PERIYAR CENTENARY POLYTECHNIC COLLEGE

PERIYAR NAGAR – VALLAM – THANJAVUR – 613 403

(AUTONOMOUS INSTITUTION)

DIPLOMA IN COMPUTER ENGINEERING

SYLLABUS

CTD/21/00

SEMESTER SYSTEM

D– SCHEME

PERIYAR CENTENARY POLYTECHNIC COLLEGE
VALLAM – 613 403, THANJAVUR

Department of Computer Engineering

Programme Advisory Committee (PAC)
Syllabus Revision

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PERIYAR CENTENARY POLYTECHNIC COLLEGE

Periyar Nagar, Vallam – 613 403, Thanjavur
AUTONOMOUS INSTITUTION

VISION

Periyar Centenary Polytechnic College aspires to be recognized as one of the leaders in imparting quality technical education and strives to prepare rural students with excellent technical and life skills for the benefit of the stakeholders and society at large.

MISSION

M1: To impart quality technical education to the students and equip them with knowledge, skills and attitudes that will lead to successful employment in industry/business, entrepreneurship and higher education.

M2: To provide conducive learning environment and adopt well structured teaching – learning practices to make the students technically competent.

M3: To strengthen the collaboration with industry and community for career development, placement and extension services.

M4: To develop the personality of the students and identify themselves as good individuals, professionals and responsible citizens with ethical values.

M5: To inculcate lifelong learning skills to face challenges with innovations.

PROGRAMME OUTCOMES (POs)

1. **Basic and Discipline specific knowledge**: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.

2. **Problem analysis**: Identify and analyse well-defined engineering problems using codified standard methods.

3. **Design/ development of solutions**: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.

4. **Engineering Tools, Experimentation and Testsing**: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

5. **Engineering practices for society, sustainability and environment**: Apply appropriate technology in context of society, sustainability, environment and ethical practices.

6. **Project Management**: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.

7. **Life-long learning**: Ability to analyse individual needs and engage in updating in the context of technological changes.

DEPARTMENT OF COMPUTER ENGINEERING

VISION

Develop highly competent diploma Computer Engineers to manage the global challenges with latests technologies to suit the need of the industry and society.

MISSION

M1: To provide quality education and training with updated curriculum.

M2: To create innovative teaching learning environment with motivation for self learning for problem solving through ICT infrastructure.

M3: To strengthens soft skills of students especially of rural students through co-curricular and extracurricular activities.

M4: Mould the students as professional diploma engineers with moral, ethical and social values and encourage them to become entrepreneurs, also encourage them for lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1 :Our Diploma graduates will have the ability to apply knowledge of computer engineering to pursue varietyof career / higher educations.

PEO2 : Our Diploma graduates will be able to design solutions that are technically sound, economical viable by following the ethical value

PEO3 : Our Diploma graduates will be effective to work in new technologies by constantly upgrading their skills and attitude towards lifelong learning

PROGRAM SPECIFIC OUTCOMES(PSOs)

PSO1: Analyze and develop essential proficiency skills in the areas related to engineering science, communicating the earned knowledge, algorithms and analysis, system software and networking and to apply the knowledge based skill to solve real time problems.

PSO2: Apply programming skills for the software development using modern computer languages, tools and platforms.

PSO3: Utilize the knowledge in the computer hardware, network, multimedia and product development..

OUTCOME BASED EDUCATION (OBE)

Our institution is practicing Outcome Based Education (OBE) which is a student centered instruction model that focuses on measuring student performance through outcomes. Outcomes include knowledge, skills and attitudes.

In the OBE model, the required knowledge and skill sets for a particular diploma programme is predetermined and the students are evaluated for all the required parameters (Outcomes) during the course of the program.

The OBE model measures the progress of the graduate in four parameters, which are

- Program Educational Objectives (PEO)
- Program Specific Outcomes (PSO)
- Program Outcomes (PO)
- Course Outcomes (CO)

Program Educational Objectives (PEOs) are broad statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve. PEO's are measured 4-5 years after graduation.

Program Specific Outcomes (PSOs) are the statements that describe what the graduates of specific engineering program should be able to do.

Program Outcomes (POs) are narrower statements that describe what students are expected to know and be able to do by the time of graduation.

Course Outcomes (COs) are the measurable parameters which evaluates each students performance for each course that the student undertakes in every semester. The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. According to revised Bloom's taxonomy, the levels in cognitive domain are as follows:

Level	Descriptor	Level of attainment
1	Remembering	Recalling from memory of previously learned material
2	Understanding	Explaining ideas or concepts
3	Applying	Using information in another familiar situation
4	Analyzing	Breaking information into part to explore Understandings and relationships
5	Evaluating	Justifying a decision or course of action
6	Creating	Generating new ideas, products or new ways of Viewing things.

DIPLOMA PROGRAMME IN ENGINEERING / TECHNOLOGY
(Implemented from 2020 -2021)

D SCHEME

RULES AND REGULATIONS

1. Description of the Programme:

a. Full Time (3 years)

The Programme for the Full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 semesters***** and the First Year is common to all Engineering Branches.

b. Sandwich (31/2 years)

The Programme for the Sandwich Diploma in Engineering shall extend over a period of three and half academic years, consisting of 7 semesters***** and the First Year is common to all Engineering Branches. The courses of three years full time diploma programme being regrouped for academic convenience.

During 4^{th} and/or during 7^{th} semester the students undergo industrial training for six months / one year. Industrial training examination will be conducted after completion of every 6 months of industrial training.

***Each Semester will have 16 weeks duration of studies with 35 hrs / Week for all Diploma Programmes.**

The Curriculum for all the 6 Semesters of Diploma Programme (Engineering & Special Diploma Programmes viz. Modern Office Practice) have been revised and revised curriculum is applicable for the candidates admitted from 2020 - 2021 academic year onwards.

2. Condition for Admission:

Condition for admission to the Diploma Programmes shall be required to have passed in the S.S.L.C Examination of the Board of Secondary Education, Tamil Nadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher Secondary Course in Tamil Nadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examinations recognized as equivalent to the above by the Board of Secondary Education, Tamil Nadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time

3. Admission to Second year (Lateral Entry):

A pass in HSC (academic) or (vocational) courses mentioned in the Higher Secondary Schools in Tamil Nadu affiliated to the Tamil Nadu Higher Secondary Board with eligibility for University Courses of study or equivalent examination &should have studied the following courses.

A pass in 2 Years ITI with appropriate Trade or Equivalent examination.

Sl.No	Programmes	H.Sc Academic	H.Sc Vocational		Industrial Training Institutes Courses
		Subjects Studied	Subjects Studied		
			Related Subjects	Vocational Subjects	
1	All the Regular and Sandwich Diploma Programmes	Physics and Chemistry as compulsory along with Mathematics / Biology	Maths / Physics / Chemistry	Related Vocational Subjects Theory & Practical	2 years courses to be passed with appropriate Trade
2	Diploma Programme in Modern Office Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy English & Elements of Economics English & Management principles & Techniques English & Typewriting	Accountancy & Auditing Banking Business Management, Co – operative Management, International Trade, Marketing& Salesmanship, Insurance & Material Management, Office Secretaryship	-

- For the Diploma Programmes related with Engineering/ Technology, the related / equivalent subjects prescribed along with Practicals may also be taken for arriving the eligibility.
- Programme will be allotted according to merit through counseling by the Principal as per communal reservation.
- For admission to the Modern Office Practice Diploma Programme the candidates studied the related courses will be given first preference.
- Candidates who have studied Commerce courses are not eligible for Engineering Diploma Programmes.

4. Age Limit: No Age limit.

5. Medium of Instruction: English

6. Eligibility for the Award of Diploma:

Nocandidate shall be eligible for the Diploma unless he/she has undergone the prescribed Programme of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, Tamil Nadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Programmes are as given below:

Diploma Programme	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time (Lateral Entry)	2 Years	5 Years
Sandwich	3 ½ Years	6 ½ Years

This will come into effect from D Scheme onwards i.e. from the academic year 2020-2021

7. Courses of Study and Curriculum outline:

The courses of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical courses.

The curriculum outline is given in Annexure - I.

8. Examinations:

Autonomous Examinations in all courses of all the semesters under the scheme of examinations will be conducted at the end of each semester.

The internal assessment marks for all the courses will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each course 25 marks are allotted for internal assessment. Autonomous Examinations are conducted for 100 marks and reduced to 75.

The total marks for result are 75 + 25 = 100 Marks.

9. Continuous Internal Assessment:

A . For Theory Courses

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**
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i) Course Attendance **5 Marks**

(Award of marks for course attendance to each course Theory/Practical will be as per the range given below)

80%	-	83%	1 Mark
84%	-	87%	2 Marks
88%	-	91%	3 Marks
92%	-	95%	4 Marks
96%	-	100%	5 Marks

ii)Tests# 10 Marks

3 tests each of 2 hours duration for a total of 50 marks are to be Conducted. Average of these 3 tests marks will be taken and the marks to be reduced to: **05 Marks**

The Tests – IV is to be the Model Examination covering all the five units and the marks so obtained will be reduced to: **05 Marks**

Tests	Units	When to conduct	Marks	Duration
Tests – I	Unit I & II	End of 6th week	50	2 hrs
Tests – II	Unit III & IV	End of 12th week	50	2 hrs
Tests – III	Unit V	End of 15th week	50	2 hrs
Tests– IV	**Model Examination - Compulsory** Covering all the 5 units (Autonomous Examination – question paper pattern)	End of 16th Week	100	3 hrs

 # From the Academic Year 2020 – 2021 onwards.

Question Paper Pattern for the Tests – I, Tests – II and Tests - III is as follows. The tests should be conducted by proper schedule. Retests marks should not be considered for internal assessment.

For I Year

Question Pattern (Without Choice):

Part A Type Questions: 6 Questions x1 mark	:	06 marks
Part B Type Questions: 8 Questions x 2 marks	:	16 marks
Part CType Questions: 4 Questions x 7 marks	:	28 marks

Total	**:**	**50 marks**

For II & III Year

Question Pattern (Without Choice):

Part A Type questions : 5 Questions × 2 marks	:	10 marks
Part B Type questions : 4 Questions × 3 marks	:	12 marks
Part C Type questions : 2 Questions × 14 marks	:	28 marks

Total	**:**	**50 marks**
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iii) Assignment **05 marks**

For each course, three assignments are to be given each for 20 marks and the average marks scored should be reduced for 5 marks.

Assignment 1: Written notes in relevant topics from the courses in unit I& II.

Assignment 2: Written notes in relevant topics from the courses in unit III , IV &V.

Assignment 3: Objective type online tests to understand the principles and thereby gain in-depth knowledge about the course.

iv) Seminar Presentation **05 Marks**

The students have to select the topics either from their courses or general courses which will help to improve their grasping capacity as well as their capacity to express the course in hand. The students will be allowed to prepare the material for the given topic using the library hour and they will be permitted to present seminar(For First and Second Year, the students will be permitted to present the seminar as a group not exceeding six members and each member of the group should participate in the presentation. For the Third Year, the students should present the seminar individually.) The seminar presentation is mandatory for all theory courses and carries 5 marks for each theory course. The respective course faculty may suggest topics to the students and will evaluate the submitted materials and seminar presentation. (21/2 marks for the material submitted in writing and 21/2 marks for the seminar presentation). For each course minimum of two seminars are to be given and the average marks scored should be reduced to 5 marks.

All Tests Papers, Assignment Papers / Notebooks and the seminar presentation written material after getting the signature with date from the students must be kept in safe custody in the department for verification and audit. It should be preserved for one semester after publication of Autonomous Exam results and produced to the flying squad and the inspection team at the time of

inspection/verification.

B. For Practical Courses:

I, II and III Year

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**
TOTAL		**25 Marks**

 # Tests **10 Marks**

3 tests each of 2 hours duration for a total of 50 marks are to be Conducted. Average of these 3 tests marks will be taken and the marks to be reduced to: **05 Marks**

The Tests – IV is to be the Model Examination covering all the experiments and the marks so obtained will be reduced to: **05 Marks**

- All the Experiments/Exercises indicated in the syllabus should be completed and the same to be given for final Autonomous examinations.
- The observation note book / manual should be maintained. The observation note book / manual with sketches, circuits, programme, reading and calculation written by the students manually depends upon the practical course during practical classes should be evaluated properly during the practical class hours with date.
- The Record work for every completed exercise should be submitted in the subsequent practical classes.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks (including Observation, Tests and SCL work sheet) and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)
- Only regular students, appearing first time have to submit the duly signed bonafide record note book/file during the Practical Autonomous Examinations.

All the marks awarded for Assignments, Tests, Seminar presentation and Attendance should be entered periodically in the Personal Theory Log Book of the staff, who is handling the theory course. The marks awarded for Observation, SCL work sheet, Tests and Attendance should be entered periodically in the Personal Practical Log Book of the staff, who is handling the practical course.

10. Communication Skill Practical, Computer Application Practical and Physical Education:

The Communication Skill Practical and Computer Application Practical with more emphasis are being introduced in First Year. Much Stress is given to increase the Communicative skill and ICT skill of students. As per the recommendation of MHRD and under Fit India scheme, the Physical education is introduced to encourage students to remain healthy and fit by including physical activities and sports.

11. Project Work and Internship:

The students of all the Diploma Programmes have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamil Nadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise**. The Project work must be reviewed twice in the same semester. The project work is approved during the V semester by the properly constituted committee with guidelines.**

a) Internal Assessment Mark for Project Work & Internship:

Project Review I	:	**10 marks**
Project Review II	:	**10 marks**
Attendance	:	**05 marks** (Award of marks same as theory course pattern)

Total	**:**	**25 marks**

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Autonomous Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Internship in Autonomous Examinations:

Demonstration/Presentation	25 marks
Report	25 marks
Viva Voce	30 marks
Internship Report	20 marks

Total	**100* marks**
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*Examination will be conducted for 100 marks and will be converted to 75 marks.

c) Internship Report:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year "Project Work & Internship" for 20 marks. The internship shall be undertaken in any

industry / Government or Private certified agencies which are in social sector / Govt. Skill Centre / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Autonomous examination.

12. Industrial Training and Project Work (Architectural Assistantship(SW)

i. Industrial Training

In IV and VII semesters, students should undergo the industrial training under the registered architects without fail. During this period, they should have 80% of attendance. Candidates not fulfilling the above are not eligible to appear for the practical examinations and the candidates should redo the industrial training in the next academic year.

The internal Assessment is based on the monthly report, Weekly report and drawing works completed in training period.

Work diary (internal Assessment)	**25 marks**
Monthly report	5 Marks
Weekly report	5 Marks
Drawing works	10 Marks
Attendance	5 Marks
Total	**25 Marks**

Architect office and studio practice –I &II (IV & VII Sem)

Report writing	60 marks
Viva- voce	40 marks
Total	**100 marks***

*Examination will be conducted for 100 marks and will be converted to 75 marks.

ii. Project work

a) Internal Assessment Mark for Project Work

Project Review I	**10 marks**
Project Review II	**10 marks**
Attendance	**05 marks** (Award of marks same as theory course pattern)
Total	**25 marks**

b) Project work & Viva voce – Autonomous Examination

Project Report	25 marks
Drawing &Presentation	25 marks
Viva Voce	30 marks
Model	20 marks

Total	**100* marks**
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*Examination will be conducted for 100 marks and will be converted to 75 marks.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the project Work & Viva voce Autonomous Examination.

13. Scheme of Examinations:

The Scheme of examinations for courses is given in Annexure - II.

14. Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed programme of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, Tamil Nadu and pass all the courses prescribed in the curriculum.

2. A candidate shall be declared to have passed the examination in a course if he/she secures not less than 40% in theory courses and 50% in practical courses out of the total prescribed maximum marks including both the Internal Assessment and the Autonomous Examinations marks put together, subject to the condition that he/she secures at least a minimum of 40 marks out of 100 marks in the Autonomous Theory Examinations and a minimum of 50 marks out of 100 marks in the Autonomous Practical Examinations.

15. Classification of successful candidates:

Classification of candidates who will pass out the final examinations from April 2023 onwards (Joined first year in 2020 -2021) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in **First Class with Superlative Distinction** if he/she secures not less than 75% of the marks in all the courses and passes all the semesters in the first appearance itself and passes all courses within the stipulated period of study 2/3/3 ½ /4 years [Full time (lateral entry)/Full Time/Sandwich/Part Time) without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he/she secures not less than 75% of the aggregate marks in all the semesters put together and passes all the semesters except the I and II semester in the first appearance itself and passes all courses within the stipulated period of study 2/3/3 ½ /4 years [Full time (lateral entry)/Full Time/Sandwich/Part Time) without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he/she secures not less than 60% of the aggregate marks in all the semesters put together and passes all the courses within the stipulated period of study 2 / 3/ 3½ / 4 years [Full time(lateral entry)/ Full Time/Sandwich/Part Time) without any break in study.

Second Class:

All other successful candidates will be declared to have passed in **Second Class**.

The above classifications are also applicable for the Sandwich / Part-Time students who pass out Final Examination from October 2023 /April 2024 onwards (both joined First Year in2020 - 2021)

16. Duration of a period in the Class Time Table:

The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical)

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'D' SCHEME
ANNEXURE – I

CURRICULUM OUTLINE

THIRD SEMESTER

S.No.	Course Code	Course	Hours Per Week			
			Theory Hours	Tutorial/ Drawing	Practical Hours	Total Hours
1	CTD310	Basics of Electrical and Electronics Engineering	5	-	-	5
2	CTD320	Operating System	5	-	-	5
3	CTD330	C Programming and Data structures	6	-	-	6
4	CTD340	Electrical and Electronics Engineering Practical	-	-	4	4
5	CTD350	Linux Practical	-	-	4	4
6	CTD360	C Programming and Data Structures Practical	-	-	4	4
7	CTD370	E Publishing Practical	-	-	4	4
Extra &Co - Curricular Activities		Physical Education	-	2	-	2
		Library	-	1	-	1
Total			16	3	16	35

FOURTH SEMESTER

S.No.	Course Code	Course	Hours Per Week			
			Theory Hours	Tutorial/ Drawing	Practical Hours	Total Hours
1	CTD410	Computer Architecture	5	-	-	5
2	CTD420	Web design and Programming	5	-	-	5
3	CTD430	Object Oriented Programming with Java	5	-	-	5
4	CTD440	RDBMS	5	-	-	5
5	CTD450	Web design and Programming Practical	-	-	4	4
6	CTD460	Java Programming Practical	-	-	4	4
7	CTD470	RDBMS Practical	-	-	4	4
Extra &Co - Curricular Activities		Physical Education	-	2	-	2
		Library	-	1	-	1
Total			20	3	12	35

FIFTH SEMESTER

S.No.	Course Code	Course	Hours Per Week			
			Theory Hours	Tutorial/ Drawing	Practical Hours	Total Hours
1	CTD510	Python Programming	5	-	-	5
2	CTD520	Cloud Computing and Internet of Things	6	-	-	6
3	Elective Theory-I					
	CTD531	Component Based Technology	5	-	-	5
	CTD532	Artificial Intelligence and Data analytics				
	CTD533	Mobile Computing				
4	CTD540	Python Programming Practical	-	-	4	4
5	CTD550	Cloud Computing and Internet of Things Practical	-	-	4	4
6	Elective Practical-I					
	CTD561	Component Based Technology Practical	-	-	4	4
	CTD562	Data analytics using Python Practical				
	CTD563	Mobile Computing Practical				
7	CTD570	Entrepreneurship and Startups #	-	-	4	4
Extra &Co - Curricular Activities		Physical Education	-	2	-	2
		Library	-	1	-	1
Total			16	3	16	35

 # Common with Mechanical Engineering

SIXTH SEMESTER

S.No.	Course Code	Course	Hours Per Week			
			Theory Hours	Tutorial/ Drawing	Practical Hours	Total Hours
1	CTD610	Computer Hardware and Servicing	6	-	-	6
2	CTD620	Computer Networks and Security	5	-	-	5
3	**Elective Theory-II**					
	CTD631	Software Engineering	5	-	-	5
	CTD632	Multimedia Systems				
	CTD633	Data science and Big Data				
4	CTD640	Computer Hardware and Networking Practical	-	-	6	6
5	**Elective Practical – II**					
	CTD651	Software Engineering Practical	-	-	4	4
	CTD652	Multimedia Systems Practical				
	CTD653	Data Science and Big Data Practical				
6	CTD660	Project work and Internship	-	-	6	6
Extra &Co - Curricular Activities		Physical Education	-	2	-	2
		Library	-	1	-	1
Total			16	3	16	35

ANNEXURE – II

SCHEME OF THE EXAMINATION

THIRD SEMESTER

S.No.	Course Code	Course	EXAMINATION MARKS			Minimum for pass	Duration of Exam Hours
			Internal assessment Marks	Autonomous Exam Marks*	Total		
1	CTD310	Basics of Electrical and Electronics Engineering	25	75	100	40	3
2	CTD320	Operating System	25	75	100	40	3
3	CTD330	C Programming and Data structures	25	75	100	40	3
4	CTD340	Electrical and Electronics Engineering Practical	25	75	100	50	3
5	CTD350	Linux Practical	25	75	100	50	3
6	CTD360	C Programming and Data Structures Practical	25	75	100	50	3
7	CTD370	E Publishing Practical	25	75	100	50	3
Total			**175**	**525**	**700**		

*** Examination will be conducted for 100 marks and it will be reduced to 75marks.**

FOURTH SEMESTER

S.No.	Course Code	Course	EXAMINATION MARKS			Minimum for pass	Duration of Exam Hours
			Internal assessment	Autonomous Exam marks*	Total		
1	CTD410	Computer Architecture	25	75	100	40	3
2	CTD420	Web design and Programming	25	75	100	40	3
3	CTD430	Object Oriented Programmingwith Java	25	75	100	40	3
4	CTD440	RDBMS	25	75	100	40	3
5	CTD450	Web design and Programming Practical	25	75	100	50	3
6	CTD460	Java Programming Practical	25	75	100	50	3
7	CTD470	RDBMS Practical	25	75	100	50	3
TOTAL			**175**	**525**	**700**		

*** Examination will be conducted for 100 marks and it will be reduced to 75marks**

FIFTH SEMESTER

S.No.	Course Code	Course	Examination Marks			Minimum for pass	Duration of Exam Hours
			Internal assessment Marks	Autonomous Exam Marks*	Total		
1	CTD510	Python Programming	25	75	100	40	3
2	CTD520	Cloud Computing and Internet of Things	25	75	100	40	3
Elective Theory-I							
3	CTD531	Component Based Technology	25	75	100	40	3
	CTD532	Artificial Intelligence and Data analytics					
	CTD533	Mobile Computing					
4	CTD540	Python Programming Practical	25	75	100	50	3
5	CTD550	Cloud Computing and Internet of Things Practical	25	75	100	50	3
Elective Practical-I							
6	CTD561	Component Based Technology Practical	25	75	100	50	3
	CTD562	Data analytics using Python Practical					
	CTD563	Mobile Computing Practical					
7	CTD570	Entrepreneurship and Startups	25	75	100	50	3
Total			175	525	700		

*** Examination will be conducted for 100 marks and it will be reduced to 75marks.**

SIXTH SEMESTER

S.No.	Course Code	Course	Examination Marks			Minimum for pass	Duration of Exam Hours
			Internal assessment Marks	Autonomous Exam Marks*	Total		
1	CTD610	Computer Hardware and Servicing	25	75	100	40	3
2	CTD 620	Computer Networks and Security	25	75	100	40	3
3	**Elective Theory-II**						
	CTD631	Software Engineering	25	75	100	40	3
	CTD632	Multimedia Systems					
	CTD633	Data science and Big Data					
4	CTD640	Computer Hardware and Networking Practical	25	75	100	50	3
5	**Elective Practical - II**						
	CTD651	Software Engineering Practical	25	75	100	50	3
	CTD 652	Multimedia Systems Practical					
	CTD 653	Data Science and Big Data Practical					
6	CTD 660	Project work and Internship	25	75	100	50	3
Total			150	450	600		

*** Examination will be conducted for 100 marks and it will be reduced to 75marks.**

LIST OF EQUIVALENT COURSE FOR 'C' SCHEME TO 'D' SCHEME

THIRD SEMESTER

Sl.No	Code No	C Scheme	Code No	D Scheme
1	CTC310	Basics of Electrical & Electronics Engineering	CTD310	Basics of Electrical & Electronics Engineering
2	CTC320	Operating systems	CTD320	Operating systems
3	CTC330	C Programming	CTD330	C Programming and Data structures
4	CTC340	Electrical and Electronics Practical	CTD340	Electrical and Electronics Practical
5	CTC350	Linux Practical	CTD350	Linux Practical
6	CTC360	C Programming Practical	CTD360	C Programming and Data Structures Practical
7	CTC370	Computer Application Practical	D002	Computer Application Practical

FOURTH SEMESTER

Sl.No	Code No	C Scheme	Code No	D Scheme
1	CTC410	Computer Architecture	CTD410	Computer Architecture
2	CTC420	Computer Networks and Security	CTD620	Computer Networks and Security
3	CTC430	Object Oriented Programming with Java	CTD430	Object Oriented Programming with Java
4	CTC440	Data structures using C	CTD330	C Programming and Data structures
5	CTC450	Java Programming Practical	CTD460	Java Programming Practical
6	CTC460	Data Structures using C practical	CTD360	C Programming and Data Structures Practical
7	CTC 470	Life and Employability Skills Practical	-	No equivalent

FIFTH SEMESTER

Sl.No	Code No	C Scheme	Code No	D Scheme
1	CTC510	Web Programming	CTD420	Web Design and Programming
2	CTC520	Relational Database Management system	CTD440	Relational Database Management system
3	CTC530	Component Based Technology	CTD531	Component Based Technology
4	CTC540	Software Engineering	CTD631	Software Engineering
5	CTC550	Web Programming practical	CTD450	Web Design and Programming practical
6	CTC560	Relational Database Management systemPractical	CTD470	Relational Database Management systemPractical
7	CTC570	Component Based Technology practical	CTD561	Component Based Technology practical

SIXTH SEMESTER

Sl.No	Code No	C Scheme	Code No	D Scheme
1.	CTC610	Computer Hardware andServicing	CTD610	Computer Hardware and Servicing
2	CTC620	Mobile Computing	CTD533	Mobile Computing
3	CTC631	Multimedia Systems	CTD632	Multimedia Systems
	CTC632	Open source software	CTD510	Python Programming
4	CTC640	Computer Servicing and Networking Practical	CTD640	Computer Servicing and Networking Practical
5	CTC650	Mobile Computing Practical	CTD563	Mobile Computing Practical
6	CTC661	Multimedia Systems Practical	CTD652	Multimedia Systems Practical
	CTC662	Open source software practical	CTD540	Python Programming Practical
7	CTC670	Project Work	-	No equivalent

CTD310 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

TEACHING AND SCHEME OF EXAMINATION

Number of Weeks/ Semester: 16 weeks

Course	Instruction		Examination			
			Marks			
	Hours / Week	Hours/ Semester	Internal Assessment	Autonomous Examinations	Total	Duration
Basics of Electrical and Electronics Engineering	5	80	25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO. OF. HOURS
I	AC Fundamentals,Batteries and UPS	13
II	Transformer and Special Motors	12
III	Semiconductor Devices	16
IV	Boolean Algebra, Logic Gates and Combinational Systems	15
V	Sequential Logic System	15
	Tests and Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

Diploma Engineers from all branches of engineering are expected to have some basic knowledge of electrical and electronics engineering. Also the technicians working in different engineering fields have to deal with various types of electrical equipments. Various types of electronic circuits are used in different electrical equipments. Hence it is necessary to study electric circuits, different types of electrical machines and electronic devices their principles and working characteristics. The basic concepts studied in this subject will be very useful for understanding of higher level subjects in further study.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to

- Understand the AC fundamentals.
- Understand the working principle of UPS.
- Know about stepper motors and servo motors.
- Familiarize with semiconductor devices, rectifier circuits, transistors and its applications
- Use Binary, Octal and Hexadecimal numbers.
- Define logic gates.
- Significance of Boolean algebra in digital circuits.
- Understand the working principles of sequential and combinational logic circuits.
- Define Flip- flops and describe behavior of various flip flops.
- Know about Synchronous and Asynchronous counters.
- Know about the function of shift registers.
- Understand the basic concept of microprocessor and 8085 microprocessor.

COURSE OUTCOMES:

Course	**CTD310 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING**
After successful completion of this course, the students should be able to	
D310.1	Understand the basic concepts of AC fundamental, batteries and its maintenance, UPS and its maintenance and switches
D310.2	Know the working principle,construction and applications of transformers, stepper motors, Servo motors and electrical safety
D310.3	Understand the concepts, application, construction and charcterstics opf PN junction diode, Zener diode , LED, LDR , Photo Diode , Rectifiers and Bipolar Junction Tranisistor
D310.4	Learn the basic concepts of Number representation, Logic Gates, Boolean algebra, Arithmetic circuits and combinational logic circuits.
D310.5	Understand the concepts of Flip flops, Counters, Registers, basics of microprocessor and architecture of 8085 microprocessor.

CTD310 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIT - I

AC FUNDAMENTALS, BATTERIES AND UPS [13 Hrs]

AC FUNDAMENTAL

Difference between AC and DC - Advantages of AC over DC Wave form of sinusoidal A.C. Cycle [1 Hr]

Generation ofsinglephase A.C. by elementary alternator - Definition of cycle, frequency, time period, amplitude, peak value, average value and rms value [1 Hr]

Define peak factor and form factor -Concept of phase, phase difference and phase angle. [1 Hr]

Single phase and 3 phase (Definition) - Meaning of lagging and leading sine wave-

Advantages of three phase over single phase [1 Hr]

BATTERIES

Classification of cells- Construction of Lead acid cell– Methods of charging [1 Hr]

Care and Maintenance of Lead acid battery– Indications of a fully charge battery–

Maintenance free batteries. [2 Hrs]

UPS

Need for UPS - Online and Offline UPS – Definition – Block Diagram [1 Hr]

Explanation of each block– Merits and demerits of online and offline UPS [1 Hr]

Need of heat sink-Specification and ratings–Maintenance of UPS including batteries. [1 Hr]

SWITCHES

Basics of switches used - Ratings of switches used for a system [1 Hr]

Installation – Ratings and types of wires used – necessity of MCB, ELCB. [2 Hrs]

UNIT- II

TRANSFORMER AND SPECIAL MOTORS [12 Hrs]

2.1 SINGLE PHASE TRANSFORMER

Working Principle and Construction of transformer–Brief description of each part – [2 Hrs]

Function and materials used – emf equation of transformer(No derivation) – Voltage and current ratio of a transformer – [2 Hrs]

Efficiency - Losses in a transformer - Auto transformer-Applications–Step up and Step down transformer(Definition only) [1 Hr]

2.2. SPECIAL MOTORS

Stepper Motor:Definition-Working principle-Types and applications– [2 Hrs]

Servo motors: Definition - Working principle - Types and applications – [2 Hrs]

Factors to be considered for selecting a motor for a particular application. [1 Hr]

2.3.ELECTRICAL SAFETY

Electric shock – need for earthing - types of earthing, fuses- need –types of fuses [2 Hrs]

UNIT- III

SEMICONDUCTOR DEVICES [16Hrs]

DIODES

PN Junction diode–Barrier Voltage,Depletion Region– [1 Hr]

Forward biased and Reverse biased Junction–Working principle – forward /Reverse [2 Hrs]

characteristics of PN Junction diode - Applications of diode– Zener Diode: Construction- [1 Hr]

Characteristics (Forward and Reverse)– Avalanche and Zener break down - Applications of [1 Hr]

Zener diode. Light Emitting Diodes-operation, construction and characteristics. [1 Hr]

LDR: Principle of operation and Characteristics.Photo Diode–Principle of operation [2 Hrs]

(conceptonly)

RECTIFIERS

Definition – Need of Rectification – Circuit diagram, Operation, i/p and o/p Waveforms of [2 Hrs]

Half wave - Full wave- Bridge rectifiers (without filters) - Uses of filters in rectifier circuit [2 Hrs]

– Ripple factor, Efficiency and PIV (No derivation) – Comparison

3.3 BIPOLAR JUNCTION TRANSISTOR

Definition- Principle of NPN and PNP transistor- Symbol – Transistor terminals - [2 Hrs]

Operating principle (NPN transistor only) –Configurations of transistor. [2 Hrs]

UNIT- IV

BOOLEAN ALGEBRA, LOGIC GATES COMBINATIONAL SYSTEM [15 Hrs]

NUMBER REPRESENTATION

Decimal, Binary, Octal and Hexadecimal number Systems-Conversion of number from one [2 Hrs]

number system to another (without decimal point) - BCD CODE – ASCII Codes - Parity bit [1 Hr]

Use of a parity bit –Odd parity and Even parity [1 Hr]

LOGIC GATES

Positive and Negative logic System- Definition, Truth table, Symbol and [1 Hr]

Logical equations of AND–OR-NOT–EXOR-EXNOR (Only 2-inputs) gates– [1 Hr]

Universal gates-NAND-NOR–Symbol and truth table. [2 Hrs]

BOOLEAN ALGEBRA

Basic laws of Boolean algebra – Demorgan's Theorem and proofs –Duality theorem - [1 Hr]

Simplification of logical equations using Boolean laws -De-Morgan's theorem–Two and three variable Karnaugh map. [2 Hrs]

ARITHMETIC CIRCUITS

Half Adder and full adder-Truth table, Circuit diagram– [1 Hr]

Half subtractor and Full subtractor- Truth table, Circuit diagram. [1 Hr]

COMBINATIONAL LOGIC CIRCUITS

Parity generator and checker -Multiplexer – De multiplexer – Encoder - Decoder (Definition and Basic Circuits only) [2 Hrs]

UNIT- V

SEQUENTIAL LOGIC SYSTEM [15 Hrs]

FLIP FLOPS

Basic principle of operation - S-R, D flip-flop – Operation and truth table- [2 Hrs]

Race Condition – JK flip flop–T flip flop– Toggling- Edge Triggered Flip-flop – Level Triggered flip flop - JK Master Slave flipflop. [2 Hrs] [1 Hr]

COUNTERS

Need-Types of counters - 4bit Asynchronous counter- Mod N counter- Decade Counter - [2 Hrs]

4bit Synchronous counter-Distinguish between Synchronous and Asynchronous counter- Application of counters [2 Hrs]

REGISTERS

Shift register-Block diagram representation and wave form of serial in,Serial Out, Serial in Parallel out, Parallel in-parallel out Applications of Shift Registers. [2 Hrs] [2 Hrs]

MICROPROCESSOR

Architecture of 8-bit Microprocessor: Intel 8085A microprocessor, Pin description and internal architecture. [2 Hrs]

Tests and Model Exam: [9 Hrs]

TEXT BOOKS :

S.No	Title	Author	Publisher With Edition
1	Electrical Technology Vol Iand II	B.L.Theraja	S.Chand& Co,New Delhi Mutiple Colour Revised First Edition,2012
2	Modern Digital Electronics	R.P. Jain	TataMc-GrawHill, New Delhi
3	Principles of Digital electronics	K.Meena	PHI learning, Private Ltd 2009

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1	Digital Electronics and Logic Design	Jaydeep Chakravarthy	University Press,Hyderabad Hyderabad, First Edition2012
2	Basic Electrical Engineering	V.N.Mittle	Tata Mc-Graw Hill, NewDelhi, First Edition
3	Basic Electrical and Electronics Engineering	R,Muthusubramanian R.Salivajanan	Tata Mc-Graw Hill, NewDelhi Seventh Reprint, 2011
4	Principles of Electronics	V.K.Mehta	S.Chand &Co, NewDelhi Second Edition
5	Digital Electronics	G.K.Kharate	Oxford University Press 2010

LEARNING WEBSITES

1.https://www.electronics-tutorials.ws/

2.http://www.learnabout-electronics.org/

3. http://www.circuitstoday.com/4-great-books-to-study-basic-electronics

4.https://www.build-electronic-circuits.com/how-to-learn-electronics/

5.https://www.seeedstudio.com/blog/2017/02/24/electronic-websites/

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D310.1	3	3	2	2	2	2	2	3	2	2
D310.2	3	3	2	2	2	2	2	3	2	2
D310.3	3	3	2	2	2	2	2	3	2	2
D310.4	3	3	2	2	2	2	2	3	2	2
D310.5	3	3	2	2	2	2	2	3	2	2
D310 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD320 OPERATING SYSTEM

TEACHING AND SCHEME OF EXAMINATION

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
	Hours / Week	Hours/ Semester	Internal Assessment	Autonomous Examinations	Total	Duration
Operating Systems	5	80	25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO .OF. HOURS
I	Introduction To Operating System	16
II	Process Management	16
III	Memory Management	13
IV	I/O And File Management , Security and Protection	13
V	Linux – Case Study	13
	Tests And Model Exam	9
	TOTAL	**80**

COURSE DESCRIPTION:

Students have to be conversant with computer, its terminology and functioning. Theheart of a computer is based around its Operating System. The processor deals with request coming from all directions asynchronously. The operating system has to deal with the problems of contention, resource management and both program and user data management, and provide a useful no-wait user interface. The course provides clear vision, understanding and working of Operating Systems.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to

- Understand the purpose, goals, functions and evolution of Operating Systems.
- Understand the concept of process, process states and their scheduling.
- Classify different types of schedulers and scheduling algorithms.

- Identify the significance of inter-process communication and synchronization.
- Know about the usage of semaphore in inter-process communication.
- Understand the condition for a dead lock, ways to prevent or recover from the deadlock.
- Know about memory protection against unauthorized access and sharing.
- Compare and contrast paging and segmentation techniques.
- Define virtual memory and its underlying concepts.
- Describe page replacement policies and disk scheduling techniques.
- Describe the features and brief history of Linux
- Compare Unix and Linux
- Explain Linux architecture
- Describe the process management, memory management handled by LINUX
- Describe file management, device drivers handled by Linux
- Learn to manage accounts in Linux OS.
- Learn to write shell script.

COURSE OUTCOMES

Course	**CTD320 OPERATING SYSTEMS**
After successful completion of this course, the students should be able to	
D320.1	Understand the basic concepts of operating systems, types, components, services, structures and user interface.
D320.2	Know the process management states, threads, types of threads, Process Scheduling, types of schedulers, Inter-process communication and synchronization, Deadlocks and mutex lock.
D320.3	Understand the concepts of Memory Management, virtual memory and Page replacement Algorithms.
D320.4	Know the concepts of disk management, file management and its concept, access methods, security and Protection.
D320.5	Understand the history of Linux , features,components,File system ,Managing Accounts and Shell Programming

CTD320 OPERATING SYSTEM

UNIT I **[16 Hrs]**

INTRODUCTION TO OPERATINGSYSTEMS

BASICS OF OPERATING SYSTEMS:

Definition–Types of Operating Systems: Mainframe, Desktop, Multiprocessor [2 Hrs]

Distributed ,Clustered, Multiprogramming, Real time, Embedded and Timesharing, Mobile OS (Android, iOS). [2 Hrs]

OPERATING SYSTEM COMPONENTS:

Process Management component– Memory Management component -I/O Management component [2 Hrs]

File Managementcomponent-Protection System– Networking Management component– Command interpreter [2 Hrs]

.1.3 OPERATING SYSTEM SERVICES:

Process Execution – I/O operations– File manipulation- Communications– [1 Hr]

Error detection and recovery–Resourceallocation– Accounting–System Protection- [1 Hr]

System Calls–System call Execution. [1 Hr]

OPERATING SYSTEM STRUCTURES:

Simple structure, Layered, Monolithic, Microkernel Operating Systems– Hybrid Operating System [1 Hr]

Views – User, System view–Concept of Virtual Machine–Booting. [1 Hr]

USER INTERFACE:

Command Line Interface(CLI)based OS–DOS, Unix–Graphic User Interface (GUI) based OS– [1 Hr]

Windows, Linux–Differencebetween CLI and GUI. [2 Hrs]

UNIT II **[16 Hrs]**

PROCESSMANAGEMENT

2.1 PROCESSES:

Definition–Process Relationship-Process states–Process State transitions Process Control [2Hrs]

Block–

Context switching–Threads – Conceptof multithreads –Benefits of threads–Types of threads. [2Hrs]

2.2. PROCESS SCHEDULING:

Definition–Scheduling objectives–Types of Schedulers–Scheduling criteria – CPU utilization, [2Hrs]

Throughput, Turnaround Time, Waiting Time, Response Time (Definition only)–

Scheduling algorithms –Preemptive and Non – pre emptive-FCFS – SJF –SRT– PS–RR-MQ- [2Hrs]

Multiprocessor scheduling– Types-Performance evaluation of the scheduling. [2 Hrs]

INTER-PROCESS COMMUNICATION AND SYNCHRONIZATION: [2 Hrs]

Definition– Shared Memory System – Message passing– Criticalsection – Mutual exclusion-Semaphores. [2 Hrs]

DEADLOCKS:

Definition –Deadlock characteristics–Deadlock Prevention–Deadlock Avoidance – Deadlock detection and Recovery. Mutex locks [2 Hrs]

UNIT III **[13 Hrs]**

MEMORYMANAGEMENT

BASIC MEMORY MANAGEMENT:

Definition – Logical and Physical address map – Memory allocation – Contiguous Memory allocation [2 Hrs]

Partition allocation -Single, Fixed and Variable partition–Internal and External fragmentation and Compaction – [2 Hrs]

Swapping - Paging – Principle of operation – Page allocation – Hardware support for paging – Protection and sharing – Disadvantages of paging. [2 Hrs]

VIRTUAL MEMORY:

Basics of Virtual Memory – Hardware and control structures – Locality of reference, [2 Hrs]

Page fault , Working Set , Dirty page/Dirty bit – Demand paging,Segmentation [2 Hrs]

PAGE REPLACEMENT ALGORITHMS:

Optimal (OPT), First In First Out (FIFO), Second Chance (SC), [1 Hr]

Not Recently Used (NRU) and Least Recently Used (LRU), Advantages and Disadvantages of Virtual Machine. [2 Hrs]

UNIT IV **[13 Hrs]**

I/O AND FILEMANAGEMENT

DISK MANAGEMENT: [2 Hrs]

Disk Structure – Physical structure, Logical structure, Disk formatting, [2Hrs]

Disk Scheduling and its algorithms, RAID structure of disk, RAID levels 0-6.

FILE MANAGEMENT: [1Hr]

File concept – File attributes – Name, Identifier, Type, Location, Size, Time, Date, [1 Hr]

useridentification–File Operations-File system structure–Byte sequence,

Record sequence and Tree-based Directory Structure–Single level, Two levels, Tree structured Directory. [2Hrs]

ACCESS METHODS:

Sequential, Random access – File allocation methods [1 Hr]

Contiguous, Linked, Indexed. [1 Hr]

SECURITY AND PROTECTION:

Security threats–Security Policies and [2 Hrs]

mechanismsAuthentications [1 Hr]

UNIT V LINUX–

CASESTUDY [13 Hrs]

5.1.INTRODUCTION:

History of Linux – Features of Linux – Components of Linux system – User space – [2 Hrs]

Kernel space - Linux Architecture - Popular Flavors of Linux- FSF/GNU-Linux Desktop: [2 Hrs]

GNOME- KDE. [1 Hr]

5.2 FILE SYSTEM:

Second extended file system–ext2–Virtual File System–Different typesof files – [2 Hrs]

File Management – File Security – 3 levels – Mounting file system–Unmounting [2 Hrs]

MANAGING ACCOUNTS:

Types of accounts–Root, System, User–Manage Users andGroups – Create, Modify, [2 Hrs]

Delete a Group – Create, Modify, Delete an account.

SHELL PROGRAMMING:

Linuxshell–Types–Graphical,CommandLine–Characteristics ofVariousshells– [2 Hrs]

Bash,Csh/Tcsh,Zsh,Fish–ShellPrompt– Shellscripting–NeedforShellscript–

Shell script advanages and disadvantages –Script example.

Tests and Model Exam: [9 Hrs]

TEXT BOOKS:

Sl.No.	Title	Author	Publisher & Edition
1	Operating System concepts	Abraham Siberschatz Galvin, Gagne	Wiley Publishers, 9th Edition
2	Operating System Internal and Design Principles	William Stallings	Pearson Education 7th Edition

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition	
1	Operating system, Principals &Design	Pal Chaudhury	PHI Learning	First Edition
2	Operating Systems	Harvey M. Deitel and Paul J.Deitel	Pearson Education, New Delhi.	Third Edition, 2007
3	Operating System	Rohit Khurana ITLESE	Vikas Publishing Ltd	First Edition 2011

LEARNING WEBSITES :

1. https://en.wikipedia.org/wiki/Operting_system

2.https://computer.howstuffworks.com/operating-system.htm

3.https://www.geeksforgeeks.org/operating-systems/

4.https://codescracker.com/operating-system/

5.https://www.computerhope.com/os.htm

ShellScriptProgramsWebsitelinks

http://www.codepoc.io/blog/unix

CONTINUOUS INTERNAL ASSESSMENT :

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D320.1	3	3	2	2	2	2	2	3	2	2
D320.2	3	3	2	2	2	2	2	3	2	2
D320.3	3	3	2	2	2	2	2	3	2	2
D320.4	3	3	2	2	2	2	2	3	2	2
D320.5	3	3	2	2	2	2	2	3	2	2
D320 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD330 C PROGRAMMING AND DATA STRUCTURES

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per semester: 16 weeks

Course	Instruction		Examination			
			Marks			
	Hours / Week	Hours/ Semester	Internal Assessment	Autonomous Examinations	Total	Duration
C programming and Data Structures	6	96	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO OF HOURS
I	Program Development and Introduction To C	17
II	Decision Making, Arrays, Strings, Functions	17
III	Structures , Unions and Pointers	17
IV	Introduction To Data Structures, Stack, Queues	17
V	Linked List, Trees, Graphs, Sorting, Searching	19
	Tests and Model Exam	9
	TOTAL	**96**

COURSE DESCRIPTION:

'C' is the most widely used computer language, which is being taught as a core course. C is general purpose structural language that is powerful, efficient and compact, which combines features of high level language and low-level language. It is closer to both Man and Machine. Due to this inherent flexibility and tolerance it is suitable for different development environments. Due to these powerful features, C has not lost its importance and popularity in recently developed and advanced software industry. C can also be used for system level programming and it is still considered as first priority programming language. This course covers the basic concepts of C. This course will act as "Programming concept developer" for students. It will also act as "Backbone" for subjects like OOPS, Visual Basic, Windows Programming, JAVA etc.

Data structures are the techniques of designing the basic algorithms for real-life projects. In the present era, it is very essential to develop programs and organize data in such a way that it solves a complex problem efficiently. Understanding of data structures is essential and this facilitates to acquire sound knowledge of the insight of hardware requirement to any problem base. The practice and assimilation of data structure techniques is essential for programming.

OBJECTIVES:

At the end of the Course, the students will be able to

- Define Program,Algorithm and flowchart
- Listdown and Explainvarious program development steps
- Write down algorithm and flowchart for simple problems.
- Describe the concepts ofConstants, Variables,Data types and operators.
- Develop programs using input and output operations.
- Use of command line arguments.
- Explain compiler controlled directives.
- Understand the structure and usage of different looping and branching statements.
- Define arrays and string handling functions.
- Explain user-defined functions, structures and union.
- Define pointers and using the concept of Pointers.
- Define Linear and non-linear data structures.
- List and discuss the different types of linear data structures.
- Define a tree and the different terms related with trees.
- Define a graph and the different types
- Write the algorithm for different types of sorting and searching.

COURSE OUTCOMES:

Course	**CTD330 C PROGRAMMINGAND DATA STRUCTURES**
After successful completion of this course, the students should be able to	
D330.1	Summarize the basic concepts of C programming language
D330.2	Solve basic mathematical problems by using decision making and looping statements
D330.3	Apply user defined functions, structures, unions and concepts of pointers in a program
D330.4	Summarize various linear data structures like stack, queues,
D330.5	Understand the concepts of linked lists, trees,graphs and use them in designing applications like sorting, searching

CTD330 C PROGRAMMING AND DATA STRUCTURES

UNIT I

PROGRAM DEVELOPMENT & INTRODUCTION TO C **[17 Hrs]**

PROGRAM

Program Definition - Program development cycle – Algorithm –flowchart [1 Hr]

Symbols, importance & advantage of flow chart. [1 Hr]

INTRODUCTION TO C

History of C - Features of C Language - Structure of a C program –Execution of C Program: [1 Hr]

Compiling, Link and Run a program – Diagrammatic representation of program execution process. [2 Hrs]

VARIABLES, CONSTANTS & DATA TYPES

C character set – Tokens – Constants - Keywords – identifiers and Variables – [2 Hrs]

Data types and storage – Data type Qualifiers – Declaration of variables – [2 Hrs]

Assigning values to variables – Escape sequences – Defining symbolic constants [1 Hr]

C OPERATORS

Arithmetic, Logical, Assignment, Relational, Increment and Decrement, Conditional, [2Hrs]

Bitwise, Special Operator precedence and Associativity. C expressions – Arithmetic [2 Hrs]

expressions, Evaluation of expressions- Type cast operator. [1 Hr]

I/O STATEMENTS

Formatted input, formatted output, Unformatted I/O statements [2 Hrs]

UNIT II

DECISION MAKING, ARRAYS , STRINGS, FUNCTIONS **[17 Hrs]**

CONTROL STATEMENTS

Simple if statement – if-else, else-if-ladder statements, switch statement, [2 Hrs]

Looping Statements – while, do _ while and for loop, go to, continue and break statements. [2 Hrs]

ARRAYS

Definition – Array element and subscript - Declaration – [2 Hrs]

Initialization of one dimension array elements–Two dimensional arrays – initialization of elements. [2 Hrs]

STRINGS

Introduction – Declaring and Initializing string variables, Reading strings , [1 Hr]

Writing strings, String handling functions– strlen(), strcpy(), strcmp(), strcat() and strrev() functions. [2 Hrs]

BUILT IN FUNCTIONS

Declaration and definition of function. Math functions – Console I/O functions [2 Hrs]

– Standard I/O functions – Character Oriented functions. [1 Hr]

USER DEFINED FUNCTIONS

Defining functions & Needs, Scope and Life time of Variables, [2 Hrs]

Function call, return values, Recursion. [1 Hr]

UNIT III

STRUCTURES, UNIONS AND POINTERS **[17 Hrs]**

STRUCTURES AND UNIONS

Structure Definition – Variable declaration – initialization – [2 Hrs]

Accessing and giving values to structures, Structures within structures, [2 Hrs]

Arrays within structures. Unions: Declaration – initialization. [2 Hrs]

Difference between Union and Structure. [1 Hr]

POINTER

Introduction–Advantages of pointers–Accessing the address of a variable [2 Hrs]

–Declaring and Initializing pointers–Accessing a variable through its pointer – Pointer [2 Hrs]

Expressions.

DYNAMIC MEMORY ALLOCATION

Advantages – malloc(), calloc(), realloc() and free() functions. [2 Hrs]

COMMAND LINE ARGUMENTS

Introduction – argv and [2 Hrs]

argc arguments . [2 Hrs]

UNIT IV **[17 Hrs]**

INTRODUCTION TO DATA STRUCTURES, STACK, QUEUES

INTRODUCTION TO DATA STRUCTURES

Introduction – Data and information – elementary data strucute organization [2 Hrs]

Types of data structures – Primitive and Non Primitive data structures, Operations on data [2 Hrs]

structures:

Traversing, Inserting, Deleting, Searching, Sorting, Merging Different Approaches to [2 Hrs]

designing in an algorithm: Top – Down approach, Bottom-up approach (Definition and [2 Hrs]

examples only

DEFINITION OF A STACK

Operations on Stack (PUSH & POP) – [1 Hr]

Implementation of stack through arrays Polish notations – [2 Hrs]

Conversion of infix to postfixexpression, [2 Hrs]

QUEUES

Definition – Representation of Queue using arrays – Circular Queue,	[2 Hrs]
Dequeue (Definition and Examples only)	[2 Hrs]

UNIT V

LINKED LIST, TREES,GRAPHS, SORTING, SEARCHING **[19Hrs]**

5.1 TERMINOLOGIES

Node, Address, Pointer, Information, Null Pointer, Empty list	[1 Hr]
Type of lists : Singly linked list , Doubly linked list, Circular list	[1 Hr]
Representation of singly linked lists in Memory	[1 Hr]
Difference between Linked & sequential List	[1 Hr]
Advantages and Disadvantages of Linked list. (Concepts only, no implementations)	[1 Hr]

5.2. TREES

Terminologies: Degree of a node, degree of a tree, level of a node, leaf node, Depth / Height	[2Hrs]
of a tree, In-degree & out-Degree, siblings. In order traversal, Preorder traversal,	[2Hrs]
Post order traversal. (Concepts only,noimplementations)	[1 Hr]

5.3 GRAPHS

Introduction, types of graphs – directed and undirected graphs - Examples	[2 Hrs]

5.4. SORTING

Introduction, Types of sorting –	[1 Hr]
Bubble sort , Quick Sort - Examples.	[2 Hrs]

5.5 SEARCHING

Definition – Algorithms and “C” programs for Linear search and	[2 Hrs]
Binary search.	[1 Hr]
Tests And Model Exam	[9 Hrs]

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1	Programming in ANSI C 4E	E. Balagurusamy	Tata Mc-GrawHill, NewDelhi Fourth Edition

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1	Programming and Problem solving using C	ISRD Group, Lucknow	Tata Mc-GrawHill, NewDelhi Sixth Reprint, 2010
2	Let us C	Yeswanth Kanetkar	BPB Publications, Fourth Revised
3	A TextBook on C	E.Karthikeyan	PHI Private Limited, New Delhi , 2008
4	Programming with C	Byron Gottfried	Schaum Series - TMGH
5	Introduction to Data structures with applications.	Trembley and Sorenson	Tata Mc-GrawHill, NewDelhi
6	Fundamentals of Data structures in C	Horowitz ,sahni Anderson-freed	University Press, Hyderabad
7	Introduction to Data structures	Bhagat Singh	TMGH, New Delhi
8	Data Structures and Algorithms	G.A. VijayalakshmiPai	TMGH, New Delhi, 6^{TH} Reprint 2011

LEARNING WEBSITES:

1. https://www.crio.do/full-stack/web-development

2.https://practice.geeksforgeeks.org/data_structures/online

3. https://Udacity's Intro to Algorithms.

4.https://Algorithms and Data Structures by edX.

5. https://Data Structures and Algorithms on Udemy.

6. https:// Coursera's Data Structures and Algorithms Specialization.

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	**-**	**25 Marks**

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D330.1	3	3	2	2	2	2	2	3	2	2
D330.2	3	3	2	2	2	2	2	3	2	2
D330.3	3	3	2	2	2	2	2	3	2	2
D330.4	3	3	2	2	2	2	2	3	2	2
D330.5	3	3	2	2	2	2	2	3	2	2
D330 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD340 ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
Electrical And Electronics Engineering Practical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

S.No	DESCRIPTION	MARKS
1	Circuit diagram, Tabular/ Truth Table /Equation /Formula	40
2	Construction	40
3	Output /Result	5
4	Viva – Voce	5
5	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

Diploma Engineers from all branches of engineering are expected to have some practical knowledge of electrical and electronics engineering. Also the technicians working in different engineering fields have to deal with various types of electrical equipments. Various types of electronic circuits are used in different electrical equipments. Hence it is necessary to have practice with electric circuits, different types of electronic devices to know the principles and working characteristics.

EQUIPMENTS / COMPONENTS REQUIRED

EQUIPMENTS

S.No	Name of the Equipments	Range	Required Nos
1	Ammeter	(0-50) Ma	6
2	Voltmeter	(0-20) V,(0-1v)	6
3	Power supply	0-30V	6
4	Digital Trainer Kit		6
5	Bread Board		6
6	Fixed dual power Supply	0-15 V	2
7	Signal generator	1 MHz	2
8	CRO Dual Trace	30 MHz	6
9	Single Phase Transformer		

COMPONENTS

S.No	Name of the Components	
1	Resistors	1150Ω,1KΩ,2.2KΩ,10KΩ,2 20Ω
2	Capacitor	10μF, 4.7μF
3	PN Diode	IN4007
4	Zener Diode	Z11.1
5	Transistor	SL100,CL100
6	IC7400, IC7402, IC7404, IC7408,IC7432, IC7486	
7	IC74180,IC 74153,IC 7476,IC 7474	
8	IC 7490,IC 7493,IC 7495	

OBJECTIVES:

On completion of the following practical contents the students must be able to

- Verify Power supply of SMPS
- Find the efficiency and voltage regulation of a single phase transformer
- Study the characteristics of PN junction diode and Zener Diode
- Function of Rectifier circuit
- Tests the performance of Light devices
- Know about the function of a Transistor
- How to construct different logic functions using universal gates
- Realize the combinational circuits and sequentialcircuits
- Develop the Mini Projects

COURSE OUTCOMES

Course	**CTD340 ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL**
After successful completion of this course, the students should be able to	
D340.1	Construct the circuit and draw the different stages of bridge rectifier using CRO and checking of power supply in SMPS.
D340.2	Construct and draw the forwar and reverse characteristics for PN diode and Zener diode.
D340.3	Construct and draw the input and output characteristics of Common Emitter configuration
D340.4	Construct and verify truth tables for logic gates , Full adder, half and full subtractor
D340.5	Construct and Tests the 4-bit Ripple counter, Decade counter and develop the Mini Project with report

CTD340 ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL

List of experiments to be conducted

1. A. Checking of power supply in SMPS

B. Construct the circuit and draw the graph for different stages of Bridge rectifier with filter using CRO.

2. To observe waveforms of A.C. . Voltage and current on CRO. Determine amplitude, phase and understand the concept's of lagging and leading.
3. Construct the circuit and draw the forward characteristics of PN junction diode and find input resistance.
4. Construct the circuit and draw the reverse characteristics of Zener Diode and find breakdown voltage
5. Construct the circuit and draw the VI characteristics of LED
6. Construct the circuit and draw the characteristics of LDR
7. Construct CE configuration circuit and draw the input characteristics and also find input resistance.
8. Construct CE configuration circuit and draw the output characteristics and also find output resistance.
9. A. Verify the truth tables of NAND,AND,NOR,OR,NOT,XOR using IC's

   B. Realization of basic gates using either NAND or NOR gate.
10. Construct and verify Half adder and Half Subtractor
11. Construct and verify the truth table of Full adder
12. Construct and verify the truth table of Full subtractor
13. Verify the truth tables of RS,D,T and JKFF
14. Construct and tests the parity generator and checker function using IC74180
15. Construct and tests the 4bit Ripple counter (IC7493)
16. Construct and tests decade counter (IC7490)
17. Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

Continuous Internal Assessment

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests #	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. https://www.quora.com/What-are-some-best-sites-to-learn-the-basic-of-electronics-for-Electronics-engineer
2. https://www.pannam.com/blog/free-resources-to-learn-electrical-engineering/
3. http://www.pvpsiddhartha.ac.in/autonomus1
4. http://www.circuitstoday.com/4-great-books-to-study-basic-electronics
5. http https://www.edx.org/course/circuits-and-electronics-1-basic-circuit-analysiss://www.scribd.com/document/161565322/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D340.1	3	3	3	3	3	3	3	3	3	3
D340.2	3	3	3	3	3	3	3	3	3	3
D340.3	3	3	3	3	3	3	3	3	3	3
D340.4	3	3	3	3	3	3	3	3	3	3
D340.5	3	3	3	3	3	3	3	3	3	3
D340 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substanial (high)

CTD340 ELECTRICAL AND ELECTRONICS ENGINEERING PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1.	A. Checking of power supply in SMPS	D340.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	B. Construct the circuit and draw the graph for different stages of Bridge rectifier with filter using CRO.	D340.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	To observe waveforms of A.C. Voltage and current on CRO. Determine amplitude and phase and understand the concept's of lagging and leading	D340.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Construct the circuit and draw the forward characteristics of PN Junction Diode and find input resistance.	D340.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Construct the circuit and draw the reverse characteristics of Zener Diode and find breakdown voltage.	D340.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Construct the circuit and draw the VI characteristics of LED	D340.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Construct the circuit and draw the characteristics of LDR	D340.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Construct CE configuration circuit and draw the input characteristics and also find input resistance	D340.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Construct CE configuration circuit and draw the output characteristics and also find output resistance.	D340.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	A. Verify the truth tables of NAND,AND,NOR,OR,NOT,XOR using IC's	D340.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	B. Realization of basic gates using either NAND or NOR gate.	D340.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Construct and verify Half adder and Half Subtractor	D340.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Construct and verify the truth table of Full subtractor	D340.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Construct and verify the truth table of Full adder	D340.4	PO1,PO2,PO3,PO4,

			PO5,PO6,PO7
13	Verify the truth tables of RS,D,T and JKFF	D340.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Construct and tests the parity generator and checker function using IC74180	D340.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Construct and tests the 4bit Ripple counter(IC7493)	D340.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Construct and tests decade counter(IC7490)	D340.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
17	Mini Project	D340.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD350 LINUX PRACTICAL

SCHEME OF INSTRUCTION AND EXAMINATION

No of weeks per semester : 16 weeks

Course	Instructions		Examination			
			Marks			Duration
	Hours/ Week	Hours/ Semester	Internal Assessment	Autonomous Examinations	Total	
Linux Practical	4	64	25	100*	100	3Hrs.

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE: Students should write one program from PART A and one program from PART B

S.No	DESCRIPTION	MARKS
1	Correctness of Commands in Part-A	20
2	Execution of Commands in Part-A	15
3	Writing program in Part-B	20
4	Execution of program in Part-B	20
5	Printed Output (Part–A)	5
6	Printed Output (Part–B)	5
7	VIVA– VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

- Linux is an open-source Operating System which offer a variety of functions, programs or applications and Linux software to choose from, to the users, most of them are free. It has a good graphical user interface (GUI) and almost all the functionality that other proprietary OS offer.
- This practical enables to learn the commands used to perform various operations in a Linux system and write shell scripts for various functions. One of the top practical uses for Linux is web applicationdevelopment.

HARDWARE AND SOFTWARE REQUIREMENTS:

Minimum Hardware Requirements:

1. Desktop Computers: 30 Nos
2. Laser Printer: 1 No.

Minimum Software Requirements:

Operating System: Any Linux Based GUI Operating System

OBJECTIVES

On completion of the following exercises, the students must be able to

- Login and logoff Procedures
- Use of General purpose commands
- Explain the use of simple filters and advanced filters.
- Know the details of process status
- Use Various communication Commands
- Search patterns
- Use of shell scripts and define the elements of the shell script
- Write shell script for various problems.

COURSE OUTCOMES:

Course	CTD350 LINUX PRACTICAL
After successful completion of this course, the students should be able to	
D350.1	General understanding of various application programs entering and exiting from a Linuxsystems
D350.2	Learn the syntax and usage of all the management commands, filters and process status.
D350.3	Understand the File operations(New, Open, Close, Save, Save and Exit, Print) –Text Editing operations (Inserting, deleting, finding, replacing, copying and moving).
D350.4	Use of shellscripts ,Numerical operations,Looping,Swapping Technique,String operations.Using Command line arguments and Filters
D350.5	Understand the concepts of Relational operations,Logical operations,Boolean operations,Basic arithmetic operations, Case statement,Search Directory/File-Exercises and develop the Mini Project with report

CTD350 LINUX PRACTICAL

List of experiments to be conducted

PART–A LINUX COMMANDS

Write down the syntax and usage of the following exercise with all options. Check the commands with the system

1. Usage of Directory Management commands: ls, cd, pwd, mkdir, rmdir
2. Usage of File Management commands :cat, chmod, cp, mv, rm, more
3. Use the General Purpose commands: wc, cal, date, who, tty, ln
4. Using the Simple filters: pr, head, tail, cut, paste, nl ,sort
5. Advanced filters: Search for a pattern using grep, egrep, fgrep, uniq
   Communication Commands: write, wall
6. Check the details of process name, PID, status using ps command.
   Process Management commands:&,nohup, kill, nice
7. Device pattern using meta character to match each of the following situations:
   All three character filenames.
   All filenames that contains the characters ‘a ‘or ‘b ‘or’ c.’ All
   filenames beginning with a particular string.
   All filenames beginning with ‘ca’ and ending with two digits. All
   filenames beginning with ‘s ‘and having ‘a’ at somewhere.

PART– BSHELL SCRIPTS

1. Write a shell script that accepts a numerical value N. Then display the
   Decrementing value of N till it reaches 0.
2. Write a shell script to search a string and display it.
3. Write a shell script that takes three command line arguments. The first argument is the name of the destination file and the other two arguments areNames of files to be placed in the destination file.
4. Write a shell script to print contents of file from given line number to next given Number of lines.
5. Write a shell script that print out date information in this order: time, day of The week, day number, year– that is like this.21:18:00 IST Mon16 Aug2021
6. Develop a Basic math Calculator using case statement

7 Write a shell script that represents a multiple choice question, gets the user's Answer and report back whether the answer is right, wrong or not one of thechoices.

8 Write a shell script that takes a command line argument and reports on Whether it is a directory, a file or something else.

9 Write a shell script to concatenate two strings.

10 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

Continuous Internal Assessment

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests #	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**
TOTAL		**25 Marks**

LEARNING WEBSITES

1. https://www.programiz.com
2. http://codedad.co.uk
3. https://www.log2base2.com
4. https://www.edx.org

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D350.1	3	3	3	3	3	3	3	3	3	3
D350.2	3	3	3	3	3	3	3	3	3	3
D350.3	3	3	3	3	3	3	3	3	3	3
D350.4	3	3	3	3	3	3	3	3	3	3
D350.5	3	3	3	3	3	3	3	3	3	3
D350 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

CTD350 LINUX PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	Usage of Directory Management commands: ls, cd, pwd, mkdir, rmdir	D350.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Usage of File Management commands :cat, chmod, cp, mv, rm, more	D350.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Use the General Purpose commands: wc, cal, date, who, tty, ln	D350.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Using the Simple filters: pr, head, tail, cut, paste, nl ,sort	D350.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Advanced filters: Search for a pattern using grep, egrep, fgrep, uniqCommunication Commands: write, wall	D350.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Check the details of process name, PID, status using ps command.Process Management commands:&,nohup, kill, nice	D350.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Device pattern using meta character to match each of the following situation: All three character filenames. All filenames that contains the characters ‘a ‘or ‘b ‘or’ c.’ All filenames beginning with a particular string. All filenames beginning with ‘ca’ and ending with two digits. All filenames beginning with ‘s ‘and having ‘a’ at somewhere.	D350.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Write a shell script that accepts a numerical value N. Then display theDecrementing value of N till it reaches 0.	D350.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Write a shell script to search a string and display it.	D350.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Write a shell script that takes three command line arguments. The first argument is the name of the destination file and the other two arguments are Names of files to be placed in the destination file.	D350.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Write a shell script to print contents of file from given line number to next given Number of lines.	D350.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Write a shell script that print out date information in this order: time, day of The week, day number, year– that is like	D350.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7

	this.21:18:00 IST Mon16 Aug2021		
13	Develop a Basic math Calculator using case statement	D350.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Write a shell script that represents a multiple choice question, gets the user's Answer and report back whether the answer is right, wrong or not one of thechoices.	D350.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Write a shell script that takes a command line argument and reports on Whether it is a directory, a file or something else.	D350.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Write a shell script to print contents of file from given line number to next given Number of lines.	D350.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
17	Mini Project	D350.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD360 C PROGRAMMING AND DATA STRUCTURES PRACTICAL

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks per semester: 16 weeks

Course	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Autonomous Examinations	Total	
C Programming and Data Structures Practical	4	64	25	100*	100	3Hrs.

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program from **PART A** and one program from **PART B**

S.No	DESCRIPTION	MARKS
1	Writing any one program from PARTA	20
2	Writing any one program from PART B	25
3	Executing program (PART–A)	15
4	Executing program (PART– B)	15
5	Result with print out (PART–A)	5
6	Result with print out (PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	10

COURSE DESCRIPTION:

As 'C' is the most widely used computer language in software industry to provide the hands on experience o n writing C programs and on implementation of linear and non-linear data structure, this course is introduced. The knowledge of 'C' language and data structures will be reinforced by practical exercises during the course of study. This course will help students to develop the capability of selecting a particular data structure.

HARDWARE AND SOFTWARE REQUIREMENTS:

HARDWARE REQUIREMENT

Desktop Computers	-	30 No's
LaserPrinter	-	1 No

SOFTWARE REQUIREMENT

C–Compiler with Editor.

OBJECTIVES

At the end of the Course, the students will be able to

- Analyze the given problem.
- Think the logic to solve the given problem.
- Describe the concepts of constants, variables, and data type's and operators.
- Develop programs using input and output operations.
- Write programs using command line arguments.
- Write programs using compiler control directives.
- Write programs using different looping and branching statements.
- Write programs based on arrays.
- Write Programs using string handling functions.
- Write programs using user-defined functions, Structures and Union.
- Write programs using the concept of Pointers.
- Understand the use of arrays
- Implement linear data structure algorithms using Clanguage.
- Implement non - linear data structure algorithms using Clanguage.
- Write programs for traversing a binary tree.
- Write programs for searching and sorting.

COURSE OUTCOMES:

Course	**CTD360 C PROGRAMMING AND DATA STRUCTURES PRACTICAL**
After successful completion of this course, the students should be able to	
D360.1	Program to print the basic details and swapping of two variables
D360.2	Program to print prime numbers,prepare total Marks and function power
D360.3	Program to find length of the given string using pointers and find factorial using recursion
D360.4	Program to perform operations in stack, queue and single linked list
D360.5	Program to sort and search the given list of numbers and develop the Mini Project with report

CTD360 C PROGRAMMING AND DATA STRUCTURES PRACTICAL

List of experiments to be conducted

Part – A

1. Write a simple C Program

a. Print your Name and Address

b. Find Simple interest and Compound interest.

2. Write a C program to swap two variable's using
(i) third variable and (ii) without using a third variable.

3. Write a program to find the largest number between given three numbers.

4. Write a program to print all prime numbers from 1 to N.

5. Write a program to prepare the total marks for N students by reading the Reg.No, Name, Mark 1 to Mark 6 by using array of structures.

6. Write a program using the function power (a,b) to calculate the value of a raised to b.

7. Write a program to find the length of the given string using pointers.

8. Write a program to find factorial of a number using recursion.

PART – B

9. Write a program in 'C' to create a singly linked list containing at least five elements.Make necessary assumptions.

10. Write a "C" program to perform operations in stack using array.

11. Write a "C" program to convert an infix expression into post fix expression.

12. Write a "C" program to perform operations in queue using array.

13. Write a "C" program to add two 3 x 3 matrices and display the result in Matrix form.

14. Write a "C" program to read 10 elements and sort the above numbers using bubble sort.

15. Write a "C" Program for binary searching

16. Write a program to read a string and check whether it is palindrome or not.

17. Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

Continuous Internal Assessment

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests #	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. https://www.vssut.ac.in
2. https://www.ctae.ac.in

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D360.1	3	3	3	3	3	3	3	3	3	3
D360.2	3	3	3	3	3	3	3	3	3	3
D360.3	3	3	3	3	3	3	3	3	3	3
D360.4	3	3	3	3	3	3	3	3	3	3
D360.5	3	3	3	3	3	3	3	3	3	3
D360 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

CTD360 C PROGRAMMING AND DATA STRUCTURES PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	Write a simple C Program a. Print your Name and Address b. Find Simple interest and Compound interest.	D360.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Write a C program to swap two variable's using (i) third variable and (ii) without using a third variable.	D360.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Write a program to find the largest number between given three numbers.	D360.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Write a program to print all prime numbers from 1 to N.	D360.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Write a program to prepare the total marks for N students by reading the Reg.No,Name, Mark1 to Mark6	D360.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Write a program using the function power (a,b) to calculate the value of a raised to b.	D360.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Write a program to find the length of the given string using pointers.	D360.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Write a program to find factorial of a number	D360.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Write a program in 'C' to create a singly linked list containing at least five elements.Make necessary assumptions.	D360.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Write a "C" program to perform operations in stack using array.	D360.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Write a "C" program to perform operations in queue using array.	D360.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Write a "C" program to convert an infix expression into post fix expression.	D360.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	Write a "C" program to add two 3 x 3 matrices and display the result in Matrix form.	D360.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Write a "C" program to read 10 elements and sort the above	D360.5	PO1,PO2,PO3,PO4,

	numbers using bubble sort.		PO5,PO6,PO7
15	Write a “C” Program for binary searching	D360.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Write a program to read a string and check whether it is palindrome or not.	D360.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
17	Mini Project	D360.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD370 E PUBLISHING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 Weeks

Course	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
E Publishing Practical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE: Students should write one program from PART A and one program from PART B

S.No	DESCRIPTION	MARKS
1	Procedure Writing – One Question from PART - A	20
2	Procedure Writing – One Question from PART - B	25
3	Executing Exercise (PART – A)	15
4	Executing Exercise (PART – B)	15
5	Result(Part – A)	5
6	Result(Part – B)	5
7	VIVA – VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

This course will enable the students to familiarize with the features and use of application packages such as CorelDraw, Photoshop and Adobe indesign. This subject will develop skills in handling the above packages to develop software for-publishing. It makes the students exactly suitable for DTP industry.

HARDWARE AND SOFTWARE REQUIREMENTS

HARDWARE REQUIREMENTS

Desktop Computers	…..	30 Nos
Laser printer	…..	1 No
Scanner	…..	1 No

SOFTWARE REQUIREMENTS

Any Open Source Software

- GIMP
- Scribus
- Inkscape
- Krita
- Pinta
- Shotwellor any equivalent open source software.[or]
- Corel draw, Photoshop, Adobeindesign**.(optional)**

[Open source software usage is recommended than proprietary for doing lab exercises]

OBJECTIVES:

On completion of the following exercises, the students must be able to

- Learn all tools and options inCorelDraw.
- Create designs like Bit Notice, Notebook Wrapper, Invitation and Calendar in CorelDraw or any open sourcesoftware.
- Learn all tools and options in PhotoShop.
- Create designs using layers, tools, text effects and filters in Photoshop or any equivalent open sourcesoftware.
- Learn to use character styles, paragraph styles, text effects and text framein Adobe In design or any equivalent open sourcesoftware
- Create master page, multipage document and monthly calendar in Adobe Indesign.

COURSE OUTCOMES:

Course	**CTD 370 E PUBLISHING PRACTICAL**
After successful completion of this course, the students should be able to	
D370.1	Creating a Bit Notice, a design using basic tools and notebook wrapper
D370.2	Creating an invitation, calendar and simple logo
D370.3	Transforming one object into another object using blend tool and creating a design using various selection tools and masking various images.
D370.4	Creating a design using various filtering effects , simple layout and master page
D370.5	Creating a multipage document and stylish monthly calendar sheet and develop the Mini Project with report

CTD370 E PUBLISHING PRACTICAL

List of experiments to be conducted

PART-A

1. Create a Bit Notice with specified height and width with various text styles.
2. Create a design using all basic tools and make changes using shape tool.
3. Create a notebook wrapper design using fountain filling and pattern filling tools.
4. Create an invitation using arrange menu commands like transformations, align and distribute and order.
5. Create a calendar with the help of Grid Tool, Power clip and import commands.
6. Create a simple logo using text tool, rectangle tool and ellipse tool.
7. Transform one object into another object using blend tool.

PART-B

1. Create a design by using the various Selection Tools, cutting and pasting the images.
2. Using multiple layers, create a design with the use of masking various images.
3. Create a design by the use of text tools and apply text effects.
4. Change the color of an image by the use of selective coloring method.
5. Create a design by applying the various filtering effects.
6. Create a simple layout and master page by using master page palette and Character Styles.
7. Create a multipage document by using character, paragraph, auto flow and text commands.
8. Create a stylish monthly calendar sheet by using table and its formatting commands.
9. Create E- invitation for the college symposium
10. Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests #	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. https://www.bridgeacademy.in
2. https://wabisabilearning.com
3. https://elearningindustry.com
4. http://renodo.org

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D370.1	3	3	3	3	3	3	3	3	3	3
D370.2	3	3	3	3	3	3	3	3	3	3
D370.3	3	3	3	3	3	3	3	3	3	3
D370.4	3	3	3	3	3	3	3	3	3	3
D370.5	3	3	3	3	3	3	3	3	3	3
D370 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substantial (high)

CTD 370 E PUBLISHING PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	Create a Bit Notice with specified height and width with various text styles.	D370.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Create a design using all basic tools and make changes using shape tool.	D370.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Create a notebook wrapper design using fountain filling and pattern filling tools.	D370.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Create an invitation using arrange menu commands like transformations, align and distribute and order.	D370.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Create a calendar with the help of Grid Tool, Power clip and import commands.	D370.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Create a simple logo using text tool, rectangle tool and ellipse tool.	D370.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Transform one object into another object using blend tool.	D370.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Create a design by using the various Selection Tools, cutting and pasting the images.	D370.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Using multiple layers, create a design with the use of masking various images.	D370.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Create a design by the use of text tools and apply text effects.	D370.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Change the color of an image by the use of selective coloring method.	D370.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Create a design by applying the various filtering effects.	D370.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	Create a simple layout and master page by using master page palette and Character Styles.	D370.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Create a multipage document by using character, paragraph, auto flow and text commands.	D370.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Create a stylish monthly calendar sheet by using table and its formatting commands.	D370.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Create E- invitation for the college symposium	D370.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
17	Mini Project	D370.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD310 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Write the advantages of three phase over single phase	I	R	D310.1	PO1,PO5
2	What the merits and demerits are of online and offline UPS?	I	U	D310.1	PO1, PO5
3	What are the losses in a transformer?	II	U	D310.2	PO1, PO5
4	What is Servo motors and its tpes?	II	R	D310.2	PO1, PO5
5	Write on reverse biasing of a diode.	III	U	D310.3	PO1, PO4
6	Write the uses of filters in rectifier circuit.	III	U	D310.3	PO1, PO4
7	Explain the Demorgan's theorm.	IV	U	D310.4	PO1,PO3
8	Draw the logic diagram for odd parity generator.	IV	R	D310.4	PO1,PO3
9	Distinguish between Synchronous and Asynchronous counter.	V	R	D310.5	PO1,PO3
10	Write on Race condition and need for Master Slave flip flop.	V	U	D310.5	PO1,PO3

	PART-B (5 X 14 = 70Marks)					
	Note: Answer all questions choosing A or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Write notes on Maintenance free batteries.	07	I	R	D310.1	PO1,PO4,PO5
	(ii) Explain in detail about online UPS.	07	I	U	D310.1	PO1,PO4,PO5
	(OR)					
	(B) (i) Explain the concept of Switch.	07	I	U	D310.1	PO1,PO4,PO5
	(ii) Write notes on the construction of Lead Acid cell.	07	I	R	D310.1	PO1,PO3,PO4
12	(A) (i) Explain the working principle of autotransformer.	07	II	U	D310.2	PO1,PO3,PO4
	(ii) Discuss about various Losses in a transformer.	07	II	U	D310.2	PO1,PO3,PO4
	(OR)					

	(B) (i) Explain the working principle of stepper motor.	07	II	R	D310.2	PO1,PO3,PO4
	(ii) Discuss the factors about selection of motor for a particular application	07	II	U	D310.2	PO1,PO3,PO4
13	(A).(i) Describe the principle of operation of photo diode.	07	III	U	D310.3	PO1,PO3,PO4
	(ii) Describe the characteristics of LDR & LED.	07	III	U	D310.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the forward /reverse characteristics of PN Junction diode	07	III	U	D310.3	PO1,PO3,PO4
	(ii) Explain the working of bridge rectifier.	07	III	U	D310.3	PO1,PO3,PO4
14	(A) (i) Convert $(79169)_{10}$ into binary number & Octal number	07	IV	E	D310.4	PO1,PO2,PO4
	(ii) a.Explain ASCII code.b.Parity bit	07	IV	U	D310.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain about the universal gates with logic diagram	07	IV	U	D310.4	PO1,PO3,PO4
	(ii) Explain the working of half adder and full subtractor.	07	IV	U	D310.4	PO1,PO3,PO4
15	(A) (i) List the types of flip flop explain any one with logic diagram.	07	V	U	D310.5	PO1,PO3,PO4
	(ii) How a 4bit asynchronous counter is working?	07	V	U	D310.5	PO1,PO3,PO4
	(OR)					
	(B) (i) What is decade counter?Write on it.	07	V	U	D310.5	PO1,PO3,PO4
	(ii) Explain about 8 bit microprocessor.	07	V	R	D310.5	PO1,PO3,PO4

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD320 OPERATING SYSTEM

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	List the types of system call.	I	R	D320.1	PO1,PO3
2	What is Virtual machine?	I	U	D320.1	PO1,PO3
3	What are the types of thread?	II	R	D320.2	PO1,PO5
4	What do you mean by mutex locks?	II	R	D320.2	PO1,PO3
5	What is Page fault?	III	U	D320.3	PO1,PO3
6	What is Paging?	III	R	D320.3	PO1,PO3
7	What is RAID?	IV	R	D320.4	PO1,PO3
8	What are the two types of security threats?	IV	R	D320.4	PO1,PO3
9	List two types of Linux desktop.	V	R	D320.5	PO1,PO5
10	What is mount point?	V	R	D320.5	PO1,PO3

	PART-B (5 X 14 = 70Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain any two types of operating systems.	07	I	U	D320.1	PO1,PO4,PO5
	(ii) Explain system call execution with an example	07	I	U	D320.1	PO1,PO3,PO5
	(OR)					
	(B) (i) Explain any two operating system services.	07	I	U	D320.1	PO1,PO3,PO5
	(ii) Explain monolithic and micro kernel operating systems.	07	1	U	D320.1	PO1,PO3,PO5
12	(A) (i) Explain context switching and Multithreads.	07	II	R	D320.2	PO1,PO3,PO5
	(ii) Explain s hortests job first and round robin scheduling with example.	07	II	U	D320.2	PO1,PO4,PO5
	(OR)					
	(B) (i) Discuss in detail deadlock	07	II	U	D320.2	PO1,PO4,PO5

	detection, and recovery .					
	(ii) Explain critical section and mutual exclusion.	07	II	U	D320.2	PO1,PO4,PO5
13	(A).(i) Explain internal and external fragmentation.	07	III	R	D320.3	PO1,PO4,PO5
	(ii) With neat diagram,explain hardware support for paging	07	III	R	D320.3	PO1,PO4,PO5
	(OR)					
	(B) (i) Explain the hardware and control structure for virtual memory.	07	III	U	D320.3	PO1,PO3,PO4
	(ii) Explain any two page replacement policies.	07	III	U	D320.3	PO1,PO3,PO4
14	(A) (i) Explain disk structure.	07	IV	U	D320.4	PO1,PO3,PO5
	(ii) With example explain contiguous diskspace allocation	07	IV	U	D320.4	PO1,PO4,PO5
	(OR)					
	(B) (i) Discuss about file system structure.	07	IV	U	D320.4	PO1,PO4,PO5
	(ii) Explain the security mechanisms.	07	IV	U	D320.4	PO1,PO4,PO5
15	(A) (i) Explain the three levels of file security in Linux.	07	V	U	D320.5	PO1,PO4,PO5
	(ii) Explain Linux architecture with neat diagram.	07	V	U	D320.5	PO1,PO4,PO5
	(OR)					
	(B) (i) Explain in detail about ext2 file system.	07	V	U	D320.5	PO1,PO4,PO5
	(ii) Write a shell script to print contents of file from given line number to next given number of lines.	07	V	U	D320.5	PO1,PO4,PO5

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD330 C PROGRAMMING AND DATA STRUCTURE

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3= 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Write down the syntax of scanf() and printf() function.	I	R	D330.1	PO1,PO3
2	Differentiate constant and variables	I	U	D330.1	PO1, PO6
3	Write and explain syntax of — while loop.	II	U	D330.2	PO1, PO6
4	What is recursion?	II	R	D330.2	PO1, PO6
5	Define pointer .How can you declare it?	III	R	D330.3	PO1,PO3
6	What is the purpose of realloc()?	III	U	D330.3	PO1,PO3
7	What is circular queue?	IV	R	D330.4	PO1, PO6
8	Define stack.	IV	R	D330.4	PO1, PO6
9	Define Bubble Sorting.	V	R	D330.5	PO1, PO6
10	What is meant by linear search?	V	R	D330.5	PO1,PO5

	PART-B (5 X 14 = 70 Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain in detail about the structure of a C program with an example.	07	I	U	D330.1	PO1, PO5, PO6
	(ii) Explain the various operators in C with one example for each operator.	07	I	U	D330.1	PO1, PO5, PO6
	(OR)					
	(B) (i) Discuss the Program development cycle in detail.	07	I	R	D330.1	PO1, PO5, PO6
	(ii) Explain about the formatted and unformatted I/O statements in C.	07	I	U	D330.1	PO1, PO5, PO6
12	(A) (i) Explain for statement with syntax and an example.	07	II	U	D330.2	PO1, PO5, PO6
	(ii) How does switch statement differ from if statement. Give examples	07	II	U	D330.2	PO1,PO3, PO6
	(OR)					
	(B) (i) Discuss the different types of if statements with an example	07	II	U	D330.2	PO1,PO5, PO6
	(ii) Write a program to read a list	07	II	U	D330.2	PO1, PO5, PO6

	of n elements and find the minimum number using array.					
13	(A).(i) Explain structure with syntax and example.	07	III	U	D330.3	PO1, PO5, PO6
	(ii) What are the advantages of using pointers? How are pointers declared & initialized?	07	III	U	D330.3	PO1, PO5, PO6
	(OR)					
	(B) (i) Explain about array with in structure with example.	07	III	U	D330.3	PO1, PO5, PO6
	(ii) Write a program to demonstrate malloc() and free() functions.	07	III	U	D330.3	PO1,PO5, PO6
14	(A) (i) What are different data structure operations? Define them.	07	IV	U	D330.4	PO1,PO5, PO6
	(ii) Explain any one applications of a stack.	07	IV	U	D330.4	PO1,PO5, PO6
	(OR)					
	(B) (i) Explain different approaches to design an algorithm.	07	V	U	D330.4	PO1, PO5, PO6
	(ii) Explain about Circular queue and dequeue.	07	V	U	D330.4	PO1, PO5, PO6
15	(A) (i) With a set off 10 values explain quick sort method.	07	V	An	D330.5	PO1, PO5, PO6
	(ii) Explain graph and its types with example.	07	V	U	D330.5	PO1, PO5, PO6
	(OR)					
	(B) (i Describe about postorder traversal of a tree.	07	V	U	D330.5	PO1, PO5, PO6
	(ii) Write a program to sort a set of integer susing bubble sort method	07	V	R	D330.5	PO1,PO5, PO6

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

*****

CTD410 COMPUTER ARCHITECTURE

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Computer Architecture	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO. OF.HOURS
I	Register Transfer Logic and CPU	16
II	Input – Output Organization	14
III	Memory Organization	15
IV	Microprocessors, Pipelining and Vector Processing	14
V	Architecture And Concepts of Advanced Processors	12
	Tests and Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

Computer Architecture is concerned with the structure and behavior of the variousfunctional modules of the computer and their interaction. This course provides the necessary understanding of the hard ware operation of digital computers.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- Know the fundamental blocks of computer
- Realize the function of I/O in different operation modes
- Use of I/O processor
- Know about different memory types and their operations
- Study about the fundamental blocks of CPU
- Know about the computer arithmetic
- Study the different processors

COURSE OUTCOMES

Course	**CTD410 COMPUTER ARCHITECTURE**
After successful completion of this course, the students should be able to	
D410.1	Understand the basic of Computer Architecture, acquire knowledge on basic computer organization and design.
D410.2	Explain data transfer Input/output module.
D410.3	Understand the different types of memory also explain about the associative memory, cache memory and virtual memory.
D410.4	Infer the knowledge about micro processor.
D410.5	Explain about advanced processors and architecture.

CTD410 COMPUTER ARCHITECTURE

UNIT- I **[16 Hrs]**

REGISTER TRANSFER LOGIC AND CPU

REGISTER TRANSFER

Register Transfer Language–Inter Register transfer– [2 Hrs]

Control function-Bustransfer-Memory transfer. [1 Hr]

MICROOPERATIONSANDALU

Arithmetic micro operations-Binary adder,subtractor,incrementer,4-bit arithmetic ccircuit, [2 Hrs]

Logic micro operations-one stage of logic circuit-applications, [2 Hrs]

shift micro operations- [1 Hr]

4 bit combinational circuitshifter-one stage of ALU. [2 Hrs]

CENTRALPROCESSINGUNIT

Components of CPU- General register organization, bus system-register set with common [2 Hrs]

ALU-memory stack - stack limits-

Processor Organization - Instruction format (3,2,1,0 address instructions) –Addressing modes, [2 Hrs]

Various addressing modes –RISC and CISC Architecture,Characteristics.

CONTROL UNIT

Structure of control unit–Fetch cycle, Indirect cycle, Execute cycle,Interruptcycle,Instruction [1 Hr]

cycle–

Types of control unit–Hardwired, Micro-programmed control. [1 Hr]

UNIT-II **[14 Hrs]**

INPUT – OUTPUT ORGANIZATION

INPUT OUTPUT INTERFACE

Need for I/O interface, I/O bus and interface, I/O commands, ExampleofI/Ointerface, [2 Hrs]

I/O Bus versus memory bus,Isolated I/O versus Memory mapped I/O. [1 Hr]

ASYNCHRONOUS DATA TRANSFER

Strobe control,Hand shaking,Asynchronous serial transfer [2 Hrs]

Asynchronous communication interface. [2 Hrs]

MODESOFTRANSFER

Programmed I/O,Interrupt initiated I/O-vectored interrupt, non-vectored interrupt, Priority [2 Hrs]

interrupt

Interrupt controller , DMA –DMAcontroller,DMAtransfer. [2 Hrs]

I/O PROCESSOR

CPU-IOP communication, Data Communication Processor-Serial and Parallel communication. [2 Hrs]

Flynn‘s classification – SISD, MIMD, SIMD, SPMD [1 Hr]

UNIT-III **[15 Hrs]**

MEMORY ORGANIZATION

MEMORY TYPES

Sequential Access memory, Random Access memory, CPU registers [1Hr]

Main memory, Secondary memory, Cache memory-Memory Hierarchy – Characteristics, Design, Advantages of Memory Hierarchy. [1 Hr]

MAIN MEMORY

ROM, Types of ROM, RAM - SRAM, DRAM, Chips– ROM, RAM - Memory address map, [2 Hrs]

Memory connection to CPU. [1 Hr]

SECONDARYMEMORY

Magnetic disk-Structure**,**Storage capacity**,**Optical disks,USB drives, [2 Hrs]

Solid State Drives,SD cards. [1 Hr]

CACHE

Need for cache memory, Operational principle, Cache initialization, Different mapping techniques,Writing in to cache. [2 Hrs]

MEMORY MANAGEMENT

Virtual memory concept- Virtual address, Physical address [2 Hrs]

Memory table for mapping a virtual address, Address mapping using pages, Associative memory page table, Page replacement techniques [1 Hr]

MEMORY MANAGEMENT HARDWARE

Segmented – Page mapping, Memory protection. [2 Hrs]

UNIT- IV **[14 Hrs]**

MICROPROCESSORS, PIPELINING AND VECTOR PROCESSING:

MICROPROCESSOR:

Block diagram of 8086-registers: segment registers, address: effective address, flag registers and application of microprocessor. [2 Hrs] [1 Hrs]

PARALLEL PROCESSING:

Types of parallel processing systems [2 Hrs]

Parallel organizations. [2 Hrs]

PIPELINING:

Instruction pipeline, Arithmetic pipeline, RISC pipeline, Super pipelining, [2 Hrs]

Super scalar processors [2 Hrs]

VECTOR PROCESSING:

Vector Processing,Array Processing– [2 Hrs]

Example of SIMD array processor [1 Hr]

UNIT- V **[12 Hrs]**

ARCHITECTURE AND CONCEPTS OF ADVANCED PROCESSORS:

SYMMETRIC MULTIPROCESSORS

Organizations, a mainframe. [2Hrs]

MULTITHREADING AND CLUSTERS

Implicit and Explicit multithreading, [2 Hrs]

Cluster configuration. [1 Hr]

NUMA AND VECTOR NUMA

organizationsand Approaches to [2Hrs]

vector computation. [1 Hr]

MULTICORE

Multi coreorganization [2 Hrs]

Advantages and disadvantages of multi core processing. [2 Hrs]

Tests And Model Exam [9 Hrs]

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Computer System Architecture	M.Morris Mano	Prentice –Hall of India Pvt Limited, Third Edition.
2.	Computer Organization and Architecture Designing for Performance	William Stallings	PearsonPublications ,Eighth Edition.

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	ComputerOrganizationandDesign : The Hardware/SoftwareInterface	David A.PattersonandJohnL.Hennessey	Morgan Kauffman / Elsevier, Fifth Edition, 2014.
2.	Computer Architecture and Organization	John P. Hayes	Tata McGraw – Hill Publication 3rd Edition
3.	ComputerOrganizationandEmbeddedSystems	CarlHamacher,ZvonkoVranesic,SafwatZakyandNaraigManjikian	Tata McGraw – Hill ,2012.

LEARNING WEBSITES

1. http://www.ddegjust.ac.in/studymaterial/msc-cs/ms-07.pdf
2http://www.learnerstv.com/lectures.php?course=ltv086•&cat=Computer-Science
3.http://www.tutorialspoint.com/computer_logical_organization/cpu_architecture.html

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D410.1	3	3	2	2	2	2	2	3	2	2
D410.2	3	3	2	2	2	2	2	3	2	2
D410.3	3	3	2	2	2	2	2	3	2	2
D410.4	3	3	2	2	2	2	2	3	2	2
D410.5	3	3	2	2	2	2	2	3	2	2
D410 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
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% to be included	90%	10%

****

CTD420 WEB DESIGN AND PROGRAMMING

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Subject	Instruction		Examination			
			Marks			
Web Design and Programming	Hours/ Week	Hours/ Semester	Internal Assessment	Autonomous Examination	Total	Duration
	5	80	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO. OF. HOURS
I	Internet,HTMLAnd AdvancedHTML	15
II	Frames, FormsAndCSS	14
III	Javascript	14
IV	PHP	14
V	PHPProgrammingAndMYSQL	14
	Tests And Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

The main objective of the of this subject is to introduce the students to the building blocks ofInternet and Web Design & Programming using HTML, CSS, Java Script, PHP and MySQL.The subject will impart knowledge to design web pages, dynamic and interactive web siteswithclient-sideandserver-sidescripting.Aftercompletionthestudentswillbeabletoindependentlydesign anddevelopwebsites.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- ToimpartknowledgeonInternetandbasicsofnetworkingconcepts.
- Toimpartbasicknowledgeonweb development.
- Develop simplecomponentsinwebpagesusing CSS.
- Toimpart knowledge forvalidationsandeventhandlersusingJavaScript.
- ToprovidethebasicknowledgeaboutPHPandwebservices.
- ToimpartPHPscriptingideasandimportanceinwebdevelopment.
- Write PHPProgramswithMySQLdatabase.

COURSE OUTCOMES:

Course	**CTD420 WEB DESIGN AND PROGRAMMING**
After successful completion of this course, the students should be able to	
D420.1	Understand the basic concepts of Web Development Techniques.
D420.2	Explain about frames and forms
D420.3	Build simple JSP scripts.
D420.4	Demonstrate and understand THE PHP concepts.
D420.5	Understand and create simple PHP Programs.

CTD420 WEB DESIGN AND PROGRAMMING

UNIT – I

INTERNET,HTMLANDADVANCEDHTML [15 Hrs]

INTERNET

History of the Internet - Basics of Networking Concepts – WAN,LAN,TCP/IP, [2 Hrs]

UDP, FTP, Telnet, SMTP, Ports - World Wide Web –HTTP,SMTP,POP3,MIME, [2 Hrs]

UnderstandingrolesofWebBrowsers-ConceptsofWebServers. [1 Hr]

HTML

Introduction - Basic Tags of HTML - HTML Tag - TITLE Tag –BODY Tag – [1Hr]

Formatting of Text: Headers - Formatting Tags: BOLD,ITALICS, UNDERLINE, [2 Hrs]

PARAGRAPH,TT,STRIKE THROUGH ,EM,BR and HR tags - PRE Tag - FONT [2 Hrs]

Tag – Special Characters -WorkingwithImages-METATag.

ADVANCEDHTML

DifferencebetweenHTML&HTML5-NewelementsinHTML5– [2 Hrs]

Links - Anchor tag – Lists - Unordered Lists - Ordered Lists –DefinitionLists; [2 Hrs]

Tables-TABLE,TRandTDTags-Colspanand Rowspan [1 Hr]

UNIT-II

FRAMES,FORMSANDCSS [14 Hrs]

FRAMES

Frameset – FRAME Tag – Frame inside other frames –NOFRAMESTag. [2 Hrs]

FORMS

FORMandINPUTTag–Textbox- RadioButton–Checkbox–SELECT Tag and Pull [1 Hr]

Down Lists: Hidden - Submit and Reset;

SomeSpecial Tags: COLGROUP - THREAD, TBODY, TFOOT - [2 Hrs]

_blank,_self,parent,_top–IFRAME–LABEL-Attributefor<SELECT>-EXTAREA..

CSS

Introduction – Features – Style Sheet basics - Working with CSSfiles–Syntax- [2Hrs]

TypesofStyleSheets-InlineStyles–Embedded Styles-ExternalorLinkedStyles–

WhatisCSS3?Animation–Borders – Backgrounds – Fonts –Multiple columns – Text [2 Hrs]

effects.

FORMATTING TEXT AND FONTS

Font Families Font Size Kerning, Leading and Indenting – [1 Hr]

Formatting Colors and Backgrounds: The Color Attribute - The Background [1 Hr]

Attribute –Background Colors and Images. Exploring CSS Class and ID Attributes: [1 Hr]
Defining the CSS

Class Attribute – Defining the CSSID Attribute - Dynamic effects with CSS - [2Hrs]
Lists- Tables – Forms –Simple Examples using above properties.

UNIT-III **[14Hrs]**

JAVASCRIPT

Need of scripting languages – Variables and Data Types:Declaring Variables – Life [1 Hr]
span of variables - Data Types –

Operators:Assignment,comparison,computational and logical operators - Control [2 Hrs]
Structures:

Conditional Statements –Loop Statements:for,while,forin,break and continue [2 Hrs]
statements.

OBJECT-BASED PROGRAMMING AND MESSAGE BOXES

Functions –Executing Deferred Scripts [1 Hr]

-objects:Document object Model,Predefined objects,Array object,History object, [2 Hrs]

Location object-Dialog Boxes-Alert Boxes-Confirm Boxes-Prompt Boxes. [2 Hrs]

JAVASCRIPT WITH HTML

Events-Event Handlers:on Load and on Unload–on Focus and on Blur–on Error– [2Hrs]

Forms:FormsArray–Form element properties-Introduction to jQuery–Features of [2Hrs]
jQuery-jQuery example

UNIT- IV [14 Hrs]

PHP

INTRODUCTION

A Brief Introduction to Apache, MySQL, PHP [2Hrs]

And OpenSource-Server-Side WebScripting. [2Hrs]

PHP

PHP Structure and Syntax-Integrating HTML with PHP-Syntax and Variables– [2 Hrs]

Constants and Variables-Passing Variables between Pages– [2 Hrs]

If Statements –if and else–switch case –for loop–for each loop. [1 Hr]

I NCLUDES

Includes and Functions for Efficient Code - Strings – Arrays and Array Functions – [2 Hrs]

Sessions and Cookies – Sample Programs – [2Hrs]

Alternates to Incrementing/Decrementing Values. [1 Hr]

UNIT- V **[14Hrs]**

PHP PRGRAMMING AND MYSQL

PHP WITH MYSQL

MySQL Syntax and Commands-Connecting to the MySQL Server– [2Hrs]

Data types-Functions-Querying the Database-SELECT, Logical Operators– [1 Hr]

MySQL Programs.

FORM ELEMENTS

Processing the Form-FORM Element-Tables to Display Data– [2 Hrs]

Edit, Update and Delete data. [1 Hr]

HANDS ON EXPERIMENTS

Creating a Simple Shopping– [2Hrs]

Cart Script– [2Hrs]

Introduction to Web Publishing and Hosting- [2Hrs]

Mini Project. [2Hrs]

Tests And Model Exam **[9 Hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	HTML & CSS The Complete Reference	Thomas A Powell	Tata McGraw Hill Publishing Ltd, New Delhi ,Fifth Edition
2.	JavaScript the Complete Reference	Powell, Thomas	MC Grawhill, New Delhi ,Third Edition

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	TheInternetBook	Douglas E.Comer	Prentice Hall
2.	Web Development and Design Foundations with HTML5	TerryFelke-Morris	Pearson.
5.	Beginning PHP6, Apache, MySQL, Web Development	Timothy Boronczyk, Elizabeth Naramore, Jason Gerner, Yann Le Scouarnec, JeremyStolz, Michael K. Glass	WroxPublications.

LEARNING WEBSITES

1. http://www.tutorialspoint.com/jsp/jsp_quick_guide.html

2.http://www.html5andcss3.org/html5tutorialpdf

3.http://www.tutorialspoint.com/html/html_tutorial.pdf

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D420.1	3	3	2	2	2	2	2	3	2	2
D420.2	3	3	2	2	2	2	2	3	2	2
D420.3	3	3	2	2	2	2	2	3	2	2
D420.4	3	3	2	2	2	2	2	3	2	2
D420.5	3	3	2	2	2	2	2	3	2	2
D420 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
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% to be included	90%	10%

****

CTD430 OBJECT ORIENTED PROGRAMMING WITH JAVA

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
ObjectOriented Programmingwi thJava	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO.OF. HOURS
I	Fundamentals Of OOPS & JAVA	15
II	ControlStructures,Arrays,Vectors And Strings	13
III	Classes,Interfaces and Packages	15
IV	Exception Handling, Multithreading and Files	14
V	Applets,Graphics Programming and Awt Controls	14
	Tests and Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

This course explains the fundamental ideas behind the object oriented approach to programming .Knowledge of java helps to create the latests innovations in programming. Like the successful computer languages that came before, java isthe blend of the best elements of its rich heritage combined with the innovativeconcepts required by its unique environment. This subject is designed to give youexposure to basic concepts of object oriented technology. This subject will help inlearningtowriteprogramsinjava.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- Understand the basic concepts and applications of Object Oriented Programming.
- Know the history & features Java.
- Use of control structures in Java Program.
- Use of Arrays and Vectors in Java Program.

- Demonstrate the use of string and String Buffers.
- Define Class with the attributes and methods.
- Know the types of inheritances.
- Define and Implement Interfaces.
- Create and access packages.
- Handle the errors using exceptions.
- Creating own exceptions
- Understand the concepts of multithreading.
- Develop multithreaded programs in Java.
- Develop Fileprograms
- Develop simple Applets.
- Use of Graphics,Color & Font class
- List the types of AWT Components and types of event listeners.

COURSE OUTCOMES:

Course	**CTD430 OBJECT ORIENTED PROGRAMMING WITH JAVA**
After successful completion of this course, the students should be able to	
D430.1	Summarize the basic concept of object oriented programming and java.
D430.2	Explain control structures, arrays , vectors and strings.
D430.3	Understand and explain classes, interfaces and packages.
D430.4	Illustrate the concepts of exception handling, multithreading and files.
D430.5	Understand the concept of applets and AWT controls.

CTD430 OBJECT ORIENTED PROGRAMMING WITH JAVA

UNIT – I [15 Hrs]

FUNDAMENTALS OF OOPS & JAVA

1.1 BASICS OF OOPS

Introduction to Object Oriented Programming–Basic concepts of Object Oriented [2 Hrs]

Programming –Objects and Classes – Data abstractionand Encapsulation, Inheritance,

Polymorphism, Dynamic binding, Message communication – Application ofOOPs. [2 Hrs]

1. 2 INTRODUCTION TO JAVA

History of Java – Java features – Java Environment – JDK – API- [2Hrs]

Types of Java program – Creating and Executing a Java program– [2 Hrs]

JavaTokens:Keywords,Characterset,Identifiers,Literals, Separator – [2 Hrs]

Java Virtual Machine (JVM) – Comments in Java program.

1.3 ELEMENTS

Constants – Variables – Data types – Type casting – [2 Hrs]

Scopeof variables Operators – Types – Expressions – [2 Hrs]

Evaluation of Expressions. [1 Hr]

UNIT-II **[13 Hrs]**

CONTROL STRUCTURES, ARRAYS, VECTORS AND STRINGS

DECISION MAKING AND BRANCHING

Decision making:Simple if statement–if–elsestatement–Nesting if – else – else if Ladder [2 Hrs]

switch statement, Looping: Whileloop– do – While loop – for loop – [2 Hrs]

break – labeled loop – continue Statement. [1 Hr]

ARRAYS & VECTORS

Arrays:One Dimensional Array–Creating an array–Array processing–Multidimensional [2 Hrs]

Array, Vectors: Definition- Creation – Methods [2 Hrs]

STRINGS

String Class – Creation – Methods, String Buffer Class – Creation – Methods– Difference [2 Hrs]

between String and StringBuffer. [2 Hrs]

UNIT-III **[15 Hrs]**

CLASSES, INTERFACES AND PACKAGES

CLASS AND OBJECT

Defining a class – Creating objects – Accessing class members–Constructors– [2 Hrs]

Method overloading– [2Hrs]

Staticmembers– Nesting of Methods–this keyword–Command line argument. [2 Hrs]

INHERITANCE

Definition –Types – Single Inheritance – Multilevel Inheritance – Hierarchical Inheritance [2 Hrs]
– Overriding methods –

Final variablesand methods – Final classes – Final methods – Abstract methods and [2 Hrs]
classes – Visibility Control: Public , Private, friendly and protected. Interfaces:

Multiple Inheritance – Defining interface – Extending interface – Implementing [2 Hrs]
Interface.

PACKAGE

Java API Packages – System Packages – Naming Conventions Creating&Accessing a [2Hrs]
Package–Adding Class to a Package Hiding Classes.

State modeling Events, states, Transition and conditions, state diagram, state diagram [1 Hr]
behavior

UNIT -IV [14 Hrs]

EXCEPTION HANDLING, MULTITHREADING AND FILES

EXCEPTION HANDLING

Types of Errors – Exception – Advantages of Exception Handling – [2Hrs]

Basics of Exception Handling – try blocks – throwing an exception–catching an exception [2 Hrs]

– finally statement – built in exceptions, creating own exception sub classes. [2 Hrs]

MULTITHREADING

Introduction – Life cycle of a Thread – Thread Methods – Creating Threads– [2 Hrs]

Extending Thread class–Implementing Runnable interface – Thread Priority – Thread [2 Hrs]
Scheduling.

FILES

File – Streams – Advantages – The stream classes – [2 Hrs]

Byte stream classes –Character stream classes – Random Access files. [2 Hrs]

UNIT -V [14Hrs]

APPLETS, GRAPHICS PROGRAMMING AND AWT CONTROLS

APPLETS

Introduction – Applet Life cycle – Creating & Executing an Applet – [2 Hrs]

Applet tags in HTML – Parameter tag. [2 Hrs]

GRAPHICS PROGRAMMING

Graphics class –Lines – Rectangles – Circles – Arcs [2 Hrs]

Polygon – Filling objects–Colorclass– Selecting a color–Font class–Selecting a font – [2 Hrs]

Drawing Barcharts. [1 Hr]

AWT COMPONENTS AND EVENT HANDLERS

Abstract window tool kit – AWT Controls – [1 Hr]

Labels – Text Field – Buttons – Checkboxes – Choice – Scroll bars – Event handling: [2 Hrs]

Events, Event sources, Event Listeners, Input Events – Layout Managers – Menus. [2 Hrs]

Tests and Model Exam **[9 Hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Programming with Java	E. Balagurusamy	Tata Mc - Graw Hill, New Delhi, First Edition 2010.

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Java - The complete reference	Herbert schildt	Tata Mc-Graw Hill, NewDelhi.
2.	Java 2, J2SE1.4 Complete	-	BPBPublications.

LEARNING WEBSITES

1. http://www.tutorialspoint.com/java/
2. http://www.learnjavaonline.org/
3. http://www.c4learn.com/javaprogramming/
4. http://www.tutorialspoint.com/jdbc/jdbc-driver-types.html
5. http://www.tutorialspoint.com/javaexamples/

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

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D430.2	3	3	2	2	2	2	2	3	2	2
D430.3	3	3	2	2	2	2	2	3	2	2
D430.4	3	3	2	2	2	2	2	3	2	2
D430.5	3	3	2	2	2	2	2	3	2	2
D430 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD440 RELATIONAL DATABASE MANAGEMENT SYSTEM

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Relational Database Management System	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO.OF .HOURS
I	Concepts Of Databases And Data Modeling	15
II	Relational Data Model & Mysql Administration	14
III	Interactive Mysql	14
IV	Mysql Performance Tuning	14
V	Stored Program Concepts & Development	14
	Tests And Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

The Database Management system is a collection of programs that enables to store, modify and extract information from a database. The primary resource that fuels knowledge power is the database. Organizations are employing mechanisms to effectively manage and utilize the data stored in the databases. Relational Database Management System has been developed to harness the information stored in the database.

The major objectives of this subject are to provide a strong formal foundation in Database Concepts, technology and practice to the students to enhance them into well informed application developers. After learning this subject, the students will be able to understand the designing of RDBMS and can use any RDBMS package as a backend for database applications.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- Describe data, database, database management systems and databasemodels.
- To make the students to understand the concept of relational model andconstraints.
- To make the students to understand the concept of Client/Server technology, Data warehousing, Data mining and BigData.
- State CODD's rules.
- Understand Normalization and explain different types of normalform.
- To know DDL, DML, DCL and all relatedcommands.
- Write logical and conditional statement for databasequery.
- Works with Procedures andfunctions.
- Create and use Cursors andTriggers.

COURSE OUTCOMES :

Course	**CTD430 RELATIONAL DATABASE MANAGEMENT SYSTEM**
After successful completion of this course, the students should be able to	
D440.1	Acquire knowledge on database Management systems and their advanced concepts.
D440.2	Gain a good understanding of the Installation of MySQL and basic database design.
D440.3	Explain about interactive MySQL
D440.4	Understand the performance tunning of MySQL.
D440.5	Understand the stored concepts of Storage Engines, Stored Program Concept

CTD440 RELATIONAL DATABASE MANAGEMENT SYSTEM

UNIT – I **[15 Hrs]**

CONCEPTS OF DATABASES AND DATA MODELING

BASIC CONCEPTS

Data, Databases, Database Management System – Components of Database – [2 Hrs]

Data Dictionary – Architecture: Overall Architecture of DBMS, Three level architecture [2 Hrs]

DATA MODELS

Types of Database models: Hierarchical Database Model, Network Database Model and Relational Database Model. E-R model: Entities [2 Hrs]

- Attributes – Relationships – E-R diagram – Samples. [1 Hr]

DATABASE ADMINISTRATOR

Server / Client and distributed concept – DBA tasks – [1 Hr]

DBA Tools/Utilities – Database Maintenance – Backup & Recovery. [2 Hrs]

ADVANCED CONCEPTS

Introduction to Datawarehousing and Datamining–Applications– Data marts. [2 Hrs]

Big Data: Definition – Characteristics – Various Technologies used – Applications – [2 Hrs]

Overview of NoSQL: Difference between RDBMS and NoSQL –

Tools used in Big Data, Scalability, and Understanding storage architecture. [1 Hr]

UNIT-II **[14 Hrs]**

RELATIONAL DATA MODEL & MYSQL ADMINISTRATION

2.1RELATIONAL DATA MODEL

CODD's rules – components of DBMS – Table Structure – Records, rows, tuples, attributes. [2 Hrs]

Keys: Primary key, foreign key, composite key. Meta data – Data Dictionary – Data [1 Hr]

Integrity – Data constraints and validation – Types of constraints – Difference between SQL andMySQL. [2 Hrs]

NORMALIZATION

Benefits – Normal forms: 1st Normal form, [1 Hr]

2nd Normal form, 3rd Normal form [2 Hrs]

MYSQL INSTALLATION

Install, Configure [1 Hr]

tests the MySQL server on Microsoft Windows. [1 Hr]

WORKING WITH MYSQL ADMIN

Creating (CREATE cmd), Selecting (USE cmd) and Describing database (DESC cmd) – [2 Hrs]

SHOW cmd – backing up databases. [2 Hrs]

UNIT-III [14 Hrs]

INTERACTIVE MYSQL

INTRODUCTION TO MYSQL

MySQL data types-Data Definition Commands– [2 Hrs]

Data Manipulation Commands – Data retrieval commands. [2 Hrs]

MYSQL OPERATORS ANDEXPRESSIONS

Types of Operators – Arithmetic, Comparison and logical operators– [1 Hr]

Pattern matching – Import and Export of data. [1 Hr]

BUILT-IN FUNCTIONS

Single row functions – Aggregate functions – [1 Hr]

Conversion functions. [1 Hr]

QUERYING THE TABLE

Selecting rows using Where, Order by, group by & Having clauses.Sub-queries – [2 Hrs]

Correlated sub-queries. [1 Hr]

FLOW CONTROL

IF(), IF NULL(), CASE, LOOP, LEAVE, ITERATE, [2 Hrs]

REPEAT, WHILE [1 Hr]

UNIT-IV [**14Hrs]**

MYSQL PERFORMANCE TUNING

INDEXES AND SEQUENCES

Index types, Creating of an Index: Simple and Composite Index, Dropping Index. [2 Hrs]

Sequences: creating, altering and dropping sequences. [1 Hr]

VIEWS

Introduction – Advantages of views – [1 Hr]

Creating, Updating and Deleting [2 Hrs]

JOINS &UNIONS

Joins – definition - Types of Joins: natural join, inner join, self join, outer join. [2 Hrs]

Unions: Types: Union, Union All, Union Distinct – order byand Limit handling. [2 Hrs]

USER AND TRANSACTION MANAGEMENT

Creating, deleting, renaming users grant & revoke commands – Transaction command: [2 Hrs]

commit, rollback and save points. Locking Protocol - Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention [2 Hrs]

UNIT -V [**14Hrs**]

STORED PROGRAM CONCEPTS & DEVELOPMENT

MYSQL PROCEDURES & FUNCTIONS

Creating – Executing and Deleting stored procedures [2 Hrs]

Creating –Executing and Deleting stored functions – Advantages. [1 Hr]

MYSQL TRIGGER & CURSOR

Use of Trigger–Creating Trigger–Types of Triggers– Cursor: [2 Hrs]

Creation and Deletion. [1 Hr]

MYSQL AND WEB

Need for own MySQL programs [2 Hrs]

MySQL Application Programming Interfaces. [1 Hr]

MYSQL WITH PHP

Database connections –Managing Database connections– [2 Hrs]

Performing Queries – [2 Hrs]

ClosingConnections. [1 Hr]

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	MySQL Developers library	Paul DuBois	Addison Wesley 4th Edition.
2.	Murach's MySQL	Joel Murach	S hroff publishers & Distributors, Mumbai, Reprint 2012

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Database System Concepts	Abraham Silberschatz, Henry F.Forth, S.Sudarshan	Mc Graw Hill Education. SeventhEdition
2.	The Complete Reference MySQL	Vikram Vaswami	BPBPublications.

LEARNING WEBSITES

1. http://www.tutorialspoint.com/mysql
2. http://www.tutorialspoint.com/sql/sql-rdbms-concepts.html
3. http://www.studytonight.com/dbms/rdbms-concept
4. http://datawarehouse4u.info/OLTP-vs-OLAP.html

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D440.1	3	3	2	2	2	2	2	3	2	2
D440.2	3	3	2	2	2	2	2	3	2	2
D440.3	3	3	2	2	2	2	2	3	2	2
D440.4	3	3	2	2	2	2	2	3	2	2
D440.5	3	3	2	2	2	2	2	3	2	2
D440 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

****

CTD450 WEB DESIGN PROGRAMMING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Course	Instruction		Examination			
Web Design Programming Practical	Hours/ Week	Hours/ Semester	Marks			
	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program from PART A and one program from PART B

S.No	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program (PART–A)	20
4	Executing program (PART– B)	20
5	Result with print out (PART–A)	5
6	Result with print out (PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

The main objective of the of this practical subject is to introduce the students to build a complete site, with the writing of a single web page in Web Design & Programming Practical using HTML, CSS, Java Script, PHP and MYSQL. The subject will impart knowledge to design web pages, dynamic and interactive web sites with client-side and server-side scripting. After

completion the students will be able to independently design and develop web sites and webapplications.

HARDWARE AND SOFTWARE REQUIREMENTS:

Hardware Requirement:

1. Desktop Computers – 30 Nos.
2. Laser Printer – 1 No.

Software Requirement:

1. Notepad / Notepad++ / Dreamweaver
2. Apache XAMPP
3. Any Browser

OBJECTIVES :

On completion of the following experiments, the students must be able to

- Develop to build a complete website using HTML.
- Create web pages using Advanced HTML andCSS.
- Practice to include JavaScript for formvalidations.
- Develop and run sample programs using PHPscript.
- Develop a simple web application using server side PHP script and MySQL.
- Mini Project

COURSE OUTCOMES:

Course	**CTD450 WEB DESIGN PROGRAMMING PRACTICAL**
After successful completion of this course, the students should be able to	
D450.1	Designing a HTML page, a single page website and web page using CSS to create a timetable
D450.2	Java script code to validate user name and password, converts the text to upper case and creating a website.
D450.3	Develop a JQuery program for count the number of milliseconds between the two click and Disable/Enable the form
D450.4	Develop a PHP program to implement atleast 5 string functions, Creating a PHP script to display the capital of the country name
D450.5	Creating a simple shopping – cart script using PHP , MYSQL and develop the Mini Project with report

CTD450 WEB DESIGN PROGRAMMING PRACTICAL

List of experiments to be conducted

PART -A

1. Design a HTML page describing your profile in one paragraph. Design in such a way that it has a heading, a horizontal rule, three links and your photo. Also, write three HTML documents for the links. Include facilities for forward, backward andHOME.
2. Design a HTML page about computer languages. List the language. Each Language's name is a link. Prepare separate HTML documents for each language and call them in the appropriatelink.
3. Design a single page website for your polytechnic containing a description of the courses offered. It should also contain some general information about the college such as its history, the campus, and its unique features and so on. The site should be colored and each section should have a differentcolor.
4. Develop a web page using CSS to create a time table for the class using different border style.
5. Write a Java script code that converts the entered text touppercase.
6. Write a Java script code to validate the username and password. The username and password are stored invariables.
7. Write a Java Script code using frames and Events (When a cursor moves over anobject it should display the specification of the object in anotherframe).
8. Create a site containing banner advertisement at the top of the page. The ads arechanged every 10 or 15seconds.
9. Write jQuery Program for Count the number of milliseconds between the two click events on aparagraph.
10. Write jQuery Program for Disable/enable the form submit button & Blink thetext.

PART – B

11. Write a PHP program to implement at least 05 string functions withdescription
12. Create a PHP script which display the capital and country name from the given array.Sort the list by the name of thecountry.
13. Write a PHP program to implement Date and TimeFunctions.

14. Write a PHP script to display table with implementing Form Processing Controls of Insert and Delete data from database.
15. Create a simple shopping - cart script using PHP andMySQL.
16. Write a PHP program to keep track of the number of visitors visiting the web page and to display this count of visitors
17. Mini Project

    The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

Continuous Internal Assessment

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests #	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1.http://www.tutorialspoint.com/jsp/jsp_quick_guide.html

2.http://www.html5andcss3.org/html5tutorialpdf

3.http://www.tutorialspoint.com/html/html_tutorial.pdf

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D450.1	3	3	3	3	3	3	3	3	3	3
D450.2	3	3	3	3	3	3	3	3	3	3
D450.3	3	3	3	3	3	3	3	3	3	3
D450.4	3	3	3	3	3	3	3	3	3	3
D450.5	3	3	3	3	3	3	3	3	3	3
Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1 – Slight (low)

Correlation level 2 – Moderate (Medium)

Correlation level 3 – Substanial (high)

CTD450 WEB DESIGN PROGRAMMING PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	Design a HTML page describing your profile in one paragraph. Design in such a way that it has a heading, a horizontal rule, three links and your photo. Also, write three HTML documents for the links. Include facilities for forward, backward andHOME.	D450.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Design a HTML page about computer languages. List the language. Each Language's name is a link. Prepare separate HTML documents for each language and call them in the appropriatelink.	D450.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Design a single page website for your polytechnic containing a description of the courses offered. It should also contain some general information about the college such as its history, the campus, and its unique features and so on. The site should be colored and each section should have a differentcolor.	D450.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Develop a web page using CSS to create a time table for the class using different border style.	D450.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Write a Java script code that converts the entered text touppercase.	D450.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Write a Java script code to validate the username and password. The username and password are stored invariables.	D450.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Write a Java Script code using frames and Events (When a cursor moves over anobject it should display the specification of the object in anotherframe).	D450.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Create a site containing banner advertisement at the top of the page. The ads arechanged every 10 or 15seconds.	D450.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Write jQuery Program for Count the number of milliseconds between the two click events on aparagraph.	D450.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Write jQuery Program for Disable/enable the form submit	D450.3	PO1,PO2,PO3,PO4,

	button & Blink thetext.		PO5,PO6,PO7
11	Write a PHP program to implement at least 05 string functions withdescription	D450.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Create a PHP script which display the capital and country name from the given array.Sort the list by the name of thecountry.	D450.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	Write a PHP program to implement Date and TimeFunctions.	D450.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Write a PHP script to display table with implementing Form Processing Controls of Insert and Delete data from database.	D450.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Create a simple shopping - cart script using PHP andMySQL.	D450.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Write a PHP program to keep track of the number of visitors visiting the web page and to display this count of visitors	D450.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
17	Mini Project	D450.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD460 JAVA PROGRAMMING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 Weeks

Course	Instruction		Examination			
Java Programming Practical	Hours/ Week	Hours/ Semester	Marks			
	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:
Students should write one program from PART A and one program from PART B

S.No	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program (PART–A)	20
4	Executing program (PART– B)	20
5	Result with printout (PART–A)	5
6	Result with printout (PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

To understand various concepts of JAVA and to familiarize Java environmentto create, debug and run Java programs.

HARDWARE AND SOFTWARE REQUIREMENTS:

HARDWARE REQUIRED:

1. Desktop computers : 30
2. Laser Printer : 1 No.

SOFTWARE :

1. Any Text Editor
2. JDK1.7 or above
3. Java enabled Browser

OBJECTIVES:

On completion of the following experiments, the students must be able to

- Develop programs using different operators andexpressions.
- Develop programs using Iterativestatements.
- Develop programs usingarrays
- Develop applications using Vectors.
- Create classes and objects withconstructors
- Solve problems usinginheritance
- Handle exception arising inprograms.
- Use multithreading inprograms
- Develop programs using File/ Create Appletprograms
- Develop programs using Graphics & Colorclasses
- Use GUI components to develop GUI applications

COURSE OUTCOMES:

Course	**CTD460 JAVA PROGRAMMING PRACTICAL**
After successful completion of this course, the students should be able to	
D460.1	Java program to read the temperature,read a two integer and read a string.
D460.2	Creating and displaying the threads
D460.3	Creating a file using byte stream or character stream and demonstrate the mouse events
D460.4	Program to display the basic shapes
D460.5	Creating a simple calculator and develop the Mini Project with report

CTD460 JAVA PROGRAMMING PRACTICAL

List of experiments to be conducted

PART – A

1. Write a program to read the temperature in Celsius and convert into Fahrenheit.
2. Write a program to read 2 integers and find the largest number using conditional operator.
3. Write a program to read an integer and find the factorial of anumber.
4. Write a program to implement Vector class and its methods.
5. Write a program to read a string and check whether it is palindrome ornot.
6. Write a program to create a class with following datamembers
   a. register number, b.Name, c. Marks in 3 subjects and member functions
   d. parameterised constructor – to assign values to member
   e. method to find total mark
   f. method to display register number, name, total mark Create 3 objects from the above class and use the members
7. Write a program that accepts radius of a circle from command line and display its area.

PART – B

8. Write a program to implement multilevel in heritance.
9. Write a program to create a own exception subclass that throws exception if the given number is in a range of numbers.
10. Write a program that creates three threads. First thread displays "Good Morning" everyone second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.
11. Write a program to create a file using Byte stream or Character stream class
12. Write a program to demonstrate Mouse events.
13. Write a program to display basic shapes using Graphics class and fill them using Color class
14. Write a program to create a simple calculator to perform addition, subtraction, multiplication and division using button, label and textfield.
15. Write a program to sort for an element in a given list of elements

16 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for han on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests #	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. http://www.tutorialspoint.com/java/
2. http://www.learnjavaonline.org/
3. http://www.c4learn.com/javaprogramming/
4. http://www.tutorialspoint.com/jdbc/jdbc-driver-types.html
5. http://www.tutorialspoint.com/javaexamples/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D460.1	3	3	3	3	3	3	3	3	3	3
D460.2	3	3	3	3	3	3	3	3	3	3
D460.3	3	3	3	3	3	3	3	3	3	3
D460.4	3	3	3	3	3	3	3	3	3	3
D460.5	3	3	3	3	3	3	3	3	3	3
D460 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTD460 JAVA PROGRAMMING PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	Write a program to read the temperature in Celsius and convert intoFahrenheit.	D460.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Write a program to read 2 integers and find the largest number using conditionaloperator.	D460.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Write a program to read an integer and find the factorial of anumber.	D460.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Write a program to implement Vector class and itsmethods.	D460.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Write a program to read a string and check whether it is palindrome ornot.	D460.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Write a program to create a class with following datamembers 1.registernumber 2. Name 3. Marks in 3 subjects and member functions a. Parameterised constructor – to assign values tomembers 4.Method to find totalmark 5.method to display register number, name, total mark Create 3 objects from the above class and use themembers	D460.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Write a program that accepts radius of a circle from command line and display itsarea	D460.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Write a program to implement multilevelinheritance.	D460.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Write a program to create a own exception subclass that throws exception if the given number is not in a range ofnumbers	D460.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Write a program that creates three threads. First thread displays “Good Morning” everyone second, the second thread displays “Hello” every two seconds and the third thread displays “Welcome” every threeseconds.	D460.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Write a program to create a file using Byte stream or Character	D460.5	PO1,PO2,PO3,PO4,

	stream class		PO5,PO6,PO7
12	Write a program to demonstrate Mouseevents.	D460.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	Write a program to display basic shapes using Graphics class and fill them using Color class	D460.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Write a program to create a simple calculator to perform addition, subtraction, multiplication and division using button, label and textfield.	D460.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Write a program to sort for an element in a given list of elements	D460.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Mini Project	D460.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD470 RELATIONAL DATABASE MANAGEMENT SYSTEM PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 Weeks

Course	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
Relational Database Management SystemPractical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program from PART A and one program from PART B

S.No	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program (PART–A)	20
4	Executing program (PART– B)	20
5	Result with printout (PART–A)	5
6	Result with printout (PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

The main objective of this practical subject is to provide basic and advanced concepts of MySQL. MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing records in the database. MySQL is open-source and free software under the GNU license. This practical includes all topics of MySQL database that provide for how to manage database and manipulate data with the help of various SQL queries.

HARDWARE AND SOFTWARE REQUIREMENTS:

HARDWARE:

1. Desktop Computers – 30 Nos
2. Printer – 1 Nos

SOFTWARE:

1. Mysql 5.5.20

OBJECTIVES:

On completion of the following experiments, the students must be able to

- How to install, configure and connect to MySQL server and MySQL work bench in Windows.
- Understand basic concepts of how a database stores information viatables
- Understand SQL syntax used with MySQL.
- Learn how to retrieve and manipulate data from on or more tables.
- Learn how to filter data based upon multiple conditions.
- Understand the advantages of stored functions and procedures.
- Learn way of connecting to MySQL through PHP, and how to create tables, enter data, select data, change data, and delete data. Connect to SQL server and other data sources

COURSE OUTCOMES:

Course	**CTD470 RELATIONAL DATABASE MANAGEMENT SYSTEM PRACTICAL**
After successful completion of this course, the students should be able to	
D470.1	To describe the database system and models
D470.2	Understand the concept of relational model and constratinsts
D470.3	Unbderstand the concept of client/server technology,datawarehousing, data mining and big data
D470.4	Write logical and conditional statement for database query
D470.5	Create and use cursors , triggers and develop the Mini Project with report

CTD470 RELATIONAL DATABASE MANAGEMENT SYSTEM PRACTICAL

List of experiments to be conducted

PART-A

1. Install, configure and connect to MySQL server and MySQL work bench in windows.Create a database, backup and restore the database.
2. To study Basic MySQL commands (create database, create table, use, drop, insert)and execute the following queries using thesecommands:
   - Create a database named‘employee’.
   - Use the database ‘employee’ and create a table ‘emp’ with attributes‘ename’, ‘ecity’, ‘salary’, ‘enumber’, ‘eaddress’,‘deptname’.
   - Create another table ‘Company’ with attributes ‘cname’, ‘ccity’, ‘empnumber’in the database‘employee’

3. To study the viewing commands (select,update)and execute the following queries using these commands:
   - Find the names of all employees who live in Chennai.
   - Increase the salary of all employees byRs.5,000
   - Change the company city to Chennai where the company name is‘TCS’

4. To study the commands that involve compound conditions (and, or, in, not in, between, not between, like, not like) and execute the following queries using these commands:
   - Find the names of all employees who live in ‘Chennai’ and whose salary is between Rs.20,000 toRs.30,000.
   - Find the names of all employees whose names begin with either letter ‘A’ or ‘B’.
   - Find the company names where the company city is ‘Chennai’ and thenumber of employees is not between 5000 and10, 000.
   - Find the names of all companies that do not end with letter‘A’
5. a) Create a database ‘polytechnic_collee’. Create 2 users namely ‘staff’and ‘student’.
   - Grant all privileges to the user ‘staff’ and grant only ‘create’privilege to‘student’ user and verify thesame.
   - Revoke all privileges to the 2 users and verify thesame.

   b) Implement the following transactions controlstatements.

   Commit ii) Rollback iii) Savepoint

6. Create table ‘author’ with the following structure

author_id

author_name

address mobile

book_title

pages

published_on

i) Insert 4 books published by 3 authors each. (12 records)

ii) Fetch all the rows and observe how the data duplicated.

iii) Apply 1st and 2nd normal forms to fix it.

7. To study the commands for views and execute the following queriesusing thesecommands:

- Create a view having ename andecity
- In the above view change the ecity to ‘Chennai’ where ename is‘John’.
- Create a view having attributes from both thetables.
- Update the above view and increase the salary of all employeesof ITdepartment byRs.1000.

8 Createalibrarytablewithproperfields.Createanothertablecalledlibrary1and insert rows from librarytable.

Hint: CREATE TABLE new_table LIKE original_table;

INSERT INTO new_table SELECT * FROM original_table;

PART – B

9. Create a table to store the details of a customer in a Bank. Do some transactions likewithdrawal, deposit. Find the Balance amount(Credit Limit). Based on customer’s credit limit, write a program using **IF** or **CASE** flow control statements to find the customer levels namely SILVER, GOLD orPLATINUM.

   If the Credit limit is

   - greater than 50K, then the customer level isPLATINUM
   - less than 50K and greater than 10K, then the customer level is GOLD.
   - less than 10K, then the customer level isSILVER

10. Create two tables with the following structure.

    a)users - table name

    user_id - UNSIGNED, INT, AUTO INCREMENT, PRIMARY KEY

    username - VARCHAR (60) password - VARCHAR (128) email - VARCHAR (255)

b)users_profiles

user_id - FOREIGN KEY refers to user_id field of user table first_name - VARCHAR(60)

last_name - VARCHAR(60) mobile - VARCHAR(15)

i) SELECT all the users along with their profile details. (Hint: Use INNER JOIN)

ii) SELECT the users who do not have profiles (Hint: USE LEFT JOIN andexclude the rows generated with NULL values from joining table)

11. Create an employee database and create a stored procedure that accepts employee_Id as input and returns complete details of employee asoutput

12. Create two tables with the following structure

Authors

author_id - INT

name VARCHAR (60)

titles_count INT -- holds the total number numbers of titles authored.

Titles

author_id - INT

name VARCHAR (512) -- name of the title

a. Create a trigger to update the titles count field of respective row in authors tableeach time a title gets inserted into titles table.

b. Create **log table** with the following structure author_id – INT

name VARCHAR (512) -- name of the title

status VARCHAR(25) --- ADDITION,DELETION,UPDATION

and insert an entry in that table each time the tile is added, deleted or updated. Use a trigger to accomplish this.

13. Create a table containing phone number, user name, address of the phone user. Write a function tosearch the address using phone number.

14. Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number, employee name and net salary. Use cursor to update the employee

15 Write a program to connect PHP with MySQL and create a database using PHP MySQL.

16 Create a library Table with proper fields. Create another table called Library1 and update, delete and modify rows from Library table.

17 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests #	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. http://www.tutorialspoint.com/mysql
2. http://www.tutorialspoint.com/sql/sql-rdbms-concepts.html
3. http://www.studytonight.com/dbms/rdbms-concept
4. http://datawarehouse4u.info/OLTP-vs-OLAP.html

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D470.1	3	3	3	3	3	3	3	3	3	3
D470.2	3	3	3	3	3	3	3	3	3	3
D470.3	3	3	3	3	3	3	3	3	3	3
D470.4	3	3	3	3	3	3	3	3	3	3
D470.5	3	3	3	3	3	3	3	3	3	3
D470 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1 – Slight (low)
Correlation level 2 – Moderate (Medium)
Correlation level 3 – Substantial (high)

CTD470 RELATIONAL DATABASE MANAGEMENT SYSTEM PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	Install, configure and connect to MySQL server and MySQL workbench in windows.Create a database, backup and restore thedatabase.	D470.1	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
2	To study Basic MySQL commands (create database, create table, use, drop, insert)and execute the following queries using thesecommands: • Create a database named‘employee’. • Use the database ‘employee’ and create a table ‘emp’ with attributes‘ename’, ‘ecity’, ‘salary’, ‘enumber’, ‘eaddress’,‘deptname’. • Create another table ‘Company’ with attributes ‘cname’, ‘ccity’, ‘empnumber’in the database‘employee’	D470.1	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
3	Tostudytheviewingcommands(select,update)andexecutethefollowing queries using thesecommands: • Find the names of all employees who live inChennai. • Increase the salary of all employees byRs.5,000 • Change the company city to Chennai where the company name is‘TCS’	D470.2	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
4	To study the commands that involve compound conditions (and, or, in, not in, between, not between, like, not like) and execute the following queries using these commands: Find the names of all employees who live in ‘Chennai’ and whose salary isbetween Rs.20,000 toRs.30,000. Find the names of all employees whose names begin with either letter ‘A’ or ‘B’. Find the company names where the company city is ‘Chennai’ and	D470.2	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7

	thenumber of employees is not between 5000 and10,000. Find the names of all companies that do not end with letter'A'		
5	a) Create a database 'polytechnic_collee'. Create 2 users namely 'staff'and 'student'. • Grant all privileges to the user 'staff' and grant only 'create'privilege to'student' user and verify thesame. • Revoke all privileges to the 2 users and verify thesame. b)Implement the following transactions controlstatements. Commit ii) Rollback iii) Savepoint	D470.3	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
6	Create table 'author' with the following structure author_id author_name address mobile book_title pages published_on i) Insert 4 books published by 3 authors each. (12 records) ii) Fetch all the rows and observe how the data duplicated. iii) Apply 1st and 2nd normal forms to fix it.	D470.3	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
7	To study the commands for views and execute the following queriesusing thesecommands: • Create a view having ename andecity • In the above view change the ecity to 'Chennai' where ename is'John'. • Create a view having attributes from both thetables. • Update the above view and increase the salary of all employeesof ITdepartment byRs.1000.	D470.3	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
8	Createalibrarytablewithproperfields.Createanothertablecalledlibrary 1and insert rows from librarytable. Hint: CREATE TABLE new_table LIKE original_table;	D470.3	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7

	INSERT INTO new_table SELECT * FROM original_table;		
9	Create a table to store the details of a customer in a Bank. Do some transactions likewithdrawal, deposit. Find the Balance amount(Credit Limit). Based on customer's credit limit, write a program using **IF** or **CASE** flow control statements to find the customer levels namely SILVER, GOLD orPLATINUM. If the Credit limit is greater than 50K, then the customer level isPLATINUM less than 50K and greater than 10K, then the customer level is GOLD. less than 10K, then the customer level isSILVER	D470.4	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
10	Create two tables with the following structure. a)users - table name user_id - UNSIGNED, INT, AUTO INCREMENT, PRIMARY KEY username - VARCHAR (60) password - VARCHAR (128) email - VARCHAR (255) b)users_profiles user_id - FOREIGN KEY refers to user_id field of user table first_name - VARCHAR(60) last_name - VARCHAR(60) mobile - VARCHAR(15) SELECT all the users along with their profile details. (Hint: Use INNER JOIN) SELECT the users who do not have profiles (Hint: USE LEFT JOIN andexclude the rows generated with NULL values from joining table)	D470.4	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
11	Create an employee database and create a stored procedure that accepts employee_Id as input and returns complete details of employee asoutput	D470.5	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
12	Create two tables with the following structure *Authors* author_id - INT name VARCHAR (60)	D470.5	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7

	titles_count INT -- holds the total number numbers of titles authored. *Titles* author_id - INT name VARCHAR (512) -- name of the title a. Create a trigger to update the titles count field of respective row in authors tableeach time a title gets inserted into titles table. b. Create **log table** with the following structure author_id – INT name VARCHAR (512) -- name of the title status VARCHAR(25) --- ADDITION,DELETION,UPDATION and insert an entry in that table each time the tile is added, deleted or updated.Use a trigger to accomplish this.		
13	Create a table containing phone number, user name, address of the phone user.Write a function to search the address using phone number.	D470.5	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
14	Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number, employee name and net salary. Use cursor toupdate theemployee	D470.5	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
15	Create a library Table with proper fields. Create another table called Library1 and insert rows from Library table. Hint: CREATE TABLE new_table LIKE original_table; INSERT INTO new_table SELECT * FROM original_table;		PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
16	Write a program to connect PHP with MySQL and create a database using PHP MySQL.	D470.5	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7
17	Mini Project	D470.5	PO1,PO2,PO3 ,PO4, PO5,PO6,PO7

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CTD410 COMPUTER ARCHITECTURE

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	What are the various types of addressing modes?	I	U	D410.1	PO1,PO3
2	What is CPU? What are the major components of CPU?	I	U	D410.1	PO1,PO3
3	List the types of flynn's classification.	II	R	D410.2	PO1,PO3
4	Definesynchronous and asynchronous datatransfer.	II	U	D410.2	PO1,PO3
5	Why we need ROM for as ystem?	III	U	D410.3	PO1,PO3
6	What is mapping table in virtual memory concept?	III	U	D410.3	PO1,PO3
7	What is parallel processing?	IV	R	D410.4	PO1,PO3
8	What are Super scalar pipeline?	IV	R	D410.4	PO1,PO3
9	List out any two characteristics of SMP.	V	R	D410.5	PO1,PO3
10	What is CC-NUMA?	V	U	D410.5	PO1,PO3

PART-B (5 X 14 = 70 Marks)						
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) What is bus andexplain bus transfer with a neat block diagram?	07	I	U	D410.1	PO1,PO3, PO4
	(ii) Explain various Arithmetic Microoperations.	07	I	U	D410.1	PO1,PO3, PO4
	(OR)					
	(B) (i) Write in detail about Three, Two, One, Zero address instruction format?	07	I	R	D410.1	PO1,PO3, PO4
	(ii) Explain in detail about functioning	07	I	U	D410.1	PO1,PO3,

	of Control unit with block diagram.					PO4
12	(A) (i) .Explain in detail about I/O interface with example.	07	II	U	D410.2	PO1,PO3, PO4
	(ii) Explain strobe controlled data transfer in detail.	07	II	U	D410.2	PO1,PO3, PO4
	(OR)					
	(B) (i) Explain DMA transfer with block diagram.	07	II	U	D410.2	PO1,PO3, PO4
	(ii) Explain Flynn's Classifictaion in detail	07	II	U	D410.2	PO1,PO3, PO4
13	(A).(i) Explain about ROM and RAM chip	07	III	U	D410.3	PO1,PO3, PO4
	(ii) How magnetic disk works?	07	III	An	D410.3	PO1,PO3, PO4
	(OR)					
	(B) (i) Discuss in detail about the operational principle of cache memory.	07	III	U	D410.3	PO1,PO3, PO4
	(ii) Explain in detail about memory table in a paged system with diagram.	07	III	U	D410.3	PO1,PO3, PO4
14	(A) (i) With a neat diagram explain the 8086 architecture.	07	IV	U	D410.4	PO1,PO3, PO4
	(ii) Explain the various types of parallel processor organizations (Flynn'sclassification)	07	IV	U	D410.4	PO1,PO3, PO4
	(OR)					
	(B) (i) Explain in detail about vector processing.	07	IV	U	D410.4	PO1,PO3, PO4
	(ii) Explain Arithmetic pipeline with a neat diagram.	07	IV	U	D410.4	PO1,PO3, PO4
15	(A) (i) Explain the organization of a multiprocessor system with a neat block diagram.	07	V	U	D410.5	PO1,PO3, PO4
	(ii) Explain the various approaches of vector computation with diagram.	07	V	An	D410.5	PO1,PO3, PO4
	(OR)					
	(B) (i) Explain the various approaches to explicit multithreading	07	V	U	D410.5	PO1,PO3, PO4
	(ii) Explain in detail about corei7 processor.	07	V	U	D410.5	PO1,PO3, PO4

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

CTD420 WEB DESIGN AND PROGRAMMING

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3= 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Define TCP/IP	I	U	D420.1	PO1,PO3
2	What are Lists in HTML?	I	R	D420.1	PO1,PO3
3	What are attributes in Forms?	II	R	D420.2	PO1, PO4
4	How many Input controls can be used in Forms?	II	U	D420.2	PO1, PO4
5	What are the types of variables in Java Script?	III	U	D420.3	PO1, PO4
6	How to create an Array in JavaScript?	III	U	D420.3	PO1, PO4
7	What do mean by session and cookies?	IV	R	D420.4	PO1,PO3
8	What is increment tand decrement operator withexample?	IV	R	D420.4	PO1,PO3
9	Define Open Source.	V	R	D420.5	PO1,PO3
10	What is MySQL and why it is used?	V	U	D420.5	PO1,PO3

	PART-B (5 X 14 = 70 Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i)Brief in detail about networking concepts	07	I	U	D420.1	PO1, PO5, PO6
	(ii) Write a HTML to design marksheet using TableTag.	07	I	C	D420.1	PO1, ,PO5, PO6
	(OR)					
	(B) (i) What are the different types of Web servers?	07	I	U	D420.1	PO1,PO3, PO4
	(ii) Design awebpage using HTML and CSS.	07	I	Ap	D420.1	PO1,PO3, PO4,
12	(A) (i) Write CSS syntax with example all <p> elements will be center-aligned,with a red text color.	07	II	C	D420.2	PO1, PO4, PO6

	(ii) How do you create a dropdown box on a form?	07	II	U	D420.2	PO1, PO5, PO6
	(OR)					
	(B) (i) Write a HTML code to create three horizontal frames.	07	II	Ap	D420.2	PO1,PO3, PO4
	(ii) What are the properties of CSS text and CSS fonts?	07	II	U	D420.2	PO1,PO3, PO4
13	(A).(i) Describe control statements in Java Script with syntax and flowchart.	07	III	U	D420.3	PO1,PO3, PO4
	(ii) What is event handling in JavaScript with examples?	07	III	U	D420.3	PO1,PO3, PO6
	(OR)					
	(B) (i) How to use various alerts in JavaScript?	07	III	R	D420.3	PO1,PO3, PO6
	(ii) What is the syntax off or statement in JavaScript? Give an example	07	III	R	D420.3	PO1,PO3, PO6
14	(A) (i) DescribetheusesofGETandPOSTmethods.	07	IV	U	D420.4	PO1,PO3, PO6
	(ii) Explain the syntax of “for” and "foreach" loop. Give examples.	07	IV	R	D420.4	PO1,PO3, PO6
	(OR)					
	(B) (i) Define array in PHP and explain various array functions.	07	IV	U	D420.4	PO1,PO3, PO6
	(ii) What is session and cookie in PHP?	07	IV	U	D420.4	PO1, PO5, PO6
25	(A) (i) How to connect MySQL database using PHP?	07	V	U	D420.5	PO1,PO5, PO6
	(ii) Explain about webpage hosting and publishing.	07	V	R	D420.5	PO1,PO5, PO6
	(OR)					
	(B) (i) Write a PHP form to insert student details in database.	07	V	C	D420.5	PO1,PO5, PO6
	(ii) Write a PHP to view student details from database.	07	V	C	D420.5	PO1,PO5, PO6

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom’s Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom’s Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD430 OBJECT ORIENTED PROGRAMMING WITH JAVA

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	What is separator?	I	U	D430.1	PO1,PO3
2	Define type casting.	I	U	D430.1	PO1,PO3
3	Define array. Write syntax to create an one dimensional array.	II	U	D430.2	PO1,PO3
4	Write is the use of append() method.	II	U	D430.2	PO1,PO3
5	Define constructor.	III	U	D430.3	PO1,PO3
6	Define interface. Give its syntax.	III	U	D430.3	PO1,PO3
7	List the advantages of exception handling.	IV	R	D430.4	PO1,PO3
8	What is thread scheduling?	IV	R	D430.4	PO1,PO3
9	What is the use of Applet tag?	V	R	D430.5	PO1,PO3
10	Write the syntax of drawArc() method.	V	R	D430.5	PO1,PO3

PART-B (5 X 14 = 70 Marks)						
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain how will you create & execute a java program?.	07	I	U	D430.1	PO1,PO3,PO4
	(ii) Explain any 4 basic concepts of OOPs	07	I	U	D430.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain in detail about java features.	07	I	U	D430.1	PO1,PO3,PO4
	(ii) Explain about scope of variables.	07	I	U	D430.1	PO1,PO3,PO4
12	(A) (i) Explain about if-else & switch statement.	07	II	U	D430.2	PO1,PO3,PO4
	(ii) Explain any 4 methods of Vector class.	07	II	R	D430.2	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain about string class with example.	07	II	U	D430.2	PO1,PO3,PO4
	(ii) Differentiate String and String buffer class with example.	07	II	An	D430.2	PO1,PO3,PO4

13	(A).(i) Explain Multilevel in heritance with Example.	07	III	An	D430.3	PO1,PO3,PO4
	(ii) Explain in detail about implementing interface.	07	III	An	D430.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Define class.Explain in detail	07	III	U	D430.3	PO1,PO5,PO6
	(ii) Explain in detail about state modeling events	07	III	U	D430.3	PO1,PO3,PO6
14	(A) (i) Explain about the life cycle of thread.	07	IV	U	D430.4	PO1,PO5,PO6
	(ii) Explain about exception handling.	07	IV	U	D430.4	PO1,PO3,PO6
	(OR)					
	(B) (i) Explain about character stream classes.	07	IV	U	D430.4	PO1,PO5,PO6
	(ii) Write notes about runnable interface with example.	07	IV	U	D430.4	PO1,PO3,PO6
15	(A) (i) Explain about creating and executing an applet with example	07	V	Ap	D430.5	PO1,PO5,PO6
	(ii) With suitable example,describe about the parameter tag.	07	V	U	D430.5	PO1,PO3,PO6
	(OR)					
	(B) (i) Explain about Scrollbar	07	V	U	D430.5	PO1,PO5,PO6
	(ii) Explain any 4 methods of Graphics class.	07	V	R	D430.5	PO1,PO3,PO6

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

****

CTD440 RELATIONAL DATABASE MANAGEMENT SYSTEMS

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30 Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	What are the components of database?	I	R	D440.1	PO1,PO3
2	What is E-Rmodel?	I	U	D440.1	PO1,PO3
3	What is Normalization?	II	R	D440.2	PO1,PO4
4	Explain the following terms-records, Attributes.	II	U	D440.2	PO1,PO4
5	Name some Aggregate functions.	III	R	D440.3	PO1,PO4
6	Give the syntax for IF() and IFNULL() commands.	III	R	D440.3	PO1,PO3
7	Write down the syntax for the creating sequence.	IV	R	D440.4	PO1,PO3
8	Explain GRANT command with an example.	IV	U	D440.4	PO1,PO3
9	List the types of Triggers.	V	R	D440.5	PO1,PO3
10	Write down the advantages of MySQL functions.	V	R	D440.5	PO1,PO3

	PART-B (5 X 14 = 70 Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Give the difference between RDBMS and NoSQL	07	I	U	D440.1	PO1,PO3,PO4
	(ii) What are the types of data stores in NoSQL? Explain any two of them	07	I	R	D440.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain architecture of DBMS with a neat diagram	07	I	U	D440.1	PO1,PO3,PO4
	(ii) What are the different types of Data models? Explain any one with an example	07	I	R	D440.1	PO1,PO3,PO4
12	(A) (i) Explain referential integrity constraint with an example	07	II	U	D440.2	PO1,PO3,PO4
	(ii) List and explain CODD'srules	07	II	R	D440.2	PO1,PO3,PO4

	(OR)					
	(B) (i) Discuss Backup and recovery	07	II	U	D440.2	PO1,PO3,PO4
	(ii) How to install and configure MySQL server on Microsoft windows.	07	II	U	D440.2	PO1,PO3,PO4
13	(A).(i) Explain different types of Data Definition commands with an example	07	III	An	D440.3	PO1,PO3,PO4
	(ii) List and explain different types of operators with an example..	07	III	An	D440.3	PO1,PO3,PO4
		(OR)				
	(B) (i) Explain aggregate functions with an example	07	III	U	D440.3	PO1,PO3,PO4
	(ii) Explain IF(),IFNULL(),CASE,WHILE flow control with an example	07	III	U	D440.3	PO1,PO3,PO4
14	(A) (i) Explain sequence with an example.	07	IV	U	D440.4	PO1,PO3,PO4
	(ii) Explain Transaction handling commands with an example..	07	IV	U	D440.4	PO1,PO3,PO4
	(OR)					
	(B) (i) .Explain GRANT and REVOKE commands with an example	07	IV	U	D440.4	PO1,PO3,PO4
	(ii) Explain briefly about Locking protocol and its type.	07	IV	U	D440.4	PO1,PO3,PO4
15	(A) (i) With an example ,explain stored functions in MySQL.	07	V	Ap	D440.5	PO1,PO3,PO4
	(ii) Write about the creation of triggers with an example	07	V	U	D440.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Give the syntax for MySQL with PHP database connections, managing data base connections and closing database connections.	07	V	U	D440.5	PO1,PO3,PO4
	(ii) Write about fetch statement used in cursor with its syntax and examples.	07	V	U	D440.5	PO1,PO3,PO4

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD510 PYTHON PROGRAMMING

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Python Programming	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*****	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO .OF HOURS
I	Introduction	14
II	Control Structure And Functions	15
III	Strings and Lists	14
IV	Tuple, Set, Dictionaries	14
V	Files And Exception Handling	14
	Tests And Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

To introduce the student to the basic features of industry standard programming language and impart skills to develop industry standard solutions to the problems. The python language is one of the most accessible programming languages available because it has simplified syntax and not complicated, which gives more emphasis on natural language. Due to its ease of learning and usage, python codes can be easily written and executed much faster than other programming languages. Python has several modules to write programs to solve Artificial Intelligence, Machine Learning, Data Analysis problems. Python is a cross-platform language used by many leading organizations such as Google and NASA.

OBJECTIVES:

On completion of thefollowingunits ofsyllabuscontents, the students mustbeable to

- To readandwrite simplePythonprograms.
- TodevelopPython programswithconditionalsandloops
- TodefineStringsinPythonandoperations onString.
- TodefinePython functionsandcallthem.
- DecomposeaPythonprogramintofunctions.
- Representcompound datausing Pythonlists,tuples, dictionaries.
- TousePythondatastructures–-lists,tuples,dictionaries.
- Todoinput/outputwithfilesinPython.
- TodoexceptionhandlinginPython

COURSE OUTCOMES:

Course	**CTD510 PYTHON PROGRAMMING**
After successful completion of this course, the students should be able to	
D510.1	Understanding the installation, running of python and also data types.
D510.2	Learn about decision making, control structure and functions.
D510.3	Understand the basic concepts of Strings and list.
D510.4	Learn the Tuples and Dictionaries.
D510.5	Understand the Files and Exception Handling and illustrate the programs.

CTD510 PYTHON PROGRAMMING

UNIT- I **[14 Hrs]**

INTRODUCTION TO PYTHON

FEATURES OF PYTHON

Installing and running Python - interpreter and Interactive mode – [2 Hrs]

Identifiers - Reserved Keywords - Variables – Comments in Python. [2 Hrs]

DATA TYPES

Numeric, String, List, Sets, Tuple, Dictionary, Boolean; [2 Hrs]

Operators –Arithmetic, Relational, Assignment, Logical, Bitwise, [2 Hrs]

Membership operator, identity operator. [1 Hr]

Statements and Expressions

String Operations; Boolean Expressions, [2 Hrs]

Data Type Conversion, Type coercion; Input from keyboard - input function, raw_ input [2 Hrs]

function, Mutable and immutable Objects; Illustrative programs [1 Hr]

UNIT- II **[15 Hrs]**

DECISION MAKING, CONTROL STRUCTURE AND FUNCTIONS

DECISION MAKING

– Simple if, if…else and if … elseif statement; [2 Hrs]

Control Statement - for loop, range(), while, break , [2 Hrs]

continue, pass. [1 Hr]

FUNCTIONS

Built in functions-Mathematical functions, Date and Time, dir (), help () Functions; [2 Hrs]

User defined functions-Return values, parameters and arguments, function calls, [2 Hrs]

local and global scope, function composition, recursion, anonymous functions. [1 Hr]

Writing Scripts in Python; [2 Hrs]

Illustrative programs. [2 Hrs]

Illustrative programs. [1 Hr]

UNIT- III **[14 Hrs]**

STRINGS AND LISTS

STRINGS

Strings in python, String functions and methods, string slicing, [2 Hrs]

immutable property, string Traversal, Escape Characters, [2 Hrs]

string formatting operators and functions. [1 Hr]

LISTS

Creation of List, values and accessing elements, [2 Hrs]

mutable property, Traversing a List, [2 Hrs]

copying the list, altering values, deleting elements from list. [1 Hr]

Built-in List operators and built-in methods. [2 Hrs]

IllustrativePrograms [2 Hrs]

UNIT- IV **[14 Hrs]**

TUPLE AND DICTIONARIES

TUPLES

creating, accessing values, immutable property, [2 Hrs]

assignment of tuples, returning tuples, tuples as arguments – [2 Hrs]

variable length arguments basic tuple operations, [2 Hrs]

Built-in tuple functions. [1 Hr]

DICTIONARIES

Creating a Dictionary , accessing values, updating dictionary, [2 Hrs]

deleting elements from dictionary; dictionary keys- [2 Hrs]

Properties,operations in Dictionary, Built-in dictionary methods, [2 Hrs]

Illustrative Programs. [1 Hr]

UNIT-V **[14 Hrs]**

FILE AND EXCEPTION HANDLING

FILES

Text files, opening a file, closing a file, [2 Hrs]

reading from a file and writing into a file, file opening modes, closing a file, [2 Hrs]

File Object Attributes,File positions, renaming, [2 Hrs]

deleting a file and files related methods. [1 Hr]

DIRECTORY

Directory methods – mkdir(), chdir(), getcwd(),rmdir(). [2 hrs]

EXCEPTIONS IN PYTHON:

Definition - Built-in exceptions, Handling Exceptions-try…except, [2 Hrs]

except with No Exception, except with Multiple Exceptions, try…finally; [2 Hrs]

User defined exceptions. Illustrative programs [1 Hr]

Tests And Model Exam **[9 Hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Introduction to ComputingandProblemSolvingusingPython	E.Balagurusamy	McGraw HillEducation(India) Pvt.Ltd. 1st Edition /2016
2.	Learning PythonProgramming	JeffreyElkner,Allan B. Downey,ChrisMeyers	Samurai MediaLimited.

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Taming Python ByProgramming	JeevaJose	KhannaBook Publishing Co(P)Ltd 2019
2.	PythonProgramming	AshokNamdevKamthaneandAmitAshokKamthane	McGraw, HillEducation(India)(P), Ltd.2018
3.	LearnandPracticePython programming	Swapnil Saurav	Eka Publishers 2020
4.	ProgramminginPython	Dr.PoojaSharma	BPBPublications 2017

LEARNING WEBSITES:

1. https://www.learnpython.org
2. www.python.org ,
3. https://www.tutorialspoint.com/python

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D510.1	3	3	2	2	2	2	2	3	2	2
D510.2	3	3	2	2	2	2	2	3	2	2
D510.3	3	3	2	2	2	2	2	3	2	2
D510.4	3	3	2	2	2	2	2	3	2	2
D510.5	3	3	2	2	2	2	2	3	2	2
D510 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD520 CLOUD COMPUTING AND INTERNET OF THINGS

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
CloudComputingAndInternetof Things	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	6	96	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO. OF. HOURS
I	Introduction to Cloud Computing	16
II	Cloud Computing Architecture and Services	17
III	Security inThe Cloud	16
IV	Introduction to Internet Of Things	19
V	Internet of Things Platform: Design and Development	19
	Tests and Model Exam	9
TOTAL		**96**

COURSE DESCRIPTION:

The course aims to groom the students to enable them to work on current technologyscenarios: in specific about the Cloud Computing as well as Internet of Things and preparethe students to keep pace with the changing face of technology and the requirements of the growing IT industry. The course curriculum has been designed keeping in view the emerging trends in advanced Cloud Computing as well as IoT and futuristic human resource equirements of the IT industry.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- To understand an overview of the basic concepts of Cloud Computing;
- To understand the highlight and advantages of deploying Cloud Computing;
- To know the practical adoption of a cloud deployment through real life case studies.
- To Know the Advantages and limitations of cloud Computing and List the benefits of Cloud Computing

- To understanding Cloud Architecture
- To Know the Cloud services and benefits
- To address the security issues in Cloud
- To assess the vision of IoT
- To understand the dynamic, self-configuring and inter-operable network of things
- To understand the design and development methodology for IoT domains.
- To build simple IoT systems using RaspberryPi.

COURSE OUTCOMES

Course	**CTC520 CLOUD COMPUTING AND INTERNET OF THINGS**
After successful completion of this course, the students should be able to	
D520.1	Overview of cloud computing and scenarios.
D520.2	Know about the Cloudarchitecture and deployment models.
D520.3	Understanding Cloud Security and its challenges.
D520.4	Introduction to IOT and its levels, types.
D520.5	Understand the IOT Design, Methodology and specification

CTD520 CLOUD COMPUTING AND INTERNET OF THINGS

UNIT I - INTRODUCTION TO CLOUD COMPUTING [16 Hrs]

CLOUD COMPUTING OVERVIEW

Origins of Cloud computing ,Cloud components Essential characteristics, [2 Hrs]

on-demand self-service, Broad network access, Location independent resource pooling, [2 Hrs]

Rapid elasticity, measured service [1 Hr]

ARCHITECTURAL INFLUENCES

High-performance computing,utility and enterprise grid computing, [2 Hrs]

Autonomic computing, Service consolidation, [2 Hrs]

Horizontal scaling, Web services, High scalability architecture. [2 Hrs]

CLOUD SCENARIOS

Cloud scenarios– Benefits - scalability, simplicity, vendors, security-Limitations – Sensitive [2 Hrs]

information, Application development – Security concerns -privacy concern with a third [2 Hrs]

party, security level of third party, security benefits. Regularity issues – Government [1 Hr]

policies

UNIT II - CLOUD COMPUTING ARCHITECTURE AND SERVICES [17 hrs]

CLOUD ARCHITECTURE

Cloud delivery model – SPI framework, SPI evolution, [2 Hrs]

SPI vs. traditional IT Model. [1 Hr]

SOFTWARE AS A SERVICE (SAAS)

SAAS service providers – Web Services– Web 2.0 – Web Operating system -Google App [2 Hrs]

Engine,Salesforce.com and google platform –

benefits – Operational benefits, Economic benefits– Evaluating SaaS [1 Hr]

PLATFORM AS A SERVICE (PAAS)

Cloud Plat form & Management – Computation& Storage – PaaS service providers – Right [2 Hrs]

Scale – Salesforce.com –

Rackspace - Force.com – services and benefits. [1 Hr]

INFRASTRUCTURE AS A SERVICE (IAAS)

IaaS service providers –Amazon EC2, GoGrid – Microsoft implementation and support – [2 Hrs]

Amazon EC service level agreement – recent developments– benefits. [2 Hrs]

CLOUD DEPLOYMENT MODEL:

Public clouds – private clouds – Community clouds – [2 Hrs]

hybrid clouds – Advantages of Cloud computing [2 Hrs]

UNIT III - SECURITY IN THE CLOUD [16 Hrs]

SECURITY IN THE CLOUD:

Understanding Cloud Security - Securing the Cloud – [2 Hrs]

Security service boundary: CSA Cloud Reference Model – [2 Hrs]

Securing Data – Brokered cloud storage access – [2 Hrs]

Storage location and tenancy – Encryption [2 Hrs]

CLOUD COMPUTING SECURITY:

Challenges [2 Hrs]

Security Policy Implementation [2 Hrs]

Policy Types [2 Hrs]

Virtualization Security Management –Virtual Threat [2 Hrs]

UNIT IV - INTRODUCTION TO INTERNET OF THINGS [19 Hrs]

INTRODUCTION TO INTERNET OF THINGS:

Definition and Characteristics of IOT – [1Hr]

Physical design of IOT - Things in IOT- [2 Hrs]

IOT Protocols-Logical Design of IOT - IOT functional blocks- IOT [2 Hrs]

communication Models - IoT communication API's [2 Hrs]

IOT ENABLING TECHNOLOGIES:

Wireless sensor networks Cloud Computing- [2 Hrs]

Big Data Analytics- Communication protocols- [2 Hrs]

Embedded systems [1 Hr]

IOT LEVELS AND DEPLOYMENT TEMPLATES:

IOT Level-1- IOT Level-2- [2 Hrs]

IOTLevel-3-IoT Level-4 – [2 Hrs]

IOT Level-5- [2 Hrs]

IOT Level-6 [1 Hr]

UNIT V - IoT PLATFORM: DESIGN AND DEVELOPMENT **[19 Hrs]**

IoT PLATFORMS : DESIGN AND DEVELOPMENT:

Introduction- IOT Design and Methodology- [2 Hrs]

Purpose and requirements specification- Process specification- [2 Hrs]

Domain model specification- Information model specification- service Specification – [2 Hrs]

IoT level specification- functional view specification –Operational view specification - [2 Hrs]

Device and component integration- application development. [2 Hrs]

WHAT IS AN IOT DEVICE? :

Basic Building blocks of an IoT Device – [2 Hrs]

Exemplary Device Raspberry Pi – [2 Hrs]

About the Board - Linux on Raspberry Pi- [2 Hrs]

Raspberry Pi Interfaces- [2 Hrs]

Other IOT devices [1 Hr]

Tests And Model Exam **[9 Hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	CLOUD SECURITY:A Comprehensive Guide to Secure Cloud Computing	RonaldL.Krutz RussellDeanVines	Wiley Publishing,Inc
2.	Cloud Computing A Practical Approach 2008 Edition ry	Cloud Computing A practical Approach	TataMcGrawHill

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	CloudComputingBible	Barrie Sosinsky	Wiley Publishing,Inc
2.	Internetof Things–A HandsonApproach	ByArshdeepBahgaandVijayMadisetti	Universities Press, ISBN:9788173719547
3.	DesigningtheInternetofThings	AdrianMcEwen & HakimCassimality	Wiley India,ISBN

LEARNING WEBSITES:

1. https://www.wiley.com/

2.https://www.igi-global.com

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D520.1	3	3	2	2	2	2	2	3	2	2
D520.2	3	3	2	2	2	2	2	3	2	2
D520.3	3	3	2	2	2	2	2	3	2	2
D520.4	3	3	2	2	2	2	2	3	2	2
D520.5	3	3	2	2	2	2	2	3	2	2
D520 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)
Correlation level 2- Moderate (Medium)
Correlation level 3- Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

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% to be included	90%	10%

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CTD531 COMPONENT BASED TECHNOLOGY

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Component Based Technology	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*****	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO. OF .HOURS
I	Introduction To .Net Framework and C#.Net	15
II	Application Development Using C#.Net	14
III	Application Development Using Ado.Net	14
IV	Introduction To Asp.Net	14
V	Xml	14
	Tests And Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

.NET Framework is changing the way developers write applications. .NET Framework provides a number of components to create many types of applications including those for consoles, Windows, mobile units and the web. Using .NET framework the data can be made available anytime, anywhere and on any device.This subject introduces the basics of .NET Framework. Writing applications on C#.Net is covered in this course. Concepts of developing Window applications using C#.NET. Concepts of developing web applications using ASP.NET are discussed. This course helps to use ADO.NET to write the applications to connect with the back end database. The subject also enables the users to know the concepts of XML and the XML webservices.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be ableto

- List the major elements of the .NET Framework and describe some of the major enhancements to the new version of C#.
- Describe the basic structure of a C#.NET project and use the main features of the integrated development environment (IDE).
- Use the new language features and syntax in C#.NET.
- Explain and use the basic concepts and terminology of object-oriented design and programming in C#.NET.
- Use the basic concepts and terminology of object-oriented in C#.NET.
- Create applications by using Microsoft WindowsForms.
- Create applications that use ADO.NET.
- List down the features of ASP.NET.
- Create web controls using ASP.NET.
- Learn about server controls and events in ASP.NET.
- Set up and deploy various types of C# .NET-based applications.
- Develop Window applications using XML as back end database

COURSE OUTCOMES :

Course	**CTC531 COMPONENT BASED TECHNOLOGY**
After successful completion of this course, the students should be able to	
D531.1	Understanding the features of .net framework, visual stdio .net and c# .net
D531.2	Understanding the c#.net formation.
D531.3	Understanding the ADO.net data accessing and creations.
D531.4	Learn about ASP.net and creating the web formation and control.
D531.5	Creating the XML framework and .NET framework.

CTD531 COMPONENT BASED TECHNOLOGY

UNIT – I **[15 Hrs]**

INTRODUCTION TO .NET FRAMEWORK AND C#.NET

INTRODUCTION TO .NET FRAMEWORKAND C#.NET

Features of .NETframework, Features of .NET CORE,.Net Architecture Managed Code and the CLR – [1 Hr]

Intermediate Language, Metadata and JIT Compilation–Automatic Memory Management.–Assembly [1 Hr]

.NETobjects,.NET webservices,.netcore Vs.netframework [1 Hr]

VISUAL STUDIO .NET

Features, Usingthe .NET Framework, Exploring the Visual Studio Integrated Development Environment – [2 Hrs]

System requirements – Versions [1 Hr]

INTRODUCTION TO C#.NET

Variables and constants –data types– declaration. Operators– types– precedence Expressions [2 Hrs]

–Programflow–Decisionstatements–if..thenif..then..else,switch..case, Loopstatements–while,do...while, for..next, for..each..next,LINQ. [2 Hrs]

TYPES

Value data types – Structures, Enumerations. Reference data types – Single dimensional– Multi-dimensional arrays– [2 Hrs]

Jagged arrays– Dynamic arrays [1 Hr]

CLASSES & OBJECTS

Creating and using your own classes – Data members and member methods – Instantiate an object, abstract class – static class [2 Hrs]

UNIT-II **[14 Hrs]**

APPLICATION DEVELOPMENT USING C#.NET

WINDOWS PROGRAMMING

Creating windowsForms–Working withToolbox Controls –Button, Check Box, Combo Box, Label, List Box,Radio Button, [2 Hrs]

TextBox, Group Boxes, Picture Box [2 Hrs]

ADVANCED CONTROLS & EVENTS

Timer , Progress Bar, Month Calendar, Tool Tips, Tab Controls, Panels – Events – [2 Hrs]
Click, Close, Deactivate, Load,

MouseMove, Mouse Down, MouseUp, Keypress ,KeyDown,KeyUp [1 Hr]

MULTIPLE DOCUMENT INTERFACE (MDI) FORMS

Creating MDI Applications – Creating MDI Child Windows – [2 Hrs]

Arranging MDI Child Windows [1 Hr]

MENUSANDDIALOGBOXES

Creating menus–Menu items – Creating Submenus , Menu Shortcuts, [2 Hrs]

Context menu – Using dialog boxes – show Dialog() method [2 Hrs]

UNIT-III **[14 Hrs]**

APPLICATION DEVELOPMENT USING ADO.NET

FEATURES OF ADO.NET

Architecture of ADO.NET – [2 Hrs]

ADO.NET providers – Connection– Command – [2 Hrs]

Data Adapter – Dataset. [1 Hr]

ACCESSING DATA WITH ADO.NET

Connecting to Data Table data using Command Objects – [2 Hrs]

Understanding Data Set and working with Data Column and DataRow – [2 Hrs]

Data Tables - Working with Data Grid View. [1 Hr]

CREATE AN ADO.NET APPLICATION

Using Stored Procedures. [4 Hrs]

UNIT- IV **[14 Hrs]**

INTRODUCTION TO ASP.NET

ASP.NET FEATURES

ASP.Net Life cycle,View state,session state,Change the Home Directory In IIS–Add a [2 Hrs]
Virtual Directory in IIS Set a Default Document for IIS –Change Log File Properties for
IIS – Stop, Start,orPause a Web Site – Global.asax file [2 Hrs]

CREATING WEB CONTROLS

Web Controls – HTML Controls, Using Intrinsic Controls, Using Input Validation [2 Hrs]
Controls,

Selecting Controls for Applications –Adding web controls to a Page [2 Hrs]

CREATING WEB FORMS

Server Controls – Types of Server Controls – [2 Hrs]

AddingASP.NET Code to a Page. [1 Hr]

.NET CORE WEB API

What's web API?, Web API features, Restful services, [2 Hrs]

Method of REST [1 Hr]

UNIT- V [14 hrs]

XML

INTRODUCTION

Advantages – HTML Vs XML – Browsing and parsing XML–Creating a XML file – [2 Hrs]

Data island – Well formed XML document – XML components: elements – Entities – [2 Hrs]

Comments - Processing instructions Attributes [1 Hr]

DTD

Declarations in DTD: Element, Attribute, Entity and Notation – Constructionof an XML document – [2 Hrs]

XML Namespaces – Declaring namespaces – Default namespaces – XML schema – Need and use of Schema – Building blocks –Simple elements – [2 Hrs]

Defining attributes – Complex elements [1 Hr]

XML WITH .NET

XML Serialization in the .NET Framework – [2 Hrs]

SOAP Fundamentals- Using SOAP with the .NET Framework. [2 Hrs]

Tests And Model Exam **[9 Hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Programming In C#, 3E	E.Balagurusamy	Tata McGraw-Hill Education,
2.	Applicationsof.NET Technology	ISRD Groups	TMGH Education PvtLtd.,New Delhi

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	ADO NET 2 0 Step by Step	Rebecca M. Riordan	
2.	Introducing Microsoft .NET	David S. Platt	Microsoft Press

LEARNING WEBSITES

1. https://geekflare.com
2. https://www.scribd.com
3. https://www.coursera.org
4. https://www.pluralsight.com

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i) Attendance - 5 Marks

ii) Tests - 10 Marks

iii) Assignment - 5 Marks

iv) Seminar - 5 Marks

Total - 25 Marks

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D531.1	3	3	2	2	2	2	2	3	2	2
D531.2	3	3	2	2	2	2	2	3	2	2
D531.3	3	3	2	2	2	2	2	3	2	2
D531.4	3	3	2	2	2	2	2	3	2	2
D531.5	3	3	2	2	2	2	2	3	2	2
D531 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

****

CTD532 ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
	Hours/ Week	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
Artificial Intelligence and Data Analytics	5	80	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO. OF. HOURS
I	Artificial Intelligence	15
II	Introduction To Machine Learning	14
III	Data Analytics And Numpy Library	14
IV	Data Analysis With Pandas	14
V	Visualization With Matplotlib	14
	Tests And Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

This course provides the foundations for AI problem solving techniques and data analytics and articulates the different dimensions of these areas. The syllabus is designed to provide exposure to the theory as well as practical systems and software used in data analysis. This course explains fundamental data science techniques and the various Python programming packages required for data science.

OBJECTIVES:

After studying this subject students will be able

- To understand the fundamentals of Artificial Intelligence and its importance.
- To understand the techniques used in AI.
- To understand how the knowledge is represented, and the characteristics of intelligent agents.
- To Identify and formulate appropriate AI methods for solving a problem.
- To understand some of the search strategies and the constraint satisfaction problems.
- To understand the principles of Machine Learning.

- To explore some of the real-world applications of Machine learning techniques.
- To understand a range of topics and concepts related to data analytics.
- To familiarize with the Python NumPy library for array processing.
- To utilize the Pandas packages in Python for exploratory data analytics.
- To create informative visualizations with matplotlib to identify patterns

COURSE OUTCOMES

Course	**CTD532 ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS**
After successful completion of this course, the students should be able to	
D532.1	Understanding the artificial intelligence and problem solving.
D532.2	Understanding the Machine Learning and neural network , applications.
D532.3	Understanding Data Analytics, Introduction to Pythons, libraries.
D532.4	Learn about data framing and loading.
D532.5	Understand the Visualization with Chart types.

CTD532 ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS

UNIT – I **[15 Hrs]**

ARTIFICIAL INTELLIGENCE

ARTIFICIAL INTELLIGENCE

What is AI?-Types of AI-History of AI- Turing Tests- Structure of AI-Goals of AI- [2 Hrs]
Importance of AI- Techniques used in AI-Perception,

Understanding and Action- Technological drivers of modern AI. [2 Hrs]

KNOWLEDGE

Definition-Knowledge Representation- objetives and requirements-practical aspects of [2 Hrs]
representation-Components Intelligent Agents,Agents and Environments-

Properties of environments-characteristics of agents- classification of agents [2 Hrs]

PROBLEM SOLVING

Problem Formulation-Goal FormulationState Space Search-Search Problem- [2 Hrs]

Basic search algorithmSearch Tree-Search strategies– [1 Hr]

Uninformed and informed searchBreadth First Search, Depth First Search, Best First [2 Hrs]
SearchConstraint Satisfaction Problem (CSP)-

Backtracking Search.Problem Definitions: N Queen Problem, 8 Puzzle Problem, Tic- [2 Hrs]
TacToe.

UNIT-II **[14 Hrs]**

INTRODUCTION TO MACHINE LEARNING

LEARNING

Strategies of Learning- Learning Model- [2 Hrs]

Classes of Learning (Supervised, Unsupervised, Reinforcement)- Process of ML- [2 Hrs]

Common types of ML algorithms [1 Hr]

NEURAL NETWORK

Biological and Artificial, [2 Hrs]

Mathematical model of a neuron [1 Hr]

MACHINE LEARNING APPLICATIONS

Learning Associations, Regression, Classification, Prediction- [2 Hrs]

Natural Language Processing (NLP)- [2 Hrs]

Automatic Speech Recognition (ASR)- Machine VisionRobotics. [2 Hrs]

UNIT-III **[14 Hrs]**

DATA ANALYTICS AND COMPUTING WITH NUMPY

DATA ANALYTICS

Data-Types of Data- Importance of Data- Data Analysis Vs Data Analytics-Types of Data Analytics- [2 Hrs]

Elements of Analytics- Data Analysis Process- Qualitative and Quantitative analyses- Open-Source Data. [2 Hrs]

INTRODUCTION TO PYTHON

Features of Python-Installing Python-Curriculum Development Centre, DOTE Page 107 [2 Hrs]

Python IDEs- PyPI Python Package Index- Pip Python package manager- [2 Hrs]

Importing Libraries and Functions- Python data structures (list, set, tuple, dict)- [1 Hr]

Functional programming (map, filter, reduce, lamda, list comprehension)

NUMPY LIBRARY

Introduction- Installation- Ndarray: creating an array, intrinsic creation of an array, [1 Hr]

Data types- basic operations aggregate functions- Indexing, slicing, Iterating- Conditions and Boolean arrays- [2 Hrs]

Array manipulation Joining, splitting, shape changing, sorting- Structured arrays- Reading and Writing array data on a File. [2 Hrs]

UNIT-IV **[14 Hrs]**

DATA ANALYSIS WITH PANDAS

INTRODUCTION

Pandas data structures: Series - Declaration, selecting elements, assigning values, Filtering [2 Hrs]

values, operations, mathematical functions, evaluating values, Handling missing data, [2 Hrs]

creating series from dictionaries, adding two series. [1 Hr]

DATA FRAME

Defining, Selecting elements, assigning values, membership,deleting a column, [2 Hrs]

Filtering. Index Objects: Indexing, Reindexing,Dropping- sorting and ranking- Descriptive Statistics [2 Hrs]

DATA LOADING

Reading and Writing csv, xls, text data filesData Cleaning and Preparation: [2 Hrs]

Handling missing data, Removing duplicates, replacing values- Vectorized String MethodsHierarchical Indexing- [2 Hrs]

Merging and Combining- Data aggregation and Grouping. [1 Hr]

UNIT- V **[14 hrs]**

VISUALIZATION WITH MATPLOTLIB

DATA VISUALIZATION

Introduction to Matplotlib -PyPlot package [2 Hrs]

Figures and Subplots-showing plots and images [2 Hrs]

CUSTOMIZING PLOTS

Colors, Markers, Line Styles, Limits, Tics, Labels, Legends, Grids – [2 Hrs]

Annotating with text-Matplotlib configuration [2 Hrs]

CHART TYPES

Line, Bar, stacked bar, Box plots, pie chart – [2 Hrs]

Histogram and Density plots- Scatter plot- [2 Hrs]

Saving Plots to a fileClose and clear plots. [2 Hrs]

Tests And Model Exam **[9 Hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Artificial Intelligence Basics	Tom Taulli	A Non-Technical Introduction-A press (2019)
2.	Fundamentals of artificial intelligence-	Chowdhary K.R -	Springer (2020)

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Artificial Intelligence A Modern Approach	Stuart J.Russell,Peter Norvig	(Prentice Hall- 2010, Edition 3)
2.	Artificial Intelligence,	Prof.P.Mitra, Prof.S.Sarkar	McGrawHillEducation(India)Pvt.Ltd.2018
3.	Python Data Analytics,	Fabio Nell	APRESS, 2015

LEARNING WEBSITES

1. https://www.mygreatlearning.com

2. https://nptel.ac.in/courses/106/105/106105078/

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	**25 Marks**

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D532.1	3	3	2	2	2	2	2	3	2	2
D532.2	3	3	2	2	2	2	2	3	2	2
D532.3	3	3	2	2	2	2	2	3	2	2
D532.4	3	3	2	2	2	2	2	3	2	2
D532.5	3	3	2	2	2	2	2	3	2	2
D532 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

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Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

****

CTD533 MOBILE COMPUTING

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Mobile Computing	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*****	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO. OF.HOURS
I	Introduction To Mobile Computing	14
II	Mobile and Smart TV OS	14
III	Android Development Environment	15
IV	Basic and Advanced Views	14
V	Location Based Services And Sqlite	14
	Tests And Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

Mobile Application development is the very hot business domain. Majority of the corporate have a separate division for the development of mobile applications. It is imperative that students must know the way to apply advanced data communicating methods and networking protocols for wireless and mobile devices.

Students must utilize and employ application frameworks for developing mobile applications including under disconnected and weakly connected environment. They should be in a position to select components and networks for particular application , creatively analyze mobile and wireless networks and critically analyze security issues of mobile and wireless computing systems

OBJECTIVES:

Students will be able

- To introduce the characteristics, basic concepts and systems issues in mobile computing
- To illustrate architecture and protocols in Mobile computing and to identify the trends and latests development of the technologies in the area
- To understand the network protocols governing the mobile communication
- To know the different kinds of mobile OS prevailing in the market
- To know Android OS in detail
- To know Apple iOS and Smart TV OS
- To understand the components of a Mobile App.
- To give practical experience in the area through the development of Mobile apps
- To design successful mobile computing applications and services
- To evaluate critical design tradeoffs associated with different mobile technologies,architectures, interfaces and business models and how they impact the usability,security, privacy and commercial viability of mobile and pervasive computing services and applications
- To know the development of Mobile apps using SQLite database
- To know the cross platform application development tools

COURSE OUTCOMES:

Course	**CTD533 MOBILE COMPUTING**
After successful completion of this course, the students should be able to	
D533.1	Understanding the mobile computing protocols and cellular networks.
D533.2	Learn about apple, smart TV and android operating system.
D533.3	Understanding the concept of Android Architecture, creating and Activity
D533.4	Knowledge about basic views, advanced views,displaying pictures and menu with views and SMS dialer.
D533.5	Development of android and services

CTD533 MOBILE COMPUTING

UNIT- I **[14Hrs]**

INTRODUCTION TO MOBILE COMPUTING

1.1 INTRODUCTION TO MOBILE COMPUTING

Evolution of Mobile Computing – [2 Hrs]

Important terminologies [2 Hrs]

1.2 WIRELESS LAN AND PROTOCOLS

WI-FI and WI-MAX , Bluetooth ,RFID, Wi- [2 Hrs]

Fi-Direct, Li-Fi, LTE, and 6LoWPAN , [2 Hrs]

VoLTE [1 Hr]

1.3 CELLULAR NETWORK GENERATIONS

:Features of 1G [1 Hr]

2G ,3G [2 Hrs]

4G ,5G [2 Hrs]

UNIT- II **[14Hrs]**

MOBILE AND SMART TV OPERATING SYSTEMS

MOBILE OPERATING SYSTEMS :

Evaluation of Mobile Operating System-Handset Manufactures and their Mobile OS- [2 Hrs]

Mobile OS and their features. Linux Kernel based Mobile OS [2 Hrs]

APPLE MOBILE OPERATING SYSTEMS :

History and features of Apple Operating Systems - iPadOS, [2 Hrs]

tvOS, 3 and watchOS [1 Hr]

SMART TV OPERATING SYSTEMS:

Smart TV Operating System development History – [2 Hrs]

versions and their features [1 Hr]

ANDROID OPERATING SYSTEM:

Android Operating System development History - versions and its feature – [2 Hrs]

The various Android devices on the market , The Android Market application store [2 Hrs]

UNIT-III **[15hrs]**

ANDROID DEVELOPMENT ENVIRONMENT

3.1 ANDROID DEVELOPMENT ENVIRONMENT

System Requirements, Android SDK, Installing Java, and ADT bundle – [2 Hrs]

Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs) – Android Studio [2 Hrs]

3.2 ANDROID ARCHITECTURE:

Android Architecture - The Linux Kernel, Android Runtime - Dalvik Virtual Machine, [2 Hrs]

Android Runtime – Core Libraries, Dalvik VM Specific Libraries, Java Interoperability Libraries, Android Libraries, Application Framework, [2 Hrs]

3.3 CREATING A NEW ANDROID PROJECT:

Defining the Project Name and SDK Settings, Project Configuration 4 Settings, [2 Hrs]

Configuring the Launcher Icon, [1 Hr]

3.4 ACTIVITY:

Creating an Activity, Running the Application in the AVD, Stopping a Running [2 Hrs]

Application, Modifying the Example Application, Reviewing the Layout and Resource Files [2 Hrs]

UNIT-IV **[14Hrs]**

BASIC AND ADVANCED VIEWS

BASIC VIEWS :

Text View, Button, Image Button, EditText, CheckBox, ToggleButton, [2 Hrs]

RadioButton and RadioGroup Views, ProgressBar View, Auto Complete Text View [2 Hrs]

ADVANCED VIEWS :

Time Picker View and Date Picker View – List Views – Image View – Menus – Analog [2 Hrs]

and Digital View – Dialog Boxes [2 Hrs]

DISPLAYING PICTURES & MENUS WITH VIEWS:

Image View – Gallery View – ImageSwitcher – GridView – [2 Hrs]

Creating the Helper Methods – Options Menu – Context Menu [2 Hrs]

4.4SMS AND DAILER :

Sending SMS – Receiving SMS – Making phone call [2 hrs]

UNIT-V **[14Hrs]**

LOCATION BASED SERVICES AND SQLITE

5.1 LOCATION BASED SERVICES :

Obtaining the Maps API Key- Displaying the Map – Zoom Control – [2 Hrs]

Navigating to a specific location – Adding Marker – Geo Coding andreverse Geo coding [2 Hrs]

5.2 CONTENT PROVIDER AND STORAGE:

Sharing data – view contacts – Add contacts – Modify contacts –Delete Contacts - Store [2 Hrs]

and Retire data's in Internal and ExternalStorage – SQLite - Creating and using databases [2 Hrs]

ANDROID SERVICE :

Consuming Web service using HTTP , downloading binary Data –Downloading Text [2 Hrs]

Content – Accessing Web Service [2 Hrs]

CROSS PLATFORM APP DEVELOPMENT :

Cross platform application development tools and their features: [2 Hrs]

Tests And Model Exam [9 hrs]

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Mobile Computing	Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal	TMGH, New Delhi Second Edition 2011
2.	Beginning Android 4 Application Development	Wei-MengLee	Wiley India Edition 2012

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Beginning Android Programming with Android Studio	J. F. DiMarzio	4th Edition (2016) - Wiley
2.	Wireless Communication and Networks	William Stallings	PHI , New Delhi First Edition 2002

LEARNING WEBSITE

1. http://www.tutorialspoint.com/android/
2. Developer.android.com/training/basics/firstapp
3. www.telerik.com/android-development
4. www.appmakr.com/Android

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks
	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D533.1	3	3	2	2	2	2	2	3	2	2
D533.2	3	3	2	2	2	2	2	3	2	2
D533.3	3	3	2	2	2	2	2	3	2	2
D533.4	3	3	2	2	2	2	2	3	2	2
D533.5	3	3	2	2	2	2	2	3	2	2
D533Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

QUESTION PAPER SETTING

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Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

****

CTD540 PYTHON PROGRAMMING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Course	Instruction		Examination			
Python Programming Practical	Hours/ Week	Hours/ Semester	Marks			
	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program from Part A and one program from part B

S.No	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program (PART–A)	20
4	Executing program (PART– B)	20
5	Result with printout(PART–A)	5
6	Result with printout(PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	10

COURSE DESCRIPTION:

To write, debug and run programs in Python to understand the basic concepts of industry standard modern programming language.

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement:

1. Desktop Computers - 30 Nos.
2. Printer – 1 No

Software Requirement:

1. Windows / Linux Operating System
2. Python (To run as interactive mode and IDLE mode)

OBJECTIVES:

On completion of the following experiments, the students must be able to

- To write, tests and debug simple Python programs
- To Implement Python Programs with conditionals and Loops
- To use functions for structuring Python Programs
- To implement string manipulation functions using Python Program
- To implement List and its built-in functions and methods
- To implement Tuples and passing tuple as arguments
- To create Python Dictionaries and updating DictionariesCurriculum Development Centre.
- To develop programs to read and write data from or to files in Python
- To Develop programs with Exception Handling

COURSE OUTCOMES:

Course	**CTD540 PYTHON PROGRAMMING PRACTICAL**
After successful completion of this course, the students should be able to	
D540.1	Creating a python program with conditions and loops.
D540.2	Implement functions and manipulation using python
D540.3	Implement string manipulation functions ,built in functions and methods
D540.4	Implement tuples and passing tuples and arguments.
D540.5	Create python dictionaries,updating and develop the Mini Project with report

CTD540 PYTHON PROGRAMMING PRACTICAL

List of experiments to be conducted

Part A

1 i) Write a Python program to compute GCD of two numbers

ii) Write a Python Program to print prime numbers in the given range

2 i) Write a Python Program to check the given year is leap year or not.

ii) Write a Python Program to print Armstrong numbers between given range.

3 i) Write a Python Program to do basic trim and slice operations on String.

ii) Write a Python Program to accept line of text and find the number of characters, vowels and blank spaces on it

4 i) Write a Python Program using function to display all such numbers which is divisible by 3 but are not multiple of 5 in a given range.

ii) Write a Python Program using recursion to print 'n' terms in Fibonacci series.

5 Write a Python Program to add 'ing' at the end of a given string if the string has 3 or more characters. If the given string is already ends with 'ing' then add 'ly' instead. If the string has less than 3 characters, leave it unchanged.

6 Write a Python program to find minimum and maximum of a list of numbers

7 Write a Python program to display a list in reverse order.

8 Write a Python Program to print the first half values of tuple in one line and last half values in next line.

Part B

9 Write a Python Program to take a list of words and return the length of the longest one using string.

10 Write a Python Program to find an element in a given set of elements using Linear Search

11 Write a Python Program to sort a set of elements using Selection sort.

12 Write a Python Program to multiply two matrices.

13 Write a Python program to demonstrate different operations on Tuple.

14 Write a Python Program to demonstrate to use Dictionary and related functions.

15 Write a Python Program to copy file contents from one file to another and display number of words copied.

16 Write a program using a while loop that asks the user for a number, and prints a count down from that number to zero.

17 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

Continuous Internal Assessment

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. https://www.learnpython.org
2. https://www.tutorialspoint.com/python

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D540.1	3	3	3	3	3	3	3	3	3	3
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D540.3	3	3	3	3	3	3	3	3	3	3
D540.4	3	3	3	3	3	3	3	3	3	3
D540.5	3	3	3	3	3	3	3	3	3	3
D540 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substantial (high)

CTD540 PYTHON PROGRAMMING PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	i) Write a Python program to compute GCD of two numbers ii) Write a Python Program to print prime numbers in the given range	D540.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	i) Write a Python Program to check the given year is leap year or not. ii) Write a Python Program to print Armstrong numbers between given range.	D540.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	i) Write a Python Program to do basic trim and slice operations on String. ii) Write a Python Program to accept line of text and find the number of characters, vowels and blank spaces on it	D540.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	i) Write a Python Program using function to display all such numbers which is divisible by 3 but are not multiple of 5 in a given range. ii) Write a Python Program using recursion to print 'n' terms in Fibonacci series.	D540.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Write a Python Program to add 'ing' at the end of a given string if the string has 3 or more characters. If the given string is already ends with 'ing' then add 'ly' instead. If the string has less than 3 characters, leave it unchanged.	D540.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Write a Python program to find minimum and maximum of a list of numbers	D540.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Write a Python program to display a list in reverse order.	D540.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Write a Python Program to print the first half values of tuple in one line and last half values in next line.	D540.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Write a Python Program to take a list of words and return the	D540.3	PO1,PO2,PO3,PO4,

	length of the longest one using string.		PO5,PO6,PO7
10	Write a Python Program to find an element in a given set of elements using Linear Search	D540.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Write a Python Program to sort a set of elements using Selection sort.	D540.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Write a Python Program to multiply two matrices.	D540.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	Write a Python program to demonstrate different operations on Tuple.	D540.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Write a Python Program to demonstrate to use Dictionary and related functions.	D540.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Write a Python Program to copy file contents from one file to another and display number of words copied.	D540.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Write a program using a while loop that asks the user for a number, and prints a countdown from that number to zero.	D540.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
17	Mini Project	D540.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD550 CLOUD COMPUTING AND INTERNET OF THINGS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Course	Instruction		Examination			
Cloud Computing and Internet of Things Practical	Hours/ Week	Hours/ Semester	Marks			
	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:
Students should write one program from PART A and one program from PART B

S.No	DESCRIPTION	MARKS
1	Writing answer for any one program fromPART–A	15
2	Writing answer for any one program from PART–B	20
3	Executing program(PART–A)	20
4	Executing program(PART– B)	20
5	Result with printout(PART–A)	5
6	Result with printout(PART–B)	5
7	VIVA–VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

1. To understand the Key concepts of virtualization.
2. To implement the various deployment models such as private, public, hybrid and community with SaaS, Iaas and Paas.
3. To train student show to design and program the Cloud based IoT based system.
4. To understand innovative application's needs such as Smart City, Smart Health, Smart Manufacturing, Smart Agriculture, etc.
5. To build industry capable talent, start-up community and entrepreneurial ecosystem for IoT.

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement:

1. Arduino kit – 10 Numbers
2. Node MCU / Raspberry Pi – 10 Numbers
3. LED Blub – 10 Numbers
4. 330K Resistor– 10 Numbers
5. Push Button – 10 Number
6. Servo Motor 5 V DC – 10 Numbers
7. 5V DC Relay – 10 Numbers
8. Mini Bread Board – 10 Numbers
9. 16x2 LCD Display – 10 Numbers
10. IR Sensor –10 Numbers
11. LM35 Temperature Sensor- 10 Numbers
12. Connecting Wires

Software Requirement:

1. Arduino SDK

OBJECTIVES :

On completion of the following exercises, the students must be able to

- Adapt different types of virtualization and increase resource utilization.
- Build a private cloud using open source technologies.
- Explain the concept and Application of Internet of Things
- Application of IOT in automation of Commercial and Real-World examples
- Design a simple IOT system comprising sensors, edge devices and wireless network connections involving prototyping, programming and data analysis

Course	CTD550 CLOUD COMPUTING AND INTERNET OF THINGS PRACTICAL
After successful completion of this course, the students should be able to	
D550.1	Develop and apply types of virtualization and increase resource utilization.
D550.2	Create and build a private cloud using open source technologies.
D550.3	Develop a program using the concept and application of Internet of Things
D550.4	Create a application of IOT in automation of commercial and real-world examples
D550.5	Design a simple IOT system comprising sensors, edge devices and wireless network connections involving prototyping, programming ,data analysis and develop the Mini Project with report

CTD 550 CLOUD COMPUTING AND INTERNET OF THINGS PRACTICAL

List of experiments to be conducted

Part A

1 To implement program on SaaS to Create an word document of your class time table and store locally and on cloud with doc and pdf format

2 To implement program on SaaS to Create a spread sheet to generate a mark sheet for student progress report..

3 To implement web services by create your BlogSpot and Collaborating via Wikis

4 To implement on PaaS to Install Google App Engine, create a program to validate user; create a database login(username, password)in mysql and deploy to cloud

5 Install Virtual box / Vmware Workstation with different flavours of linux or windows OS on top of windows7 or 8.

6 Install OpenStack and use it as Infrastructure as a Service and use technology own Cloud

7 Case Study on any one Open source and commercial Cloud-Microsoft Azure , Eucalyptus , Amazon EC2

Part B

8 To implement LED Blink and LED Pattern With Arduino

9 To implement LED Pattern with Push Button Control With Arduino

10 To display “Hello World “ in LCD 16X2 Display With Arduino

11 To implement the Servo Motor Control with Arduino

12 To implement and monitor the LM35 Temperature Sensor and Ultrasonic Distance Measurement With Arduino

13 To implement the IR Sensor Analog Input With Arduino

14 Using ThinkSpeak Cloud Reading Temperature Sensor Monitoring with NodeMCU Raspberry Pi

15 To implement web services by creating website and collabrating with cloud.

16 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. https://www.wiley.com/
2. https://www.igi-global.com

CO- POs & PSOs MAPPING MATRIX.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D550.1	3	3	3	3	3	3	3	3	3	3
D550.2	3	3	3	3	3	3	3	3	3	3
D550.3	3	3	3	3	3	3	3	3	3	3
D550.4	3	3	3	3	3	3	3	3	3	3
D550.5	3	3	3	3	3	3	3	3	3	3
D550 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1- Slight (low)
Correlation level 2- Moderate (Medium)
Correlation level 3- Substantial (high)

QUESTION PAPER SETTING

The teaching leering process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

CTD 550 CLOUD COMPUTING AND INTERNET OF THINGS

PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	To implement program on SaaS to Create an word document of your class time table and store locally and on cloud with doc and pdf format	D550.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	To implement program on SaaS to Create a spread sheet to generate a mark sheet for student progress report..	D550.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	To implement web services by create your BlogSpot and Collaborating via Wikis	D550.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	To implement on PaaS to Install Google App Engine, create a program to validate user; create a database login(username, password)in mysql and deploy to cloud	D550.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Install Virtual box / Vmware Workstation with different flavours of linux or windows OS on top of windows7 or 8.	D550.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Install OpenStack and use it as Infrastructure as a Service and use technology own Cloud	D550.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Case Study on any one Open source and commercial Cloud-Microsoft Azure , Eucalyptus , Amazon EC2	D550.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	Part B		
8	To implement LED Blink and LED Pattern With Arduino	D550.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	To implement LED Pattern with Push Button Control With Arduino	D550.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	To display “Hello World “ in LCD 16X2 Display With Arduino	D550.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	To implement the Servo Motor Control with Arduino	D550.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	To implement and monitor the LM35 Temperature Sensor and Ultrasonic Distance Measurement With Arduino	D550.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	To implement the IR Sensor Analog Input With Arduino	D550.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Using ThinkSpeak Cloud Reading Temperature Sensor Monitoring with NodeMCU /Raspberry Pi	D550.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	To implement web services by creating website and collabrating with cloud.	D550.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Mini Project	D550.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD561 COMPONENT BASED TECHNOLOGY PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Course	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
Component Based Technology Practical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

*Examinations will be conducted for 100 marks and it will be reduced to 75 marks

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program from PART A and one program from PART B

S.No	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program(PART–A)	20
4	Executing program(PART– B)	20
5	Result with printout(PART–A)	5
6	Result with printout(PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

Develop and execute simple programs using C#.NET Understand the concepts of event handlers. Know the usage of various C#.NET controls Create C#.NET applications using menus. Access SQL database by using ADO.NET Use Form controls. Create Window applications using C#.NET form controls Use web controls. Create web pages using ASP.NET Develop XML database handling methodologies

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement:

1. Desktop Computers – 30 Nos
2. Printer – 1 No

Software Requirement:

1.Visual Studio 2008/2012/2013/2015

2. Microsoft SQL Server 2005/2008 or above

OBJECTIVES:

On completion of the following exercises, the students must be able to

- Develop and execute simple programs using C#.NET
- Understand the concepts of event handlers.
- Know the usage of various C#.NET controls
- Create C#.NET applications using menus.
- Access SQL database by using ADO.NET
- Use Form controls.
- Create Window applications using C#.NET form controls
- Use web controls.
- Create web pages using ASP.NET
- Develop XML database handling methodologies

Course	**CTD561 COMPONENT BASED TECHNOLOGY PRACTICAL**
After successful completion of this course, the students should be able to	
D561.1	Develop and execute simple programs using C#.NET
D561.2	Create simple applications using menus.
D561.3	Develop and access SQL database by using ADO.NET Use Form controls
D561.4	Create web pages using ASP.NET
D561.5	Create simple applications XML database handling methodologies and develop the Mini Project with report

CTD561 COMPONENT BASED TECHNOLOGY PRACTICAL

List of experiments to be conducted

Part A

1 Accept a character from console and check the case of the character

2 Write a program to accept any character from keyboard and display whether it is vowel or not

3 Write a program to implement a calculator with memory and recall operations

4 Develop a form in to pick a date from Calendar control and display the day, month, and year details in separate text boxes

5 Develop a application using the File and Directory controls to implement a common dialog box

6 Develop a database application to store the details of students using ADO.NET

7 Create a simple ASP.NET page to Output Text with a form, two HTML text boxes, an HTML button, and an HTML element. Create an event procedure for the button

Part B

8 Develop a menu based application to implement a text editor with cut, copy, paste, save and close operations with accessing and shortcut keys.

9 Develop an application to perform timer based quiz of 5 questions.

10 Develop a database application using ADO.NET to insert, modify, update and delete operations.

11 Develop a application using Datagrid to add, edit and modify records.

12 Develop a web application to input data through a web form to a database and validate the data. Use the Required Field Validator and Range Validator Controls

13 Develop a Window application to read an XML document containing subject, mark scored, year of passing into a Dataset

14 Develop a Window application to read students records from Database using ADO.NET and generate XML document containing students records

15 Develop application using data grid to display records.

16 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES:

1. https://www.inspirenignite.com
2. https://www.ncbi.nlm.nih.gov
3. https://www.elegantthemes.com
4. https://geekflare.com

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D561.1	3	3	3	3	3	3	3	3	3	3
D561.2	3	3	3	3	3	3	3	3	3	3
D561.3	3	3	3	3	3	3	3	3	3	3
D561.4	3	3	3	3	3	3	3	3	3	3
D561.5	3	3	3	3	3	3	3	3	3	3
D561Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

CTD561 COMPONENT BASED TECHNOLOGY PRACTICAL

MODEL QUESTION PAPER

S.No	Part A	CO	PO
1	Accept a character from console and check the case of the character	D561.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Write a program to accept any character from keyboard and display whether it is vowel or not	D561.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Write a program to implement a calculator with memory and recall operations	D561.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Develop a form in to pick a date from Calendar control and display the day, month, and year details in separate text boxes	D561.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Develop a application using the File and Directory controls to implement a common dialog box	D561.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Develop a database application to store the details of students using ADO.NET	D561.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Create a simple ASP.NET page to Output Text with a form, two HTML text boxes, an HTML button, and an HTML element. Create an event procedure for the button	D561.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Develop a menu based application to implement a text editor with cut, copy, paste, save and close operations with accessing and shortcut keys.	D561.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Develop an application to perform timer based quiz of 5 questions.	D561.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Develop a database application using ADO.NET to insert, modify, update and delete operations.	D561.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Develop a application using Datagrid to add, edit and modify records.	D561.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7

12	Develop a web application to input data through a web form to a database andvalidate the data. Use the Required Field Validator and RangeValidator Controls	D561.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	Develop a Window application to read an XML document containing subject, mark scored, year of passing into a Dataset	D561.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Develop a Window application to read students records from Database using ADO.NET and generate XML document containing students records	D561.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Develop application using data grid to display records.	D561.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
16	Mini Project	D561.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD562 DATA ANALYTICS USING PYTHON PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Course	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
Data Analytics Using Python Practical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program from PART A and one program from PART B

S.NO	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program (PART–A)	20
4	Executing program (PART– B)	20
5	Result with printout(PART–A)	5
6	Result with printout(PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

This course provides the students the foundations for data analytics with python. The syllabus is designed to provide exposure to practical systems and software used in data analysis. The course explains data science techniques and the various Python programming packages required to prepare data for analysis, perform data analytics and create meaningful data visualization.

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement:

1. Desktop Computers – 30 Nos
2. Printer – 1 No

Software Requirement:

1. Python
2. Microsoft Excel

OBJECTIVES :

On completion of the following exercises, the students must be able to

- To familiarize with the Python NumPy library for array processing.
- To utilize the Pandas packages in Python for exploratory data analytics.
- To explore some of the real world applications of Machine learning techniques
- To create informative visualizations with matplotlib to identify patterns

COURSE OUTCOMES:

Course	**CTD562 DATA ANALYTICS USING PYTHON PRACTICAL**
After successful completion of this course, the students should be able to	
D562.1	Develop, apply and Python NumPy library for array processing.
D562.2	Create informative visualizations with matplotlib to identify patterns
D562.3	Utilize the Pandas packages in Python for exploratory data analytics.
D562.4	Develop the real world applications of Machine learning techniques
D562.5	Apply the handling missing data,duplicates and develop the Mini Project with report

CTD 562 DATA ANALYTICS USING PYTHON PRACTICAL

List of experiments to be conducted

PART A

1 Basic data structures in NumPy

a. Create a List, set, tuple and dictionary which stores the details of a student (rollno, name , dept, branch, percentage of mark) in Python and print the values.

b. Convert the list and tuple as NumPy array.

2 Arrays in NumPy

a. Create arrays using different intrinsic methods (ones, zeros, arange, linspace, indice) and print their values.

b. Check the results of arithmetic operations like add(), subtract(), multiply() and divide() with arrays created using arange and ones intrinsic method.

c. Check the results of mathematical operations like exp(), sqrt(), sin(), cos(), log(), dot() on an array created using rrange intrinsic method.

3 Built-in functions in NumPy.

a. Load your class Marklist data from a csv (comma separated value) file into an array. Perform the following operations to inspect your array. Len(), ndim, size, dtype, shape, info()

b. Apply the aggregate functions on this data and print the results. (Functions like min(), max(), cumsum(), mean(), median(), corrcoef(), std())

4 Handling Multiple Arrays

a. Create two python NumPy arrays (boys, girls) each with the age of nstudents in the class.

b. Get the common items between two python NumPy arrays.

c. Get the positions where elements of two arrays match.

d. Remove from one array those items that exist in another.

e. Extract all numbers between a given range from a NumPy array.

5 5 Array Slicing in NumPy

a.Load your class Marklist data into an array called “marks” to store students roll_num, subject marks and result.

b.Split all rows and all columns except the last column into an array called “features”.

c.Split the marks array into 3 equal-sized sub-arrays each for 3 different subject marks.

d. Split the last column into an array “label”.

e. Delete the roll_num column from the marks array and insert a new column student name in its place.

6 Indexing & Sorting in NumPy

a. Load your class Marklist data from a csv file into an array.

b. Access the mark of a student in a particular subject using indexing techniques.

c. Sort the student details based on Total mark

d. Select a subset of 2D array using fancy indexing (indexing using integer arrays)

e. Print student details whose total marks is greater than 250 using Boolean indexing.

7 Handing Two dimensional array in NumPy

a. Import iris dataset with numbers and texts keeping the text intact into python NumPy

b. Convert the 1D iris to 2D array (iris2d) by omitting the species text field

c. Find the number and position of missing values in iris2d’s sepal_length

d. Insert np.nan values at 20 random positions in iris 2d dataset

e. Filter the rows of iris2d that has petal_length > 1.5 and sepal_length < 5.0

PART-B

8 Working with a Series

a. Create a series using list and dictionary

b. Create a series using NumPy functions in Pandas

c. Print the index and values of series

d. Print the first and last few rows from the series

9 Working with Data Frame Columns

a. Create and print a DataFrame.

b. Find the descriptive statistics for each column.

c. Group the data by the values in a specified column, values in the index.

d. Set Index and columns in a DataFrame.

e. Rename columns and drop columns

f. Select or filter rows based on values in columns.

g. Select single and multiple columns with specific names

10. Working with DataFrame Rows

a. Slicing DataFrame using loc and iloc.

b. Filter multiple rows using isin.

c. Select first n rows and last n rows

d. Select rows randomly n rows and fractions of rows (use df.sample method)

e. Count the number of rows with each unique value of variables

f. Select nlargest and nsmallest values.

g. Order/sort the rows

11. Handling missing data and duplicates

a. Identify rows with missing data (isnull(), notnull()) and replace NA/Null data with a given value.

b. Drop rows and columns with any missing data (dropna(), dropna(1))

c. Find duplicate values and drop duplicates.

d. Fill the missing values using forward filling and backward filling.

E.Replace the missing value with new value and write the dataframe to a CSV file inthe local directory

12 Merge and combine data

a. Perform the append, concat and combine_first operations on DataFrames.

b. Apply different types of merge on data

c. Use a query method to filter DataFrame with multiple conditions.

Perform the following exercises using Pandas matplotlib

13 Consider the Salary dataset, which contains 30 observations consisting of years of working experience and the annual wage (in dollars).

a. Create a linear plot to identify the relationship between years of working experience and the annual wages with suitable title , legend and labels.

b. Create a scatter plot to identify the relationship between years of working experience and the annual wages with title , legend and labels.

c.Also distinguish between observations that have more than 5 years of working experience and observations that have less than 5 years of working experience by using different colors in one single plot.

14 Consider the Iris dataset, where observations belong to either one of three iris flower classes.

a. Visualize the average value for each feature of the Setosa iris class using a barchart

b. Format the obtained bar graph by Changing the color of each bar, Change the Edgecolor , Linewidth and Line style.

15 **Consider the Iris dataset, where observations belong to either one of three iris flower classes.**

a. Visualize the Histogram for each feature (Sepal Length, Sepal Width,petal Length & petal Width) separately with suitable bin size and color.

b. Plot the histograms for all features using subplots to visualize all histograms in one single plot. Save the plot as JPEG file

c. Plot the boxplots for all features next to each other in one single plot.

16 Convert the index of a series into a column of a dataframe using Pandas

17 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance : **05 Marks**
(Award of marks same as theory courses)

c. Procedure/ observation and tabulation/
Other Practical related Work : **05 Marks**

c) Tests# : **10 Marks**

d) Student Centered Learning (SCL) work sheet : **05 Marks**

TOTAL **25 Marks**

LEARNING WEBSITES

1. https://www.learnpython.org
2.https://www.tutorialspoint.com/python

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D562.1	3	3	3	3	3	3	3	3	3	3
D562.2	3	3	3	3	3	3	3	3	3	3
D562.3	3	3	3	3	3	3	3	3	3	3
D562.4	3	3	3	3	3	3	3	3	3	3
D562.5	3	3	3	3	3	3	3	3	3	3
D562Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1- Slight (low)
Correlation level 2- Moderate (Medium)
Correlation level 3- Substantial (high)

CTD562 DATA ANALYTICS USING PYTHON PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	**Basic data structures in NumPy**	D562.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Create a List, set, tuple and dictionary which stores the details of a student (rollno,name , dept, branch, percentage of mark) in Python and print the values.		
	b. Convert the list and tuple as NumPy array.		
2	**Arrays in NumPy**	D562.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Create arrays using different intrinsic methods (ones, zeros, rrange, linspace, indice) and print their values.		
	b.Check the results of arithmetic operations like add(), subtract(), multiply() and divide() with arrays created using rrange and ones intrinsic method.		
	c.Check the results of mathematical operations like exp(), sqrt(), sin(), cos(), log(), dot() on an array created using rrange intrinsic method.		
3	**Built-in functions in NumPy.**	D562.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Load your class Marklist data from a csv (comma separated value) file into an array. Perform the following operations to inspect your array. Len(), ndim, size, dtype, shape, info()		
	b. Apply the aggregate functions on this data and print the results. (Functions like min(), max(), cumsum(), mean(), median(), corrcoef(), std())		
4	**Handling Multiple Arrays**	D562.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Create two python NumPy arrays (boys, girls) each with the age of nstudents in the class.		
	b. Get the common items between two python NumPy arrays.		
	c. Get the positions where elements of two arrays match.		
	d. Remove from one array those items that exist in		

	another.		
	e. Extract all numbers between a given range from a NumPy array.		
5	**5 Array Slicing in NumPy**	D562.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a.Load your class Marklist data into an array called "marks" to store students roll_num, subject marks and result.		
	b.Split all rows and all columns except the last column into an array called "features".		
	c.Split the marks array into 3 equal-sized sub-arrays each for 3 different subject marks.		
	d. Split the last column into an array "label".		
	e. Delete the roll_num column from the marks array and insert a new column student name in its place.		
6	**Indexing & Sorting in NumPy**	D562.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Load your class Marklist data from a csv file into an array.		
	b. Access the mark of a student in a particular subject using indexing techniques.		
	c. Sort the student details based on Total mark		
	d. Select a subset of 2D array using fancy indexing (indexing using integer arrays)		
	e. Print student details whose total marks is greater than 250 using Boolean indexing.		
7	**Handing Two dimensional array in NumPy**	D562.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Import iris dataset with numbers and texts keeping the text intact into python NumPy		
	b. Convert the 1D iris to 2D array (iris2d) by omitting the species text field		
	c. Find the number and position of missing values in iris2d's sepal_length		
	d. Insert np.nan values at 20 random positions in iris 2d dataset		
	e. Filter the rows of iris2d that has petal_length > 1.5 and sepal_length < 5.0		

8	**Working with a Series**	D562.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Create a series using list and dictionary		
	b. Create a series using NumPy functions in Pandas		
	c. Print the index and values of series		
	d. Print the first and last few rows from the series		
9	**Working with Data Frame Columns**	D562.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Create and print a DataFrame.		
	b. Find the descriptive statistics for each column.		
	c. Group the data by the values in a specified column, values in the index.		
	d. Set Index and columns in a DataFrame.		
	e. Rename columns and drop columns		
	f. Select or filter rows based on values in columns.		
	g. Select single and multiple columns with specific names		
10.	**Working with DataFrame Rows**	D562.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Slicing DataFrame using loc and iloc.		
	b. Filter multiple rows using isin.		
	c. Select first n rows and last n rows		
	d. Select rows randomly n rows and fractions of rows (use df.sample method)		
	e. Count the number of rows with each unique value of variables		
	f. Select nlargest and nsmallest values.		
	g. Order/sort the rows		
11.	**Handling missing data and duplicates**	D562.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Identify rows with missing data (isnull(), notnull()) and replace NA/Null data with a given value.		
	b. Drop rows and columns with any missing data (dropna(), dropna(1))		
	c. Find duplicate values and drop duplicates.		
	d. Fill the missing values using forward filling and backward filling.		
	E.Replace the missing value with new value and write the dataframe to a CSV file inthe local directory		

12	**Merge and combine data**	D562.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Perform the append, concat and combine_first operations on DataFrames.		
	b. Apply different types of merge on data		
	c. Use a query method to filter DataFrame with multiple conditions.		
	Perform the following exercises using Pandas matplotlib		
13	**Consider the Salary dataset, which contains 30 observations consisting of years of working experience and the annual wage (in dollars).**	D562.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Create a linear plot to identify the relationship between years of working experience and the annual wages with suitable title , legend and labels.		
	b. Create a scatter plot to identify the relationship between years of working experience and the annual wages with title , legend and labels.		
	c.Also distinguish between observations that have more than 5 years of working experience and observations that have less than 5 years of working experience by using different colors in one single plot.		
14	**Consider the Iris dataset, where observations belong to either one of three iris flower classes.**	D562.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Visualize the average value for each feature of the Setosa iris class using a barchart		
	b. Format the obtained bar graph by Changing the color of each bar, Change the Edgecolor , Linewidth and Line style.		
15	**Consider the Iris dataset, where observations belong to either one of three iris flower classes.**	D562.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Visualize the Histogram for each feature (Sepal Length, Sepal Width,petal Length & petal Width) separately with suitable bin size and color.		
	b. Plot the histograms for all features using subplots to visualize all histograms in one single plot. Save the plot as JPEG file		

	c. Plot the boxplots for all features next to each other in one single plot.		
16	Convert the index of a series into a column of a dataframe using Pandas	D562.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
17	Mini Project	D562.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD563 MOBILE COMPUTING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Course	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
Mobile Computing Practical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program from **PART A** and one program from **PART B**

S.NO	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program(PART–A)	20
4	Executing program(PART– B)	20
5	Result with printout(PART–A)	5
6	Result with printout(PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

The Mobile Computing Lab studies design principles and evaluation methodologies for understanding and building systems support mechanisms for mobile computing systems including mobile adhoc and sensor networks for achieving the goal of anytime, anywhere computing in wireless mobile environments. The primary research focuses of the Mobile Application development practical are in mobility management, data and service management, security and dependability aspects in mobile computing environments.

HARDWARE AND SOFTWARE REQUIREMENTS:

Hardware Requirement:

1. DesktopComputers – 30 Nos
2. Printer – 1 No

Software Requirement:

1.Android Studio / Netbeans /Eclipse
2.Android ATD
3.Android SDK
4.JDK 6.0 or above

OBJECTIVES :

On completion of the following exercises, the students must be able to

- Provide a solid foundation and skills for programming to create applications for Mobile Devices
- Install, configure and use Android development environment.Curriculum Development Centre,
- To Learn about Basic Mobile Application Development tools
- To learn How to create interactive applications in android with multiple activities
- Create Mobile Application using SQLite Database

COURSE OUTCOMES:

Course	**CTD563 MOBILE COMPUTING PRACTICAL**
After successful completion of this course, the students should be able to	
D563.1	Develop, apply and to create applications for Mobile Devices
D563.2	Create Mobile Application using SQLite Database
D563.3	Configure and use Android development environment. Curriculum Development Centre
D563.4	Create interactive applications in android with multiple activities
D563.5	Demonstrate the application of intent class and develop the Mini Project with report

CTD563 MOBILE COMPUTING PRACTICAL

List of experiments to be conducted

Part A

1 Write a program to demonstrate activity(Application Life Cycle)
2 Write a program to demonstrate different types of layouts
3 Write a program to implement simple calculator using text view, edit view, option button and button
4 Write a program to demonstrate list view
5 Write a program to display Text in Text View using different Font Style
6 Write a program to demonstrate AutoComplete Text View
7 Write a program to demonstrate Image Button View

Part B

1. Write a program to demonstrate Date picker and time picker
2. Develop an simple application with context menu and option menu
3. Develop an application to send SMS
4. Write a program to view ,edit, contact
5. Write a program to send e-mail
6. Write a program to display map of given location/position using map view
7. Write a program to demonstrate the application of intent class
8. Write a program to demonstrate SQLite (Create Database , table , insert ,update, delete and view records)
9. To develop a Simple Android Application that uses GUI components, Font and Colors.
10. Mini Project

    The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**
TOTAL		**25 Marks**

LEARNING WEBSITES:

1. https://www.rit.edu
2. https://www.coursera.org
3. https://www.researchgate.net
4. https://er.educause.edu

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D563.1	3	3	3	3	3	3	3	3	3	3
D563.2	3	3	3	3	3	3	3	3	3	3
D563.3	3	3	3	3	3	3	3	3	3	3
D563.4	3	3	3	3	3	3	3	3	3	3
D563.5	3	3	3	3	3	3	3	3	3	3
D563Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substantial (high)

CTD563 MOBILE COMPUTING PRACTICAL

MODEL QUESTION PAPER

S.No	Part A	CO	PO
1	Write a program to demonstrate activity(Application Life Cycle)	D563.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Write a program to demonstrate different types of layouts	D563.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Write a program to implement a calculator with memory and recall operations	D563.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Write a program to implement simple calculator using text view, edit view, option button and button	D563.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Write a program to demonstrate list view	D563.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Write a program to display Text in Text View using different Font Style	D563.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Write a program to demonstrate AutoComplete Text View	D563.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Write a program to demonstrate Image Button View	D563.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	Part B		
1.	Write a program to demonstrate Date picker and time picker	D563.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Develop an simple application with context menu and option menu	D563.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Develop an application to send SMS	D563.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Write a program to view ,edit, contact	D563.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Write a program to send e-mail	D563.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

6	Write a program to display map of given location/position using map view	D563.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Write a program to demonstrate the application of intent class	D563.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Write a program to demonstrate SQLite (Create Database , Table , Insert ,Update, Delete and view records)	D563.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	To develop a Simple Android Application that uses GUI components, Font and Colors.	D563.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Mini Project	D563.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD570 ENTERPRENEURSHIP AND START-UPS

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Entrepreneurship and start-ups	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	4	64	25	100*****	100	3 Hrs

***Examinations will be conducted for 100 marks will be reduced to 75 marks.**

TOPICS AND ALLOCATIONS:

UNIT	TOPICS	NO. OF HOURS
I	Entrepreneurship – Introduction and Process	10
II	Business Idea and Banking	10
III	Start ups, E-cell and Success Stories	10
IV	Pricing and Cost Analysis	10
V	Business Plan Preparation	10
	Field Visit and preparation of case study report	14
	TOTAL	**64**

COURSE DESCRIPTION:

Development of a diploma curriculum is a dynamic process responsive to the society and reflecting the needs and aspiration of its learners. Fast changing society deserves changes in educational curriculum particularly to establish relevance to emerging socio- economic environments; to ensure equity of opportunity and participation and finally promoting concern for excellence. In this context the course on entrepreneurship and start ups aims at instilling and stimulating human urge for excellence by realizing individual potential for generating and putting to use the inputs, relevant to social prosperity and thereby ensure good means of living for every individual, provides jobs and develop Indian economy.

OBJECTIVES:

At the end of the study of 5th semester the students will be able to

- Excite the students about entrepreneurship
- Acquiring Entrepreneurial spirit and resourcefulness
- Understanding the concept and process of entrepreneurship
- Acquiring entrepreneurial quality, competency and motivation
- Learning theprocessandskills of creationand management of entrepreneurial venture
- Familiarization with various uses of human resource for earning dignified means of living
- Know its contribution in and role in the growth and development of individual and the nation
- Understand the formation of E-cell
- Survey and analyze the market to understand customer needs
- Understand the importance of generation of ideas and product selection
- Learn the preparation of project feasibility report
- Understand the importance of sales and turnover
- Familiarization of various financial and non financial schemes
- Aware the concept of incubation and start ups

COURSE OUTCOMES

Course	**ECD570 ENTERPRENEURSHIP AND START-UPS**
After successful completion of this course, the students should be able to	
D570.1	Understand the concept and process of Entrepreneurship.
D570.2	Familiarize about business idea and banking.
D570.3	Understand the formation of E-Cell, startups and success stories.
D570.4	Aware about pricing and cost analysis
D570.5	Learn about the business plan preparation

CTD570 ENTERPRENEURSHIP AND START-UPS

UNIT- I **[10 Hrs]**

ENTREPRENEURSHIP – INTRODUCTION AND PROCESS

Concept, Functions and Importance

Myths about Entrepreneurship

Pros and Cons of Entrepreneurship

Process of Entrepreneurship

Benefits of Entrepreneur

Competencies and characteristics

Ethical Entrepreneurship

Entrepreneurial Values and Attitudes

Motivation

Creativity

Innovation

Entrepreneurs - as problem solvers

Mindset of an employee and an entrepreneur Business Failure – causes and remedies Role of Networking in entrepreneurship

UNIT- II **[10 Hrs]**

BUSINESS IDEA AND BANKING

Types of Business: Manufacturing, Trading and Services.
Stakeholders: sellers, vendors and consumers and Competitors
E- commerce Business Models
Types of Resources - Human, Capital and Entrepreeurial tools and resources
Selection and utilization of human resources and professionals, etc.
Goals of Business; Goal Setting
Patent, copyright and Intellectual property rights
Negotiations - Importance and methods
Customer Relations and Vendor Management
Size and capital based classification of business enterprises
Various sources of Information
Role of financial institutions
Role of Government policy
Entrepreneurial support systems
Incentive schemes for state government
Incentive schemes for Central governments

UNIT- III **[10 Hrs]**

START UPS, E-CELL AND SUCCESS STORIES

Concept of Incubation centre's

Visit and report of DIC , financial institutions and other relevance institutions

Success stories of Indian and global business legends

Field Visit to MSME's

Various sources of Information

Learn to earn

Startup and its stages

Role of Technology – E-commerce and Social Media

Role of E-Cell

E-Cell to Entrepreneurship

UNIT-IV **[10 Hrs]**

PRICING AND COST ANALYSIS

Calculation of Unit of Sale, Unit Price and Unit Cost

Types of Costs - Variable and Fixed, Operational Costs

Break Even Analysis

Understand the meaning and concept of the term Cash Inflow and Cash Outflow

Prepare a Cash Flow Projection

Pricing and Factors affecting pricing

Understand the importance and preparation of Income Statement

Launch Strategies after pricing and proof of concept

Branding-Business name, logo,tag line

Promotion strategy

UNIT - V **[10 Hrs]**

BUSINESS PLAN PREPARATION

Generation of Ideas

Business Ideas vs. Business Opportunities

Selecting the Right Opportunity

Product selection

New product development and analysis

Feasibility Study Report – Technical analysis, financial analysis and commercial analysis

Market Research - Concept, Importance and Process

Marketing and Sales strategy

Digital marketing

Social Entrepreneurship

Risk Taking-Concept

Types of business risks

Field Visit and preparation of case study report [14 Hrs]

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Fundamentals of Entrepreneurship	Dr. G.K. Varshney	Sahitya Bhawan Publications, Agra - 282002
2.	Business Regulatory Framework	Dr. G.K. Varshney	Sahitya Bhawan Publications, Agra - 282002

REFERENCE BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHER WITH EDITION
1.	Entrepreneurship	Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd	McGraw Hill (India) Private Limited, Noida - 201301
2.	Essentials of Entrepreneurship and small business management	M.Scarborough, R.Cornwell	Pearson Education India, Noida -201301
3.	Entrepreneurship Development and Small Business Enterprises	Charantimath Poornima M	Pearson Education, Noida -201301
4.	Innovation Management and New Product Development	Trott	Pearson Education, Noida -201301
5.	A Textbook of Cost and Management Accounting	M N Arora	Vikas Publishing House Pvt. Ltd., NewDelhi-110044
6.	Financial Management	Prasanna Chandra	Tata McGraw Hill education private limited, New Delhi
7.	Indian Banking System	I.V.Trivedi, Renu Jatana	RBSA Publishers, Rajasthan
8.	HOW TO START A BUSINESS IN INDIA	Simon Daniel	BUUKS, Chennai - 600018
9.	The Business Plan Write-Up Simplified	Ramani Sarada	A practitioners guide to writing the business plan, Notion press media Pvt.Ltd.,Chennai-600095

LEARNING WEBSITES:

1. https://www.startupindia.gov.in/
2. https://www.startupcommons.org/what-is-a-startup.html
3. https://www.forbes.com/sites/allbusiness/2018/07/15/35-step-guide-entrepreneurs-starting-a-business/
4. https://www.entrepreneur.com/topic/startups
5. https://www.investopedia.com/terms/s/startup.asp

CONTINUOUS INTERNAL ASSESSMENT:

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks
	Total	-	25 Marks

Note: Two assignments should be submitted. The same must be evaluated and converted to 5marks

Guidelines for assignment:

First assignment – Unit I

Second assignment – Unit II

Guidelines for Seminar presentation – Unit III

Each assignment should have five three marks questions and two five marks questions.

AUTONOMOUS EXAMINATION

Note

1. The students should be taught all units and proper exposure and filed visit also arranged. All the portions should be completed before examinations
2. The students should maintain theory assignment and seminar presentation. The assignment and seminar presentation should be submitted during the Autonomous Practical Examinations.
3. The question paper consists of theory and practical portions .All students should write the answers for theory questions (45 marks) and practical portions (55 marks) should be completed for Autonomous examinations
4. All exercises should be given in the question paper and students are allowed to select by lot. If required the dimension for the exercise may be varied for every batch. No fixed time allotted for each portion and students have the liberty to do the examinations for 3Hrs.
5. For Written Examination: theory question and answer:45 Marks

Ten questions will be asked for 3 marks each. Five questions from each unit 1&2 (10*3=30)

Three questions will be asked for 5 marks each. One questions from each unit 1,2&3 (3*5=15)

6.For Practical Examination: The business plan/Feasibility report or Report on Unit 4&5 should be submitted during the Autonomous practical examinations. The same have to be evaluated for the report submission(40 marks)

DETAILED ALLOCATION OF MARKS

S.NO	DESCRIPTION	MARKS
PART-A	Written Examination- Theory Question and answer (10 questions x 3marks:30 marks) & (3 questions x 5 marks:15 marks)	45
PART B	Practical examination – submission on business plan/ feasibility report or report on unit 4&5	40
PART C	Viva voce	15
	Total	**100**

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D570.1	3	3	2	2	2	2	2	3	2	2
D570.2	3	3	2	2	2	2	2	3	2	2
D570.3	3	3	2	2	2	2	2	3	2	2
D570.4	3	3	2	2	2	2	2	3	2	2
D570.5	3	3	2	2	2	2	2	3	2	2
D570Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substantial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD570 ENTREPRENEURSHIP AND START-UPS

PART-A

MODEL QUESTION PAPER

TIME: 3 Hrs **MARKS: 45**

PART-I (10 X 3= 30 Marks)					
Note: Answer all questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Define entrepreneurship.	I	R	D570.1	POI,PO2,PO3
2	State the process of entrepreneurship.	I	R	D570.1	POI,PO2,PO3
3	What are the benefits of being an entrepreneur?	I	R	D570.1	POI,PO2,PO3
4	How do entrepreneurs act as problem solvers?	I	U	D570.1	POI,PO2,PO3
5	Outline the role of networking in entrepreneurship.	I	U	D570.1	POI,PO2,PO3
6	List the various types of business.	II	R	D570.2	POI,PO2,PO3
7	Outline the business model.	II	U	D570.2	POI,PO2,PO3
8	Suggest the various goals of business.	II	U	D570.2	POI,PO2,PO3
9	How selection of human resources is carried out?	II	U	D570.2	POI,PO2,PO3
10	Specify the role of government policy on entrepreneurship.	II	U	D570.2	POI,PO2,PO3

PART-II (3 X 5 = 15Marks)					
Note: Answer all questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	Describe the importance of innovation on entrepreneurship.	I	An	D570.1	POI,PO2,PO3
12	Enumerate the various incentive schemes for the central government.	II	U	D570.2	POI,PO2,PO3
13	How technology will play a major role in E-commerce?	III	An	D570.3	POI,PO2,PO3

QUESTION PAPER SETTING

The question paper setters are requested to follow the Revised Bloom's Taxonomy levels as Presented below:

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD510 PYTHON PROGRAMMING

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	What are the key features of python?	I	U	D510.1	PO1,PO3
2	What are identity operators?	I	R	D510.1	PO1,PO3
3	Write a python program to print first five odd numbers?	II	An	D510.2	PO1,PO3
4	What are local variables and global variables in python?	II	R	D510.2	PO1,PO3
5	What do you mean by traversing a List?	III	U	D510.3	PO1,PO3
6	Write the difference between List and Tuples?	III	R	D510.3	PO1,PO3
7	List the built-in functions used in tuples.	IV	R	D510.4	PO1,PO3
8	What are the different methods used in deleting elements from dictionary?	IV	R	D510.4	PO1,PO3
9	What are the File Object Attributes?	V	R	D510.5	PO1,PO3
10	Write the syntax for each of basic directory methods.	V	R	D510.5	PO1,PO3

	PART-B (5 X 14 = 70Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain different data type supported by Python.	07	I	U	D510.1	PO1,PO3,PO4
	(ii) How to install and run python?	07	I	U	D510.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain Bitwise operators, Membership Operators with example.	07	I	U	D510.1	PO1,PO3,PO4
	(ii) Write a python program to swap the values of two variables.	07	I	U	D510.1	PO1,PO3,PO4
12	(A) (i) . Explain 'for…else' statement with necessary examples.	07	II	Ap	D510.2	PO1,PO3,PO4
	(ii) Write a program to print all prime numbers in the given range.	07	II	U	D510.2	PO1,PO3,PO4
	(OR)					
	(B) (i) With example, explain composition of functions	07	II	U	D510.2	PO1,PO3,PO4
	(ii) Write a function to display Fibonacci sequence using recursion	07	II	U	D510.2	PO1,PO3,PO4
13	(A).(i) What is string slicing? Illustrate how it is done in Python with example.	07	III	An	D510.3	PO1,PO3,PO4
	(ii) Write a Python code to search a string in the given list.	07	III	Ap	D510.3	PO1,PO3,PO4
	(OR)					
	(B) (i) What do you understand from traversing a List? Give Example.	07	III	U	D510.3	PO1,PO3,PO4
	(ii) Explain the differentwaysof deletingelements fromList.	07	III	U	D510.3	PO1,PO3,PO4
14	(A) (i) Demonstrate with code the various operations that can be performed on tuples.	07	IV	U	D510.4	PO1,PO3,PO4
	(ii) Write notes on built in tuple functions.	07	IV	U	D510.4	PO1,PO3,PO4
	(OR					
	(B) (i) Illustrate with an example how a dictionary is created and updated.	07	IV	U	D510.4	PO1,PO3,PO4
	(ii) List the built-in Dictionary Methods. Explain any four methods.	07	IV	U	D510.4	PO1,PO3,PO4

15	(A) (i) Explain re-naming a file and deleting a file with example.	07	V	U	D510.5	PO1,PO3,PO4
	(ii) Write a program to count the number of words in a Python file.	07	V	U	D510.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain different ways of exception handling in Python with example.	07	V	U	D510.5	PO1,PO3,PO4
	(ii) Write notes on file related methods.	07	V	U	D510.5	PO1,PO3,PO4

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD520 CLOUD COMPUTING AND INTERNET OF THINGS

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Briefly explain the components of cloud.	I	U	D520.1	PO1,PO3
2	What is HighPerformance Computing?	I	U	D520.1	PO1,PO3
3	Expla inSPI framework.	II	An	D520.2	PO1,PO3
4	List few IAAS service providers	II	R	D520.2	PO1,PO3
5	What is security mapping?	III	R	D520.3	PO1,PO3
6	What is Denial of Service risk?	III	U	D520.3	PO1,PO3
7	List IOT functional blocks.	IV	R	D520.4	PO1,PO3
8	List IOT communication models.	IV	R	D520.4	PO1,PO3
9	List any four steps in designing any IOT	V	R	D520.5	PO1,PO3
10	What is the use of GPI Opins in Raspberry Pi?	V	U	D520.5	PO1,PO3

	PART-B (5 X 14 = 70Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain the characteristics of cloud in detail.	07	I	U	D520.1	PO1,PO3,PO4
	(ii) Write notes on origin of cloud computing.	07	I	U	D520.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Discuss the architectural influences of cloud computingin detail.	07	I	U	D520.1	PO1,PO3,PO4
	(ii) Explain the government policies on cloud computing.	07	1	U	D520.1	PO1,PO3,PO4
12	(A) (i) Explain cloud architecture with a neat diagram.	07	II	R	D520.2	PO1,PO3,PO4

	(ii) Explain in detail about Googleapp engine.	07	II	U	D520.2	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain Amazon EC2 as an IaaS provider.	07	II	U	D520.2	PO1,PO3,PO4
	(ii) Explain in detail about hybrid cloud.	07	II	U	D520.2	PO1,PO3,PO4
13	(A).(i) Explain Cloud Security Alliance reference model with a neat diagram.	07	III	U	D520.3	PO1,PO3,PO4
	(ii) Write notes on storage location and tenancy.	07	III	U	D520.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain Security Policy implementation.	07	III	U	D520.3	PO1,PO3,PO4
	(ii) Explain about the virtual threats.	07	III	U	D520.3	PO1,PO3,PO4
14	(A) (i) Explain IoT communication models.	07	IV	U	D520.4	PO1,PO3,PO4
	(ii) Explain about the communication protocols in IoT.	07	IV	U	D520.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain any two levels of an IOT system.	07	IV	U	D520.4	PO1,PO3,PO4
	(ii) Describe in detail about embedded systems.	07	IV	U	D520.4	PO1,PO3,PO4
15	(A) (i) List and briefly explain the steps involved in IOT System	07	V	U	D520.5	PO1,PO3,PO4
	(ii) Explain about domain model specification in IoT.	07	V	U	D520.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the various components and peripherals of Raspberry pi Board.	07	V	U	D520.5	PO1,PO3,PO4
	(ii) Describe in detail about other IOT devices.	07	V	U	D520.5	PO1,PO3,PO4

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

*****

CTD531 COMPONENT BASED TECHNOLOGY

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	List any two features of Visual studio.NET.	I	U	D531.1	PO1,PO3
2	What is a variable? How will you declare it?	I	U	D531.1	PO1,PO3
3	Define event procedure.	II	R	D531.2	PO1,PO3
4	Differentiate system context menu and custom context menu.	II	An	D531.2	PO1,PO3
5	Define ADO.	III	R	D531.3	PO1,PO3
6	Define Data Table Collection.	III	R	D531.3	PO1,PO3
7	What is the use of ASP.NET?	IV	R	D531.4	PO1,PO3
8	What is the purpose of global.Asax file?	IV	U	D531.4	PO1,PO3
9	Define XML.	V	R	D531.5	PO1,PO3
10	What are the important classes of XML?	V	R	D531.5	PO1,PO3

	PART-B (5 X 14 = 70Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain the features of .NET Framework.	07	I	U	D531.1	PO1,PO3, PO4
	(ii) Explain the Architecture of .NET Framework.	07	I	U	D531.1	PO1,PO3, PO4
	(OR)					
	(B) (i) Explain any three decision making statements with example.	07	I	U	D531.1	PO1,PO3, PO4
	(ii) What are the various operators available in C# .NET? Explain	07	I	U	D531.1	PO1,PO3, PO4

	with example					
12	(A) (i) Differentiate Checkbox and Radio button with an example.	07	II	Ap	D531.2	PO1,PO3, PO4
	(ii) .Define Context Menu. Explain the steps to create a context menu.	07	II	U	D531.2	PO1,PO3, PO4
	(OR)					
	(B) (i) Design an application to implement the methods of List box control.	07	II	U	D531.2	PO1,PO3, PO4
	(ii) What is context menu? Create your own Context menu using visual studio.	07	II	U	D531.2	PO1,PO3, PO4
13	(A).(i) Explain the features of ADO.NET.	07	III	An	D531.3	PO1,PO3, PO4
	(ii) Explain the objects in .NET Data provider.	07	III	Ap	D531.3	PO1,PO3, PO4
	(OR)					
	(B) (i) Write your own ADO.NET application with suitable steps and code.	07	III	U	D531.3	PO1,PO3, PO4
	(ii) What are the steps required to create a Stored procedure.	07	III	U	D531.3	PO1,PO3, PO4
14	(A) (i) Define Virtual Directory. List the steps to create a Virtual Directory in IIS	07	IV	U	D531.4	PO1,PO3, PO4
	(ii) What are the major events in GLOBAL.ASAX?	07	IV	U	D531.4	PO1,PO3, PO4
	(OR)					
	(B) (i) Write down the steps to change the properties of Log file.	07	IV	U	D531.4	PO1,PO3, PO4
	(ii) What are server controls and explain it briefly.	07	IV	U	D531.4	PO1,PO3, PO4
15	(A) (i) Explain about browsing and parsing in XML.	07	V	U	D531.5	PO1,PO3, PO4

	(ii) Explain in detail about XML serialization with its architecture diagram.	07	V	U	D531.5	PO1,PO3, PO4
	(OR)					
	(B) (i) Explain briefly about DTD	07	V	U	D531.5	PO1,PO3, PO4
	(ii) Define Schema.Write about the building blocks of schema.	07	V	U	D531.5	PO1,PO3, PO5

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD 532 ARTIFICIAL INTELLIGENCE AND DATA ANALYTICS

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Explain Applications of Artificial Intelligence.	I	R	D532.1	PO1,PO3
2	Write notes on Various types of Knowledge representation	I	R	D532.1	PO1,PO3
3	Draw the mathematical model of a neuron.	II	R	D532.2	PO1,PO3
4	Write notes on Supervised and unsupervised learning.	II	U	D532.2	PO1,PO3
5	List out the major elements of data analytics	III	R	D532.3	PO1,PO3
6	Explain how the filter function works in Numpy Library	III	An	D532.3	PO1,PO5
7	How an Empty Data frame is created in Pandas?	IV	R	D532.4	PO1,PO3
8	Explain Re-indexing in Pandas	IV	R	D532.4	PO1,PO3
9	Write the python code to save the plot as an image with Matplotlib.	V	R	D532.5	PO1,PO3
10	Write the hist() method in data visualization.	V	R	D532.5	PO1,PO3

	PART-B (5 X 14 = 70Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain Breadth First search with an example.	07	I	U	D532.1	PO1,PO3,PO4
	(ii) Explainthe Tic-Tac-Toe problem.	07	I	U	D532.1	PO1,PO2, PO3
	(OR)					
	(B) (i) Elaborate in detail the classification of agents in AI.	07	I	U	D532.1	PO1,PO3,PO4
	(ii) Explain the technological drivers of modern AI.	07	I	U	D532.1	PO1,PO3,PO4
12	(A) (i) What are the steps involved in the machine learning process?	07	II	Ap	D532.2	PO1,PO3,PO4

	(ii) Explain the artificial neural network learning model with a neat sketch.	07	II	U	D532.2	PO1,PO3,PO5
	(OR)					
	(B) (i) Explain the applicationof machine learning in regression problems.	07	II	U	D532.2	PO1,PO3,PO4
	(ii) Explainthe applications of machine learning in Automatic speech	07	II	U	D532.2	PO1,PO3,PO4
13	(A).(i) Explain how a series is different from a 1-D array and dictionary.	07	III	An	D532.3	PO1,PO3,PO4
	(ii) Howto stack two series vertically and horizontally? Give Example.	07	III	Ap	D532.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain with an example how array slicing can be done using Numpy.?	07	III	U	D532.3	PO1,PO3,PO4
	(ii) Write the python code to print the elements of a 1-D array in reverse order.	07	III	U	D532.3	PO1,PO3,PO4
14	(A) (i) Explain how a Data Frame is created using Lists of n-dimensional arrays	07	IV	U	D562.4	PO1,PO3,PO4
	(ii) Explain anytwo ways to handle missing data in Data Frame	07	IV	U	D532.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Write the python code to calculate the frequency of each element in a Pandas series	07	IV	U	D532.4	PO1,PO3,PO4
	(ii) Explain about addingrowsand columnsto the Dataframe in Pandas.	07	IV	U	D532.4	PO1,PO3,PO4
15	(A) (i) Draw histogram program automatically in python with the following frequency of scores 1,1,2,2,2,2,2,3,3,3,3,4,4,5 with range (bins)starting from1to 5.	07	V	U	D532.5	PO1,PO3,PO4
	(ii) How do you plot multiple histograms in python using matplotlib	07	V	U	D532.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Describe matplotlib and its data visualization features in Python.	07	V	U	D532.5	PO1,PO3,PO4
	(ii) Explain about Box plot in detail.	07	V	U	D532.5	PO1,PO3,PO4

QUESTION PAPER SETTING

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Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD533 MOBILE COMPUTING

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Explain Wi-Max	I	AN	D533.1	PO1,PO3
2	Define Cell	I	R	D533.1	PO1,PO3
3	What is ADT Explain?	II	R	D533.2	PO1,PO3
4	What is Smart TV Operating?	II	R	D533.2	PO1,PO3
5	What is an Activity?	III	AN	D533.3	PO1,PO3
6	What is Layout?	III	R	D533.3	PO1,PO3
7	What is the use of Toggle Button?	IV	R	D533.4	PO1,PO3
8	What is the use of CheckBox Group view?	IV	R	D533.4	PO1,PO3
9	What is Content Provider?	V	R	D533.5	PO1,PO3
10	What is LBS?	V	R	D533.5	PO1,PO3

PART-B (5 X 14 = 70Marks)						
Note: Answer all questions choosing A Or B in each question. All questions carry equal marks						
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain the important terminologies of Mobile Computing	07	I	U	D533.1	PO1,PO3,PO4
	(ii) Explain the features of WI-FI and WI-MAX	07	I	U	D533.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the Features of 4G and 5G	07	I	U	D533.1	PO1,PO3,PO4
	(ii) Write notes on RFID.	07	1	U	D533.1	PO1,PO3,PO4
12	(A) (i) Describe about the history and features of Apple Operating Systems	07	II	Ap	D533.2	PO1,PO3,PO4
	(ii) Explain features Smart TV Operating System	07	II	U	D533.2	PO1,PO3,PO4
	(OR)					

	(B) (i) Explain the evaluation of Mobile Operating Systems	07	II	U	D533.2	PO1,PO3,PO4
	(ii) Write notes on the android market application store.	07	II	U	D533.2	PO1,PO3,PO4
13	(A).(i) Explain Dalvik Virtual Machine	07	III	An	D533.3	PO1,PO3,PO4
	(ii) Explain activity life cycle with flow chart.	07	III	Ap	D533.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the architecture of Android.	07	III	U	D533.3	PO1,PO3,PO4
	(ii) How to run an application in the AVD?	07	III	U	D533.3	PO1,PO3,PO4
14	(A) (i) Explain Options Menu with example.	07	IV	U	D533.4	PO1,PO3,PO4
	(ii) Explain different types of dialogs supported by Android.	07	IV	U	D533.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Write an android code to send SMS.	07	IV	U	D533.4	PO1,PO3,PO4
	(ii) Write an android code to make a phone call.	07	IV	U	D533.4	PO1,PO3,PO4
15	(A) (i) Explain the procedure to create android map API Key	07	V	U	D533.5	PO1,PO3,PO4
	(ii) Explain Cross platform application development tools and their features.	07	V	U	D533.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Write a program to store and retrieve records in SQLite database	07	V	U	D533.5	PO1,PO3,PO4
	(ii) Howto download text content using android service?	07	V	U	D533.5	PO1,PO3,PO4

QUESTION PAPER SETTING

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Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD610 COMPUTER HARDWARE AND SERVICING

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Computer Hardware andServicing	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	6	96	25	100*****	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	No.of Hours
I	Motherboard Components	18
II	Memory & I/O Devices	18
III	Display, Power Supply & Bios	17
IV	Desktop, Laptop, Mobile And Tablet Pc	17
V	Future Hardware Systems	17
	Tests And Model Exam	9
TOTAL		**96**

COURSE DESCRIPTION:

A Computer Engineer should be able to install and maintains Keyboard, Printer, Mouse, Monitor, etc. along with the computer system. Additionally he should also be able to maintain and service mobile phones. The course provides the necessary knowledge and skills regarding working, construction and interfacing aspects of peripherals. The students will get to know how various peripherals communicate with central processing unit of the computer system and pattern their respective operations. The student will get to know about how Mobile phones are maintained. This subject provides the required background of installation, maintenance and testsing of peripheral with Computers and Laptops. The student will also get to know about the basics Non Volatile Memory (NVM), Remote Direct Memory Access (RDMA) and Embeddinghardware.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- Know the evolution of Personal Computer from PC through Core i and Laptop.
- Know and explain the major components that make up the system unit
- Know the data process and store them in meaningful information.
- Explain about the principle of operations of Keyboard, Mouse and Displays. Understand the components of media system.
- Know the Basics, working principle, specification and modern technology of different types of drives.
- Know the specification of I/O Ports of all I/O devices like serial, parallel, USB — Game port,blue tooth and IP Connectors
- Know the operation, working principle and troubleshooting of devices like Dot matrix, Inkjet, Laser, Thermal, MFP Printers.
- Know the aspects related to Power Supply.
- Understand the common problems in the computer system and the peripherals Trouble shoot the problems in Personal computers.
- Trouble shoot the problems in Computer peripherals. Know and explain the major components of Laptop. Trouble shoot the problems in Laptop.
- Understand the basic components and tools used in servicing of Mobile phones.Know to install the software required for mobile phones and to maintain it.
- Understand the basics of Non Volatile Memory (NVM), Remote Direct Memory Access RDMA) and Embedding hardware.

COURSE OUTCOMES:

Course	**CTD610 COMPUTER HARDWARE AND SERVICING**
After successful completion of this course, the students should be able to	
D610.1	Understanding the components of motherboard and bus
D610.2	Understanding the of concept of I/O and storage devices
D610.3	Learn about display, BIOS and post.
D610.4	Learn about installation and troubleshooting system and mobiles.
D610.5	Evaluate the future hardware systems.

CTD610 COMPUTER HARWARE AND SERVICING

UNIT – I **[18 Hrs]**

MOTHER BOARD COMPONENTS

MOTHERBOARD COMPONENTS

Processor sockets/slots — Memory sockets - Chipsets — Cache— BIOS — Clock generator — RTC — Super I/O Controller — Power connector — [2 Hrs]

Battery — Keyboard/Mouse Connectors — Jumpers — Ports andHeaders— Pin Connectors - [2 Hrs]

Motherboard Form factor - Hardware, Software and Firmware. [1 Hr]

COMPUTER PERIPHERAL DEVICES

Internal and external devices [2 Hrs]

PROCESSORS:

Introduction —Core2 Duo processor, [2 Hrs]

Quad core processor,Core i3, i5, i7 series, AMD AIO series, [2 Hrs]

Xeon Processor. [1 Hr]

CHIPSETS:

Chipset basics - North / South Bridge architecture and [2 Hrs]

Hub architecture. [1 Hr]

BUS STANDARDS: Overview and features of PCI, AGP, USB, & [2 Hrs]

Processor Bus. [1 Hr]

UNIT-II **[18 Hrs]**

MEMORY ANDI/ODEVICES

PRIMARY AND SECONDARY MEMORY:

Introduction. Main Memory — types – Organization, Access time, Cycle time, and [2 Hrs]

Memory errors and Error detection Techniques. Hard Disk: Introduction —

Construction —Working Principle — File Systems — Formatting andTroubleshooting. [2 Hrs]

REMOVABLE STORAGE AND SPECIAL DEVICES:

DVD-ROM — Recordable DVD Rewritable DVD. Blu-ray: Introduction - Blu-ray Disc [2 Hrs]

Parameters - Recording and Playback Principles. Special drives:

External drives, Memory stick, USB flash drive, Solid state drive. Data Recoverytools - [2 Hrs]

DOS, and Third party tools.

KEYBOARD AND MOUSE:

Keyboard: Interfacing and Signals (USB, Wireless), Types of keys, Keyboard Matrix, Key bouncing, Types of keyboard (Simple, Mechanical). [2 Hrs]

Mouse: Optical mouse operation- Optical mouse cleaning — Troubleshooting flowchart for a mouse. [2 Hrs]

PRINTERS AND SCANNERS

Printer: Introduction Types of printers — Dot Matrix, Inkjet, Laser, Thermal, MFP printer (Multi-Function Printer) - Operation and Troubleshooting. [2 Hrs]

Scanner: Introduction, Scanner mechanism, working principle — Types of Scanners (Barcode, Handheld,Flatbed) — Preventive maintenance and Troubleshootingtools. [2 Hrs]

SPECIAL I/O DEVICES:

Trackball, Touch pad, Pointing stick, Joystick, Light pen, Graphic tablet, Camera, Bar-code reader, RFID reader [2 Hrs]

UNIT-III **[17 Hrs]**

DISPLAY, POWER SUPPLYand BIOS

DISPLAYS AND GRAPHIC CARDS:

Displays: LCD Principles —Plasma Displays — TFT Displays – [2 Hrs]

LED Displays. Graphic Cards: Video capturecard - Troubleshoot display and [2 Hrs]

graphics card problems [1 Hr]

SMPS:

Block diagram - Basic Principles and Operations O/PVoltage— [2 Hrs]

Cable color code — Connectors and PowerGood — [2 Hrs]

Common Failures(No circuit diagram to be discussed) [1 Hr]

BIOS:

Bios functions — Cold and Warm booting — BIOS error codes — [2 Hrs]

BIOS interrupts — BIOS advanced setup. Upgrading BIOS, FlashBIOS-setup. [2 Hrs]

Identification of different BIOS (AMI, AWARD BIOS). [1 Hr]

POST: Error, Beep Codes, Error messages, Post — Faults related toHardware. [2 Hrs]

UNIT-IV [**17 Hrs**]

DESKTOP, LAPTOP, MOBILE ANDTABLETPC

UPGRADING OF SYSTEMS:

Hardware up-gradation. Updating of System & Application software: Device Driver - OS Update and Firewall Security— Control panel – [2 Hrs]

Installed devices and properties — Install procedure, Rollback or Un-install procedure, Tests of variousdevice driver software. [2 Hrs]

INSTALLATION AND TROUBLESHOOTING:

Formatting, Partitioning and Installation of OS —Trouble Shooting Laptop and Desktop computer problems. [2 Hrs]

Antivirus and Application Software Installation – Backup and Restore procedure - recovery software [1 Hr]

LAPTOP:

Difference between laptop and desktop- Types of laptop,working principles, configuring laptops and power settings, Upgrade RAM,harddisk, Replacing battery– [2 Hrs]

Configuration of camera, mic, WLAN and Bluetooth, touchpad, Laptop Keyboard. [1 Hr]

MOBILE PHONE:

Basics of mobile communication, battery- antenna- Ear piece- microphone -speaker-buzzer-LCD- keyboard. Basic circuit board components – Names and functions of different [2 Hrs]

ICs used in mobilephones. Installation & roubleshooting: [2Hrs]

Mobile servicing kit, Assembling and disassembling of different types of mobile phones– Installation of OS - Fault finding & troubleshooting

INTRODUCTION TO TABLET PC:

Digitizers Versus Touch-Screen Displays, Merits and Demerits. Comparisons: Laptops, Desktops, Pocket PC, Other PDAs, Other Pen-Based Computers, Differences in Hardware. [2 Hrs]

Windows XP Tablet PC Edition Configuration: [1 Hr]

Basic Interface Settings, Screen Settings, Display Properties, Other Settings and Options Diagnostic Software and Viruses: Mobile Viruses, Precautions, Antivirus Software.

UNIT-V **[17Hrs]**

FUTURE HARDWARE SYSTEMS:

MOORE'S LAW :

Calculating the Hardware Growth using Moore's Law, Introduction to Non Volatile Memory Technology, Architecture of [2 Hrs]

NVM technology – Advantages and Scope of NVM Technology [2 Hrs]

EMERGING NON VOLATILE MEMORY TECHNOLOGIES:

(Concepts only)- Magnetic random-access memory (MRAM), Spin-Transfer Torque Random-Access Memory (STT-RAM), [2 Hrs]

Ferro electric Random Access Memory (FeRAM), Phase-Change Memory (PCM), and [2 Hrs]

Resistive Random-Access Memory (RRAM). [1 Hr]

INTRODUCTION TO ADVANCED NETWORK TECHNOLOGIES:

Remote Direct Memory Access (RDMA), Working Principle of RDMA – [2 Hrs]

Limitations and Challenges in RDMA technology. [1 Hr]

EMBEDDED SYSTEMS:

Basic concepts, Embedded Board and the von Neumann Model, Basic Electronics of [2 Hrs]

Embedded devices – [2 Hrs]

AC circuits, DC Circuits, and Active Devices, Power supply-Scope,Control and [1 Hr]

Probes- Advantages and Applications of Embedded devices.

Tests And Model Exam **[9 hrs]**

TEXT BOOK:

S.No	Title	Author	Publisher With Edition
1.	Computer Installation and Servicing	D.Balasubramanian	Tata Mc-Graw Hill, New Delhi, Second Edition 2010
2.	Troubleshooting, Maintaining and Repairing PCs	Stephen J.Bigelow	TMH, New Delhi, Fifth Edition

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	PC Hardware in a nutshell	Robert Bruce Thompson.	O'Reilly Media, Third Indian Reprint 2008.
2.	The Laptop Repair Workbook: An Introduction to Troubleshooting and repairing Laptop Computers	Morris Rosenthal	Foner books, First Edition 2008
3.	The Cell Phone Handbook	P.J. Stetz and Penelo e Stetz	Find Tech Ltd, Second Edition
4.	Advanced Mobile Repairing	Pandit Sanjib	BPB Publication, New Delhi, First Edition 2010
5.	Absolute Beginner's Guide to Tablet PCs	Craig F. Mathews	ToolKits, Inc. First Edition 2004
6.	Embedded Hardware: Know It All	Ganssle J, Noergaard T, Eady F, Edwards L, Katz DJ, Gentile	Newnes, 1st Edition (2007)

LEARNING WEBSITES

1. http://nptel.iitm.ac.in/courses.php?disciplineId=106
2. ist.mit.edu/computer-repair
3. https://www.techopedia.com/definition/13965

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D610.1	3	3	2	2	2	2	2	3	2	2
D610.2	3	3	2	2	2	2	2	3	2	2
D610.3	3	3	2	2	2	2	2	3	2	2
D610.4	3	3	2	2	2	2	2	3	2	2
D610.5	3	3	2	2	2	2	2	3	2	2
Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
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% to be included	90%	10%

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CTD620 COMPUTER NETWORK AND SECURITY

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Computer Networks and Security	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO.OF. HOURS
I	Data Communications	15
II	OSI Model And LAN Protocols	15
III	TCP/IP Protocols	14
IV	Network Security	13
V	Application Of Network Security	14
	Tests And Model Exam	9
Total		**80**

COURSE DESCRIPTION:

The course aims to groom the students to gain concepts, knowledge and skills required to work on Computer Networking and Security industry. Course curriculum has been designed to give overview and use cases of Data Communication, Layered Networks, Internetworking technology/protocols and Computer Security is covered and this will help to prepare the students to keep pace with computer networking and security industry trends.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- Understand the concept of data communication.
- Discuss the advantages and disadvantages of different network topologies.
- Know different network classification based on different category.
- Study about different networking devices and their practical usages.
- Understand the different layers of OSI and their functions.
- Compare different LAN protocols.
- Understanding of Synchronization in networks
- Study of different WAN networks and protocols

- Study of Broadband Next Gen (BNG)
- Identify the protocols used in TCP /IP and compare with OSI model.
- Know the IP addressing and TCP/ IP protocols briefly.
- QoS and Traffic Engineering in networks
- Overview of Operations, Administration and Maintenance (OAM) in networks
- Understand the basic concepts of network security.
- Identify the attacks and threats.
- Understand the basic concepts of RAID and digital Signatures.
- Study about Cryptography and different Cryptography Algorithms.
- Discuss about Network Security Applications.
- Know the applications of Network Security.
- Discuss about VPN and Firewalls.

COURSE OUTCOMES

Course	**CTD620 COMPUTER NETWORKS AND SECURITY**
After successful completion of this course, the students should be able to	
D620.1	Understanding the Data Communications System and its components
D620.2	Understanding the concept of OSI model and WAN networks.
D620.3	Understanding the IP Addressing and protocols
D620.4	Understanding the concept of network security and cryptography
D620.5	Understanding the hacker techniques and network security

CTD620 COMPUTER NETWORK AND SECURITY

UNIT – I **[15 Hrs]**

DATA COMMUNICATIONS

DATA COMMUNICATION

Components of a data communication – Data flow: Simplex - Half duplex – Full duplex; [1 Hr]

Networks – Network criteria – [1 Hr]

Types of Connections: Point to point – multipoint; Topologies: Star, Bus, Ring, Mesh, Hybrid – Advantages and Disadvantages of each topology.

TYPES OF NETWORKS

Need for computer Networks - LAN – MAN– WAN – CAN – HAN –Internet – [2 Hrs]

Intranet – Extranet , Client- Server, Peer to Peer, Wi-Fi, Bluetooth, Mobile Networks, [2 Hrs]

Data Centre Networks, Service Provider Networks. [1 Hr]

TRANSMISSION MEDIA

Characteristics of Transmission Media - Classification of transmission media - Guided – [1 Hrs]

Twisted pair – Coaxial – Fiber optics – Unguided – Radio waves – Infrared – LowOrbit [1 Hr]

satellite (LOS) – VSAT – Cabling and Standards. [1 Hr]

NETWORKDEVICES FeaturesandConceptsofSwitches–

Routers (Wired and Wireless)–Gateways. [2 Hrs]

SYNCHRONIZATION IN NETWORKS [1 Hr]

Concepts of Frequency andTime synchronization in Computer networks. [2 Hrs]

UNIT-II [15Hrs]

OSI MODEL AND LAN PROTOCOLS

NETWORK MODELS

Protocol definition - Standards - OSI Model – Layered architecture– [2 Hrs]

Functions of all layers. [1 Hr]

802.X PROTOCOLS

Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) –Token ring (802.5) – [2 Hrs]

Ethernet – Types of Ethernet (Fast Ethernet, gigabit Ethernet, High speed Ethernet 10GE to 800GE) –Comparison between 802.3, 802.4 and 802.5 – [2 Hr]

Overview of Carrier Ethernet and use cases

UNDERSTANDING WIRELESS NETWORK PROTOCOLS

802.11a, 802.11b, 802.11g, 802.11n, 802.11ac [2 Hrs]

WAN NETWORKS

Different layers in Service Provider Networks – Protocols Involved – High level design of [2 Hrs]

Data Centre Networks [1 Hr]

SWITCHING

Definition **–** Circuit switching – Packet switching – Message switching – Optical Switching [2 Hrs]

OTN– Multicasting

BNG

Concepts – Services – Broadband NextGen [1 Hr]

UNIT-III **[14 Hrs]**

TCP/IP SUIT AND PROTOCOLS:

OVERVIEWOFTCP/IP

OSI&TCP/IP–TransportLayerProtocol Connection Oriented and Connectionless Services– [2 Hrs]

Sockets - TCP &UDP. [1 Hr]

NETWORK LAYERS PROTOCOLIP –

Interior Gateway Protocols (IGMP, ICMP, ARP, RARP, IGP, BGP Conceptonly). [2 Hrs]

IP ADDRESSING

Dotted Decimal Notation –Subnetting & Supernetting – VLSM Technique-IPv6 [2 Hrs]

(concepts only) [1 Hr]

APPLICATION LAYER PROTOCOLS

FTP– Telnet – SMTP– HTTP DNS – POP. [2 Hrs]

QOS AND TRAFFIC ENGINEERING

Overview of QoS and Traffic Engineering techniques and protocols. [2 Hrs]

OAM

Concepts of OAM in networks Protocols – Fault detection and isolation [2 Hrs]

UNIT- IV [13 Hrs]

NETWORK SECURITY

INTRODUCTION TO NETWORK SECURITY

Definition – Need for security– Principles of Security – Attacks – Types of Attacks – [2 Hrs]

Criminalattacks–LegalAttacks–PassiveandActiveattacks– [1 Hr]

SoftwareSupplyChainattacks-SecurityServices–Security Mechanisms.

CRYPTOGRAPHY

Definition – Symmetric Encryption principles – Symmetric Block Encryption Algorithms – [2 Hrs]

DES, AES – Stream ciphers – RC4 – Digest function – Public key Cryptography Principles–

RSA- [1 Hr]

Diffe-Hellman algorithm – Digital Signature(Definition only).

NETWORK SECURITY APPLICATION

Authentication applications –Kerberos (concepts only) - Overview- Motivation – Encryption Techniques. [2 Hrs]

INTERNET SECURITY

Email security – PGP - S/MIME - IP security – Overview –IP Security Architecture - Web security - SSL, TLS,SET (Concepts only) – [2 Hrs] [2 Hrs]

Link Layer MACSEC security overview-Network Address Translation NAT - Distributed Denial of Service attacks– [1 Hr]

DDoS and its mitigation – Lawful intercept of traffic flowoverview

UNIT-V [**14 Hrs**]

APPLICATIONS OF NETWORK SECURITY

INTRODUCTION TO NETWORK SECURITY

Definition and Basic concepts- Basic concepts of RAID levels(0,1,2,3,4,5). [2Hrs]

HACKERS TECHNIQUES

Historical hacking techniques & open sharing-Bad Passwords- Advanced Techniques- Viruses-worms- Trojan horses-SPAM [2Hrs]

SECURITY MECHANISM

Introduction – Types of Firewalls – Packetfilters – Application gate ways – Limitations of firewalls. [2Hrs]

INTRUSION

Intruders– Intruder detection – Classification of IntruderDetection systems –Honey pots. [2Hrs]

WIRELESS SECURITY ISSUES

Definition and Types -Transmission Security, Authentication ,WLAN Detection, Eaves Dropping, Active Attacks, WEP Definition andFeatures. [2Hrs]

NETWORK SECURITY APPLIANCES

Overview of Network security appliances: IPSec, DDoS, NAT, IPS gateways. [2Hrs]

Authentication Requirements Message Authentication Codes(MAC) Hashes . [2Hrs]

Tests And Model Exam **[9 hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Data Communication and networking	Behrouz A.Forouzen	Tata Mc GrawHill
2.	Network security essentials	William Stallings	PearsonPublications
3.	Cryptography and network security	William Stallings	Pearson Publications.

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Network security	Behrouz A.Forouzen	TataMcGraw-Hill,NewDelhi
2.	ComputerNetworks	Andrew S.Tanenbaum	Pearson Publications.

LEARNING WEBSITES

1. https://simple.wikipedia.org/wiki/Computer_network
2. www.tutorialspoint.com/computer.../computer_networking.htm
3. https://simple.wikipedia.org/wiki/cryptography

CONTINUOUS INTERNAL ASSESSMENT

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D620.3	3	3	2	2	2	2	2	3	2	2
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% to be included	90%	10%

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CTD631 SOFTWARE ENGINEERING

TEACHING AND SCHEME OF EXAMINATION

Number of Weeks/ Semester: 16 weeks

Course	Instruction		Examination			
	Hours / Week	Hours/ Semester	Internal Assessment	Autonomous Examinations	Total	Duration
Software Engineering	5	80	25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

Unit	TOPICS	NO.OF.HOURS
I	Introduction to software engineering	15
II	Software design and planning	15
III	Software maintenance and risk management	14
IV	Software testsing	14
V	Software reliabilty and quality assurance	13
	Tests and model exam	9
TOTAL		**80**

COURSE DESCRIPTION:

Software Engineering deals with reliability and quality assurance of the software under development. It provides framework for development of quality software product. The course enables the students to write specifications for software system understand the importance of good software, design and develop tests plans from design specifications. The course also covers other important aspects of software Engineering such as software lifecycle, requirement analysis and documentation, characteristics of good design, design techniques, testsing, software implementation and maintenanceetc.

OBJECTIVES:

On completion subject, the students must be able to

- Define Software Engineering.
- Understand the characteristics of Software Engineering.
- Explain different software development models.
- Learn about the phases of software development cycle.

- Understand the significance of requirement analysis.
- Know various tools and techniques used for requirement analysis. Understand architectural and modular design.
- Understand the different types of project metrics. Understand different software estimation techniques. Describe CASE.
- Explain about software maintenance.
- Identify and mange risks.
- Know the different scheduling methods.
- Define the basic terms used in testsing terminology. Describe black box and white box testsing.
- Describe testsing tools.
- Understand the concepts of Software quality and quality assurance.
- Know the concepts of software reliability and software quality standards.
- Define software re-engineering.
- Differentiate forward engineering from re-engineering.

COURSE OUTCOMES

Course	**CTD631 SOFTWARE ENGINEERING**
After successful completion of this course, the students should be able to	
D631.1	Understand the basic concepts of software engineering and life cycle models.
D631.2	Learn about the concept of software design and planning.
D631.3	Learn the software maintenance, Risk management and Project scheduling.
D631.4	Understand the basic concepts of Software testsing, strategies and professionals.
D631.5	Learn about the concepts of software quality assurance, reliability and reverse software engineering.

CTD631 SOFTWARE ENGINEERING

NAME OF THE TOPICS [15Hrs]

UNIT- 1

INTRODUCTION TOSOFTWAREENGINEERING

BASICS OF SOFTWARE ENGINEERING [2Hrs]

Need for Software Engineering – Definition – Software Characteristics – Software Myths – Program versus Software Products [1Hr]

SOFTWARE DEVELOPMENT LIFE CYCLE MODELS

Introduction–WaterfallModel–Prototypingmodel–SpiralModel – Iterative Enhancement model [2Hrs]

– Agile model – Object Oriented Model-Advantages and Disadvantages of above models– [2Hrs]

Comparison of various models. [2Hrs]

SOFTWARE REQUIREMENT ANALYSIS (SRS)

Value of good SRS- developing SRS from Business Requirements- Requirement Process- [2Hrs]

Requirement Specification – Desirable Characteristics of an SRS-Components of anSRS- [2Hrs]

Structures of a requirements documents-Requirements gathering- Creating a backlog in Agile model. [2Hrs]

UNIT-II **[15Hrs]**

SOFTWARE DESIGNANDPLANNING

SOFTWARE DESIGN

Definition of software design – Objectives of software design – Process of software design – [2 Hrs]

Architectural design – Modular design – Structure chart –

Coupling and Cohesion – Different types – Interface design – Design of Human Computer Interface [2 Hrs

CODING

Information Hiding –Programming style– Internal documentation –Monitoring and Control for coding –Structured programming-Error/Exceptionhandling- [2 Hrs]

Executings prints for agile model. Scrummeetings in agile-importance of code reviews and unit testsing. [2 Hrs]

SOFTWARE PLANNING

Software metrics - Definition – Types of metrics – Product and product metrics-relevant [2 Hrs]

metrics in agile-Function point and feature point metrics - Software project estimation – Steps for estimation –

Reason for poor and inaccurate estimation – Project estimation guidelines – Models for estimation – COCOMO Model – Automated tools for estimation – Sprint planning in agile. [2 Hrs]

CASE

CASE and its scope- Architecture of CASE environment – Building blocks for CASE – CASE support in software Life cycle – Objectives of CASE – Characteristics of CASE tools – [2 Hrs]

List of CASE tools –Categories, advantages and advantages of CASE tools. [1 Hr]

UNIT-III [14Hrs]

SOFTWARE MAINTENANCE ANDRISKMANAGEMENT

SOFTWARE MAINTENANCE

Software as an evolution entity – Software configuration management activities – Change control process – [2 Hrs]

Software version control – Software configuration management – Need for maintenance – Categories of maintenance – [2 Hrs]

Maintenance cost –Factors affecting the effort [1 Hr]

RISK MANAGEMENT [2 Hrs]

Definition of risk – Basics for different types of software risks – Monitoring of risks – Risk management –

Risk avoidance – Risk detection – Risk control – Risk recovery – [2 Hrs]

Sources of risks – Types of risks [1 Hr]

PROJECT SCHEDULING

Introduction –Factors affecting the task set fortheproject–schedulingmethods– [2 Hrs]

Workbreakdownstructure–Flow graph–Gantchart-PERT– [1 Hr]

SettingupSprintburndownchartsfor Agile model [1 Hr]

UNIT-IV **[14Hrs]**

SOFTWARE TESTSING

SOFTWARE TESTSING

Introduction to testsing – Testsing principles – Testsing objectives – Basic terms used in testsing – Fault – Error – Failure-Testscases–Blackboxandwhiteboxtestsing–Advantagesand disadvantages of above testsing – Methods for Block box testsing strategies– [2 Hrs]

Methodsforwhiteboxtestsingstrategies–Testsingactivities– Tests plan – Tracking defects. [1 Hr]

LEVELS OF TESTSING [2 Hrs]

Integration tests – System testsing – Types.

SOFTWARE TESTSING STRATEGIES

Static testsing strategies – Formal technical reviews – Code walkthrough – Code inspection – Debugging Definition–Characteristics of bugs– [2 Hrs]

Life cycle of a Debugging task Debugging approaches. [1 Hr]

SOFTWARE TESTSING TOOLS

Need for tools – Classification of tools –Functional/Regression Testsing tools – [2 Hrs]
Performance/Load Testsing Tools–Testsing process management Tools – Benefits of tools –
Risk Associated with tools – Selecting tools – Introducing the tool in the testsing process –
Different categories of tools – Examples for commercial software testsing tool. [1 Hr]

CODE OF ETHICS FOR SOFTWARE PROFESSIONALS

Human Ethics – Professional Ethics – Ethical issues in Software Engineering –Code of Ethics [2 Hrs]
and professional Practice: Software Engineering code of ethics and professional Practice – [1 Hr]
Ethical issues: Right versus Wrong

UNIT-V **[13Hrs]**

SOFTWARE RELIABILITY AND QUALITY ASSURANCE

SOFTWARE QUALITY ASSURANCE

Verification and validation – SQA – Objectives and Goals – SQA plan - Definition of software [2Hrs]
quality – Classification of software qualities - Software quality attributes –
Important qualities of software products - Importance of software quality–SEI – CMM - Five [2Hrs]
levels - ISO 9000 – Need for ISO Certification –Benefits of ISO 9000 certification –
Limitation of ISO 9000 certification – [1Hr]
Uses of ISO - Salient features of ISO 9000 Requirements – Introduction to ISO 9126

SOFTWARE RELIABILITY

Definition – Reliability terminologies – Classification of failures – Reliability metrics – [2Hrs]
Reliability growth modeling-
Reliabilitymeasurement process [1Hr]

REVERSE SOFTWARE ENGINEERING

Definition – Purpose – Reverse engineering Process – Reverse engineering tasks – [2Hrs]
Characteristics and application areas of reverse engineering – Software re- engineering – [2Hrs]
Principle – Re-engineering process –
Difference between forward engineering and re-engineering. [1Hr]

Tests and Model Exam **[9 Hrs]**

TEXT BOOKS

S.No	Title	Author	Publisher With Edition	
1.	Software Engineering	Ian Sommerville	PearsonEducation	Sixth Edition
2.	Fundamentals of Software Engineering	Rajib Mall	PHI Learning Pvt Limited, New Delhi	28th Printing August 2011

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition	
1.	Software Engineering	Bharat Bhusan Agarwal, Sumit Prakash Tayal	Firewall Media, New Delhi	Second Edition 2008
2.	Software Testsing	K.Mustafa and R.A.Khan	NarosaPublishing House, NewDelhi	Reprint 2009
3.	Software Quality	R.A. Khan, K.Mustafa and SI	Narosa Publishing House, New Delhi	Reprint 2008
4.	Software Engineering	Stephen Schach	TMGH Education Pvt Ltd, New Delhi	Eight Reprint 2011
5.	Software Engineering fundamentals	Ali Behforooz and Fredick J Hudson	Oxford University press	2005

LEARNING WEBSITES

1. http://www.learnabout-Software Engineering.org/

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iv)	Seminar	-	5 Marks

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D631.2	3	3	2	2	2	2	2	3	2	2
D631.3	3	3	2	2	2	2	2	3	2	2
D631.4	3	3	2	2	2	2	2	3	2	2
D631.5	3	3	2	2	2	2	2	3	2	2
D631 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)
Correlation level 2- Moderate (Medium)
Correlation level 3- Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

****

CTD632 MUTLIMEDIA SYSTEMS

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
Multimedia Systems	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*****	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO .OF. HOURS
I	Introduction to multimedia	11
II	Defining objects for multimedia systems	15
III	Multimedia data and standards, database	15
IV	Multimedia devices and making multimedia	15
V	Multimedia for internet andstreaming	15
	Tests and model exam	9
TOTAL		**80**

COURSE DESCRIPTION:

The exponential growth of Engineering and Technology particularly Information and Communications Engineering has benefited the day-today life of entire mankind in all respects. The research and developments are continually happening in this field to fine tune and improve the field particularly in multimedia which directly or indirectly has impact on every man's daily life. As such the introduction of current and future trends and technology of multimedia systems would strengthen the knowledge and skills of Engineering community in taking one-step further the prosperity of mankind.

OBJECTIVES:

On completion of the following units of syllabus contents, the students must be able to:

- Understand the relevance and underlining infrastructure of Multimedia system.
- Apply contemporary theories of multimedia learning to the development of multimedia products.
- Analyze instructional and informational media (audio/ visual materials, web based materials, games and simulations etc) applied with multimedia techniques.
- Acquire knowledge about multimedia software tools.
- Understand the multimedia systems components and fundamental elements of any multimedia system.
- Acquire knowledge about compression / decompression and various media file formats.
- Understand the underlying principles of processing various multimedia data.
- Understand the working principles of various multimedia input–output devices.
- Gain knowledge about various multimedia related standards.
- Understand the design and development process of multimedia projects.
- Understand the technologies of multimedia used in Internet and its applications.
- Acquire knowledge about streaming, webcasting and many evolving technologies.

COURSE OUTCOMES

Course	**CTD632 MULTIMEDIA SYSTEMS**
After successful completion of this course, the students should be able to	
D632.1	Understand the overview of multimedia architecture.
D632.2	Learn about the concept of image and animation of multimedia.
D632.3	Learn about different data compression techniques and file format standards
D632.4	Understand different input/output, audio and video technologies
D632.5	Learn about multimedia design and multimedia for internet.

CTD632 MUTLIMEDIA SYSTEMS

UNIT – I **[11 Hrs]**

INTRODUCTION TO MULTIMEDIA

INTRODUCTION

Definition of Multimedia, Multimedia Basics, Multimedia Elements, Multimedia Applications, DeliveringMultimedia. [2 Hrs]

MULTIMEDIA SYSTEMS ARCHITECTURE [2 Hrs]

Multimedia Workstation Architecture, High resolution Graphic displays, The IMA Architectural Framework, Network architecture for Multimediasystems. [1Hr]

EVOLVING TECHNOLOGIES FOR MULTIMEDIA SYSTEMS

Hypermedia Documents, Hypertext, Hyper Speech, HDTV and UDTV, 3D Technologies and Holography. [2 Hrs]

DEFINING OBJECTS FOR MULTIMEDIA SYSTEM

Text, Images, Audio and Voice, Full-Motion and Live Video, Multimedia Data Interface Standards, Video Processing Standards. [2 Hrs]

MULTIMEDIA SOFTWARE

Overview of Multimedia Software Tools,Open Source Replacements, Multimedia OS, VRML, OpenGL, Windowsand [2 Hrs]

Open Source API.

UNIT-II **[15Hrs]**

DEFINING OBJECTS FOR MULTIMEDIA SYSTEMS

TEXT

About Fonts and Faces, Using Text in Multimedia, Hypermedia and Hypertext, Using Hypertext, Hypermedia Structures, Hypertext Tools. [2 Hrs]

IMAGES

Making Still Images, Bitmaps, 1 bit images, 8-bit gray level images, 8-bitcolor images, Dithering, 24 bit color images, Vector Drawing, 3-D Drawing and Rendering, Color, Understanding Natural Light and Color, [2 Hrs]

Computerized Color, Color Palettes, Color Look-up table. Image Processing¸ Image acquisition, Image enhancement. Color image processing. [2 Hrs]

SOUND [2 Hrs]

The Power of Sound, Digital Audio, Making Digital Audio Files, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Adding Sound to Your Multimedia Project ,

Audio Recording, Keeping Track of Your Sounds, Audio CDs, Sound for your Mobile, [1 Hr]
Sound for the Internet.

ANIMATION

The Power of Motion, Principles of Animation, Animation by Computer, Animation [2 Hrs]
Techniques. Animation using OpenGL. [1 Hr]

VIDEO

Using Video, How Video Works and Is Displayed, Analog Video, Digital Video, Displays, [2 Hrs]
Digital Video Containers, Codec, Video Format Converters, [1 Hr]
Obtaining Video Clips, Shooting and Editing Video.

UNIT-III **[15Hrs]**

MULTIMEDIA DATA AND STANDARDS DATABASE

DATA COMPRESSION

Need for Data compression, General Data compression Scheme, Compression standards, [2 Hrs]
Non-lossy compression for images, Lossy compression for Photographs and Video, [1 Hr]
Hardware Vs Software Compression.

COMPRESSION SCHEMES AND STANDARDS

(Only Concepts of) Binary Image Compression, Color, Gray Scale and Still-Video Image Compression, JPEG, Video Image Compression, Multimedia Standards for Video, [2 Hrs]
Requirements for Full-motion Video Compression, MPEG, Audio compression, Fractal [1 Hr]
compression, advantages / disadvantages.

DATA AND FILE FORMAT STANDARDS

Popular File Formats, RTF, RIFF, GIF, PNG, TIFF, MIDI, JPEG, JFIF, AVI, WAV, BMP, [2 Hrs]
WMF, MIX, MPEG standards. TWAIN [1 Hr]

DATABASE SYSTEM

Data Types in Multimedia Databases, Storage and Retrieval, Database Management System, [2 Hrs]
Database Organization and Transaction Management for Multimedia System. [1 Hr]

CONTENT BASED RETRIEVAL IN DIGITAL LIBRARIES (C-BIRD)

C-BIRD GUI – Color Histogram – Color Density – Color Layout – Texture layout- [2 Hrs]
Search by Illumination Invariance – Search by Object Model. [1 Hr]

UNIT-IV **[15 Hrs]**

MULTIMEDIA DEVICES AND MAKING MULTIMEDIA

MULTIMEDIA INPUT/OUTPUT TECHNOLOGIES

Limitations of Traditional input devices, Multimedia input/output devices, PEN input, [2 Hrs]
Working of Electronic Pen,

Digitizer, (only the concepts of) Video and Image display systems, Printer, Scanner. Digital [2 Hrs]
voice and video: Voice Recognition system, Digital Camera, Video frame grabber,

Video and stillimage processing, Full – motion video controller, Video Capture Board. [1 Hr]

MAKING MULTIMEDIA

The Stages of a Multimedia Project: Creativity, Organization, Communication, Hardware, [2Hrs]
Software: Text Editingand Word Processing Tools, OCR Software, Painting and Drawing Tools, 3-D Modeling and Animation Tools,

Image-Editing Tools, Sound-Editing Tools, Animation, Video, and DigitalMovie Tools, [2Hrs]
Authoring Systems, Making Instant Multimedia, Types of Authoring Tools.

MULTIMEDIA SKILLS

The Team, Project Manager, Multimedia Designer, Interface Designer, Writer, Video [2 Hrs]
Specialist, Audio Specialist,

Multimedia Programmer, Producer of Multimedia for the Web [1 Hr]

DESIGNING AND PRODUCING

Designing, Designing the Structure, Designing the User Interface, [2 Hrs]

Producing–Tracking, Copyrights. [1 Hr]

[15 Hrs]

UNIT-V

MULTIMEDIA FOR INTERNET AND STREAMING

THE INTERNET AND MULTIMEDIA

The Bandwidth Bottleneck, Internet Services, MIME Types, Multimedia on the Web, [2Hrs]

Web Page Makers and Site Builders, Plug-ins and Delivery Vehicles. [1 Hr]

DESIGNING FOR THE WORLD WIDE WEB

Developing for the Web, Small-Device Workspace, text and images for the Web, Clickable [2Hrs]
Buttons, Client-Side Image Maps,

Sound for the Web, Animation for the Web, and Video for the Web, HTML5 Video - Plug- [1 Hr]
ins and Players.

MULTIMEDIA COMMUNICATION

Study of Multimedia networking, Quality of data transmission, Media on demand, [2Hrs]

Multimedia Over Wireless and Mobile Networks –

Media Entertainment,web-based applications, e-learning and education. [2 Hrs]

STREAMING

Introduction - Applications of Streaming- The Streaming Architecture, [2Hrs]

Stream Serving: Webcasting – On-Demand Servicing – Voice and Video Conferencing – [2Hrs]

Internet Telephony - Virtual Reality. [1 Hr]

Tests And Model Exam **[9 hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Multimedia:Making It Work	Tay Vaughan	Tata McGraw Hill Ltd, New Delhi, Eighth Edition 2010
2.	Fundamental of Multimedia	Ze-Nian Li and M. S. Drew	PHI Learning Pvt Ltd New Delhi, Indian Reprint 2011
3.	Multimedia Systems Design	Prabhatk.Andleigh, Kiran Thakra,	PHI Learning Pvt Ltd New Delhi, Indian reprint 2011
4.	Multimedia Technology and Applications	David Hillman	Galgotia Publications Pvt Ltd, Second Edition 2001
5.	Multimedia Systems	John F.Koegel Buford	Pearson Education, United States, Ninth Impression2012

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Multimedia Computing Communication and Applications	Ralf Steinmetz, and Klara Nahrstedt	PearsonEducation
2.	Principles of Multimedia	Ranjan Parekh	TMGH, NewDelhi.
3.	The Technology of Video and Audio Streaming	David Austerberry	FocalPress

LEARNING WEBSITES

1. Multimedia Introduction:http://www.codecademy.com/learn
2. Multimedia tools: http://www.photoshopessentials.com
3. Multimedia animation video:http://www.thefreecountry.com/webmaster/flash.shtml

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D632.1	3	3	2	2	2	2	2	3	2	2
D632.2	3	3	2	2	2	2	2	3	2	2
D632.3	3	3	2	2	2	2	2	3	2	2
D632.4	3	3	2	2	2	2	2	3	2	2
D632.5	3	3	2	2	2	2	2	3	2	2
Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

****

CTD633 DATA SCIENCE AND BIG DATA

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Course	Instruction		Examination			
			Marks			
DATA SCIENCE AND BIG DATA	**Hours/ Week**	**Hours/ Semester**	**Internal Assessment**	**Autonomous Examination**	**Total**	**Duration**
	5	80	25	100*	100	3 Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

TOPICS AND ALLOCATION OF HOURS:

UNIT	TOPICS	NO.OF. HOURS
I	Introduction To Data Science	15
II	Fundamentals Of Data Modelling	14
III	Fundamentals Of Big Data	14
IV	Big Data Storage	14
V	Big Data Processing	14
	Tests And Model Exam	9
TOTAL		**80**

COURSE DESCRIPTION:

This course provides a comprehensive understanding of data science and data modeling. The foundation on data science is laid to understand the core concepts and the techniques that underlie today's big data computing technologies. This course helps the students in identifying and applying appropriate techniques and tools to solve problems in managing huge quantities of data.

OBJECTIVES:

This subject has two major divisions. The objectives of these topics are given below.

DATA SCIENCE

After studying the first two units of this syllabus, students will be able

- To understand the fundamentals of data science, various datatypes, theirsources, problems and issues, various formats of data.
- To apply the Python libraries and Microsoft Excel for Dataanalysis.
- To work with Microsoft Excel for data analysis and applying various functions for dataanalysis.
- To familiarise with the basic data representation methods.

- To understand the concepts of samples, attributes and theirrelationships.
- To develop and implement simple linear regressionmodels.
- To understand the concept of model equation and offit.
- To understand and differentiate the concepts of predictive models and the classificationmodels.
- To familiarize with the concepts of Neural Networks, Decision Trees and Nearest neighborstechniques.

BIG DATA

After studying the lessons from Units III to V, the students will be able to

- Get conceptual understanding of Big Data, Web data, classification of data, Big Data characteristics, types, classification and handling techniques.
- Get the conceptual understanding of the impact of ICT developments on Big Data AdoptionUnderstand the Big Data Analytics Life Cycle.
- Get the conceptual understandings of Big Data Storage systems and technologies.
- Understandtheconcepts ofNoSQLdatabases, theirtypesand characteristics.
- Understand the concepts of Hadoop and its Ecosystem.
- Understandthesteps involved inBig data processing like parallel processing, distributed processing and Batch processing.
- Get understanding of MapReduce, map and reduce tasks, MapReduce algorithm.
- Understand the various techniques for Big Data analysis.
- Get introduced to the concepts and types of machine learning techniques.
- Explore the applications of Big Data in different fields.

COURSE OUTCOMES:

Course	**CTD633 DATA SCIENCE AND BIG DATA**
After successful completion of this course, the students should be able to	
D633.1	Learn about the introduction of data science.
D633.2	Understanding Fundamentals of data modeling.
D633.3	Understanding the Fundamentals of big data.
D633.4	Learn about the concept of big data storage technologies.
D633.5	Understanding about big data processing

CTD633 DATA SCIENCE AND BIG DATA

UNIT – I **[15 Hrs]**

INTRODUCTION TO DATA SCIENCE

DATA SCIENCE:

Subfields of Data Science- Data Types-Data Science Road Map- Programming languages for Data Science- [2 Hrs]

Problems with Data- Formatting issues- Python features- [2 Hrs]

Python Technical libraries- Python Arrays and Data Frames. [2 Hrs]

DATA SOURCES-

DataQuality-Consistency and accuracy (Integrity), Noise: Outliers, Missing and [2 Hrs]

Duplicate values- Data Preprocessing using Cleaning, Enrichment, Editing, Reduction, [2 Hrs]

Wrangling- Data Formats: TXT, CSV, XML, JSON, TLV- Loading and Savingfiles

WORKING WITH EXCEL:

Loading data- Statistical functions- Text Functions- Lookup Functions- [2 Hrs]

Sorting- Filtering- Data Analysis: Correlation, covariance, [2 Hrs]

Descriptive statistics, Regression. [1 Hr]

UNIT-II **[14Hrs]**

FUN FUNDAMENTALS OF DATA MODELLING

LINEAR ALGEBRA:

Data representation - Data as a Matrix - Samples and Attributes- [2 Hrs]

Classification of attributes- Concept of Rank- [2 Hrs]

Identify the relationship among attributes [1 Hr]

PREDICTIVE MODELS:

Regression Models - Linear regression - Simple and Multiple Regression- [2 Hrs]

Correlation-Mean squared Error- Testsing goodness of fit-Model Equation [2 Hrs]

CLASSIFICATION MODELS:

Two class- Multi class classification- Separability- Performance measures- [2 Hrs]

Terminology- Confusion Matrix-Types (Concepts only): Neural Network- [2 Hrs]

Decision Trees- Nearest Neighbors. [1 Hr]

UNIT-III **[14 Hrs]**

FUNDAMENTALS OF BIG DATA

DATA –

Web Data- Classification of Data- Big Data- Characteristics- Volume, Velocity, Variety, Veracity, [2Hrs]

Value- Need for Big Data- Big Data Types and classifications- [2 Hrs]

Sources of Big Data- Big Data handling techniques-Challenges. [2 Hrs]

IMPACT OF ICT DEVELOPMENTS

on Big data Adoption: data analytics and data science, digitization, affordable technology and commodity hardware, [2 Hrs]

social media, hyper connected communities and devices, cloud computing and IoT. [2 Hrs]

BIG DATA ANALYTICS LIFE CYCLE

Business Case Evaluation, Data Identification, Data Acquisition & Filtering, Data Extraction, Data Validation & Cleansing, .[2 Hrs]

Data Aggregation & Representation, Data Analysis, Data Visualization, Utilization of Analysis Results [2 Hrs]

UNIT-IV **[14 Hrs]**

BIG DATA STORAGE

STORAGE CONCEPTS

Clusters, File Systems, Distributed File System, NoSQL, Sharding, Replication, [2 Hrs]

Master Slave, Peer to Peer, CAP Theorem [2 Hrs]

BIG DATA STORAGE TECHNOLOGIES

On-Disk Storage Devices- Distributed File system-RDBMS- NoSQL Databases- [2 Hrs]

Characteristics of NoSQL-Types of NoSQL Storage devices. In-Memory storage devices- [2 Hrs]

Data Grids-Database [1Hr]

HADOOP

Introduction- Hadoop and its Ecosystem: Hadoop core components - Features of Hadoop- [2 Hrs]

Hadoop Ecosystem components- Hadoop streaming- Hadoop pipes- Hadoop distributed File system- [2 Hrs]

HDFS data storage -Hadoop Ecosystemtools. [1 Hr]

UNIT-V **[14Hrs]**

BIG DATA PROCESSING

PARALLEL DATA PROCESSING-

Distributed data processing- Hadoop Framework- Processing workloads- cluster for processing- [2 Hrs]

Batch processing with MapReduce- Map and Reduce Tasks- MapReduce algorithms- [2 Hrs]

Processing in Realtime mode- Real time processing and MapReduce. [1Hr]

BIG DATA ANALYSIS TECHNIQUES

Quantitative analysis, Qualitative analysis, Data mining, Statistical analysis: Correlation, regression, Machine Learning: [2 Hrs]

Classification, clustering, outlier detection, filtering. Semantic analysis: Natural language processing, [2 Hrs]

Text Analytics, Sentiment analysis, Visual Analysis [1Hr]

BIG DATA ANALYTICS APPLICATIONS AND CASE STUDIES

Big data in Marketing and sales- Big data and Healthcare- [2 Hrs]

Big data in Medicine- Big Data in Advertising. [2 Hrs]

Tests And Model Exam **[9 Hrs]**

TEXT BOOKS:

S.No	Title	Author	Publisher With Edition
1.	Big Data Analytics- Introduction to Hadoop, Spark and Machine Learning	Raj kamal, Preeti Saxena	Mc Graw Hill Education(India) Pvt Ltd.,2019
2.	Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses	Michael Minelli, Michelle Chambers, and Ambiga Dhiraj	Wiley, 2013.
3.	Hadoop: The DefinitiveGuide	Tom White	O'Reilley,2012, Third Edition

REFERENCE BOOKS:

S.No	Title	Author	Publisher With Edition
1.	The Data Science Handbook	Field Cady	Wiley,2017
2.	Python Data Science Handbook- Essential tools for working with data	Jake VanderPlas	O'REILLY,2017
3.	Introducing Data Science	Davy Cielen, Arno D. B. Meysman, Mohamed Ali	manning publications,2016
4.	BigData Fundamentals Concepts, Drivers &Techniques	Thomas Erl, Wajid Khattak	Prentice Hall(2016).

LEARNING WEBSITES

1. Multimedia Introduction:http://www.codecademy.com/learn
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3. Multimedia animation video:http://www.thefreecountry.com/webmaster/flash.shtml

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i)	Attendance	-	5 Marks
ii)	Tests	-	10 Marks
iii)	Assignment	-	5 Marks
iv)	Seminar	-	5 Marks

	Total	-	25 Marks

CO- POs & PSOs MAPPING MATRIX

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D633.2	3	3	2	2	2	2	2	3	2	2
D633.3	3	3	2	2	2	2	2	3	2	2
D633.4	3	3	2	2	2	2	2	3	2	2
D633.5	3	3	2	2	2	2	2	3	2	2
D633 Total	15	15	10	10	10	10	10	15	10	10
Correlation Level	3	3	2	2	2	2	2	3	2	2

Correlation level 1- Slight (low)
Correlation level 2- Moderate (Medium)
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QUESTION PAPER SETTING

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Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD640 COMPUTER HARDWARE AND NETWORKING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Course	Instruction		Examination			
Computer Hardware and Networking Practical	Hours/ Week	Hours/ Semester	Marks			
	6	96	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

NOTE:

Students should write one program fromPART A and one program from PART B

S.NO	DESCRIPTION	MARKS
1	Writing answer for any one program from PART -A	15
2	Writing answer for any one program from PART -B	20
3	Executing program (PART–A)	20
4	Executing program (PART– B)	20
5	Result with print out (PART–A)	5
6	Result with print out (PART–B)	5
7	VIVA-VOCE	5
8	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

The course aims at making the students familiar with various parts of Computers, Laptops, Tablet, devices and know the different types of peripherals desired. In addition, the course will provide the students with necessary knowledge and skills in computer, laptop, notebook, tablet its software installation and maintenance and to make them diagnose the software faults. This subject also gives the knowledge and competency to diagnose the problems in computer hardware and peripherals and also gives the knowledge for trouble shooting for systematic repair and maintenance of computers and laptops.

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement:

1. Desktop Systems -30 Nos
2. Hard disk drive-06 Nos
3. DVD, Blu-ray Drive - 06 Nos
4. Blank DVD , Blu-ray Disc - 30 Nos
5. Head cleaning CD - 01 No
6. Dot matrix Printer - 01 No
7. Laser Printer - 01 No
8. Ink Jet Printer - 01 No
9. Web camera - 01 No
10. Biometric Device - 01 No
11. No Scanner - 01 No
12. Crimping Tool - 06 Nos
13. Screwdriver set - 06 Nos
14. Network Cables - 50 mtrs Switch 01 No
15. Hub 01 No Router - 01 No
16. Wires / Wire cutters

Software Requirement:

1. Windows server OS Windows /Linux OS DVD
2. DVD/ CD Burning S/W

OBJECTIVES:

On completion of the following exercises, the students must be able to

- Know the various indicators, switches and connectors used in Computers.
- Familiarize the layout of SMPS, motherboard and various Disk Drives.
- Configure Bios set up options.
- Install various secondary storage devices with memory partition and formatting.
- Know the various types of printer installation and to handle the troubleshooting ability.
- Assemble PC system and checking the working condition.
- Installation of Dual OS in a system.
- Identify the problems in Computer systems, software installation and rectification
- Assembling and disassembling of Laptop to identify the parts and to install OS and configure it.
- Enable to perform different cabling in a network.
- Configure Internet connection and use utilities to debug the network issues.
- Configure router for any topology
- Installation of sever operating system
- Configuring various services in server operating system
- Install various packet sniffing tools in linux

COURSE OUTCOMES:

Course	**CTD640 COMPUTER HARDWARE AND NETWORKING PRACTICAL**
After successful completion of this course, the students should be able to	
D640.1	Installation and configure of hard disk
D640.2	Configuring various services in network devices
D640.3	Installation of windows server2008/2013
D640.4	Installation and configure of REDHAT LINUX
D640.5	Installation driver software(audio, video, chipset, LAN, WLAN, printer and monitor), and develop the Mini Project with report

CTD640 COMPUTER HARDWARE AND NETWORKING PRACTICAL

List of experiments to be conducted

PART A

1 HARD DISK

a) Install Hard Disk.

b) Configure CMOS-Setup.

c) Partition and Format Hard Disk.

d) Identify Master /Slave / IDE Devices.

e) Practice with scan disk, disk cleanup, disk De-fragmentation, Virus Detecting and Rectifying Software.

f) Creating System restore points in windows for system recovery.

2 a) Install and Configure a DVD Writer & Blu-ray Disc Writer.

b) Recording a Blank DVD & Blu-ray Disc.

3 Printer Installation and Servicing

a) Install and configure Dot matrix printer, Ink jet and Laser printer.

b) Troubleshoot the above printers

4 Install and configure Scanner, Web cam, and bio-metric device with system and troubleshoot the problems

5 Do the following cabling works in a network

a) Cable Crimpling

b) Standard Cabling

c) Cross Cabling

d) Testsing the Crimped cable using a Cable testser

6 a) Configure Host IP, Subnet Mask and Default Gateway in a system in LAN(TCP/IP Configuration). b)Configure Internet connection and use IPCONFIG, PING / Tracert and Netstat utilities to Debug the Network issues.

7 a) Install and configure Network Devices: HUB, Switch and Routers b)Install and Configure Wired and Wireless NIC and transfer files betweensystems

8 Transfer files between systems in LAN using FTP Configuration. Install a printer in LAN and share it in the network.

PART B – SYSTEM ADMINISTRATION PRACTICAL

1 Installation of Windows 2008 / 2013 Server

2 Installation and configuration of DHCP Server

3 Installation and configuration of Mail Server

4 Installation and configuration of Active directory Services. Create a user and permission using logon script and group permissions.

5 Installation and configuration of DNS Server

6 a) Installation of Red Hat Linux using Graphical mode. b) Installation of Red Hat Linux using VMware

7 Installation of various opens source packet sniffing tools and inspect packets in linux.

8 Open Device Manager, find various devices and install appropriate driver software (audio, video, chipset, LAN, WLAN, printer and monitor).

9 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

Continuous Internal Assessment

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1.http://www.tutorialspoint.com/

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D640.1	3	3	3	3	3	3	3	3	3	3
D640.2	3	3	3	3	3	3	3	3	3	3
D640.3	3	3	3	3	3	3	3	3	3	3
D640.4	3	3	3	3	3	3	3	3	3	3
D640.5	3	3	3	3	3	3	3	3	3	3
D640 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

QUESTION PAPER SETTING

The teaching leering process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD640 COMPUTER HARDWARE AND NETWORKING PRACTICAL

MODEL QUESTION PAPER

S. No	Part A	CO	PO
1	HARD DISK	**D640.1**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a) Install Hard Disk. b) Configure CMOS-Setup. c) Partition and Format Hard Disk. d) Identify Master /Slave / IDE Devices. e) Practice with scan disk, disk cleanup, disk De-fragmentation, Virus Detecting and Rectifying Software. f) Creating System restore points in windows for system recovery.		
2	a) Install and Configure a DVD Writer & Blu-ray Disc Writer. b) Recording a Blank DVD & Blu-ray Disc.	**D640.1**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Printer Installation and Servicing a) Install and configure Dot matrix printer, Ink jet and Laser printer. b) Troubleshoot the above printers		PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Install and configure Scanner, Web cam, and bio-metric device with system and troubleshoot the problems	**D640.2**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Do the following cabling works in a network a) Cable Crimpling b) Standard Cabling c) Cross Cabling d) Testsing the Crimped cable using a Cable testser	**D640.2**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	a) Configure Host IP, Subnet Mask and Default Gateway in a system in LAN(TCP/IP Configuration). b)Configure Internet connection and use IPCONFIG, PING / Tracert and Netstat utilities to Debug the Network issues.	**D640.3**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	a) Install and configure Network Devices: HUB, Switch and Routers b)Install and Configure Wired and Wireless NIC and transfer files betweensystems	**D640.3**	PO1,PO2,PO3,PO4, PO5,PO6,P O7
8	Transfer files between systems in LAN using FTP Configuration. Install a printer in LAN and share it in the network.	**D640.3**	PO1,PO2,PO3,PO4, PO5,PO6,P O7
	PART B – SYSTEM ADMINISTRATION PRACTICAL		

1	Installation of Windows 2008 / 2013 Server	**D640.4**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Installation and configuration of DHCP Server	**D640.4**	PO1,PO2,PO3,PO4, PO5,PO6,P O7
3	Installation and configuration of Mail Server	**D640.4**	PO1,PO2,PO3,PO4, PO5,PO 6,PO7
4	Installation and configuration of Active directory Services. Create a user and permission using logon script and group permissions.	**D640.5**	PO1,PO2,PO3,PO4, PO5,PO 6,PO7
5	Installation and configuration of DNS Server	**D640.5**	PO1,PO2,PO3,PO4, PO5,PO6,P O7
6	a)Installation of Red Hat Linux using Graphical mode. b) Installation of Red Hat Linux using VMware	**D640.5**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Installation of various open source packet sniffing tools and inspect packets in linux.	**D640.5**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Open Device Manager, find various devices and install appropriate driver software (audio, video, chipset, LAN, WLAN, printer and monitor).	**D640.5**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Mini Project	**D640.5**	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD651 SOFTWARE ENGINEERING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 Weeks

Course	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Autonomous Examination	Total	
Software Engineering Practical	4	64	25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

S.NO	DESCRIPTION	MARKS
1	Procedure / Program Writing – One Question	40
2	Execution	30
3	Result with printout	15
4	VIVA - VOCE	5
5	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

The course aims at making the students familiar with the Software Development Lifecycle. While the Software Engineering theory paper provides a good view to our students on the various models, different phases involved in the model, risk tracking etc., the practical application of this is missing. This subject is quite difficult to comprehend just by sitting in theory classes or reading books, unless the students experience it practically. Hence exposing our students to a lab which mimics a real-life situation / case study would immensely benefit the students. This way the student will understand the concept of Software Engineering – how projects are planned and executed, different stages of the project life cycle, how are metrics tracked, risk management and quality assurance. IT companies spend a lot of time and effort in teaching the Software Development Life cycle principles. Each team member must have complete understanding of the execution methodology and the role he / she is playing in the project, without which the project will never be successful. Inculcating this knowledge to our team would help in easily deploying them in theindustry.

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirements :

Desktop Systems: 30 Nos

Software Requirements :

Microsoft office (Word, Excel, Powerpoint), MS – Project or JIRA
forminiproject
Relational Database(SQL Server Express or MYSQL, JAVA/IDE,
JUNIT(open source) for unit testsing
SELENIUM(automated testsing)

OBJECTIVES :

On completion of the following exercises, the students must be able to

- Understand the difference between different SDLC models especially Iterative / incremental and Agilemethodologies
- Understand difference between a green field implementation (programs) and Softwareproducts.
- Learn how the requirements management phase works – how does the requirement gathering happen, how does this get converted to BRDs / SRSs in Iterative and Backlog in Agile, Dos and Don’tsetc

- Understand how the estimation and project planning is done based on the requirements. We will do feature point / complexity point estimate for Iterative and Story point estimate forAgile
- Preparing a work breakdownstructure
- Setting up quality assurance process in line with CMMI principles and defining metrics that will begathered
- Convert the requirements to design. Understand the different designing principles and alignment to standards. Building interface designs to integrate differentmodules
- Convert the design to structured coding following the coding standards. Understand the concept of continuous integration. Assessing the quality of thecode.
- Perform UnitTestsing
- Perform System Integration testsing – preparing the tests plan, tests cases,systemtestsing,trackingthedefectsfoundduringtestsing
- Understand how the Requirement Traceabilityworks
- Assessing the risk of the project by analyzing the metricsgathered

COURSE OUTCOMES:

Course	**CTD652 SOFTWARE ENGINEERING PRACTICAL**
After successful completion of this course, the students should be able to	
D651.1	Developing requirements for student management system
D651.2	Developing and design for structural modeling diagrams for student management system
D651.3	Developing and designing for dynamic modeling diagrams for library management system
D651.4	To write a JAVA code and perform unit testsing.
D651.5	To perform reverse engineering from simple code and develop the Mini Project with report

CTD651 SOFTWARE ENGINEERING PRACTICAL

List of experiments to be conducted

1) Develop requirements specification for student Management system such as overall problem description, system features, external interface requirements andnon-functional requirements.

DESIGN

Draw the following Structural modeling diagrams for student Management system:

2) Develop an UML Class Diagram.

3) Develop an UML Object Diagram.

4) Develop an UML Component Diagram.

5) Develop an UML Deployment Diagram.

Draw the following Dynamic modeling diagrams for Library Management system:

6) Develop a Use case Diagram.

7)Develop an UML Sequence Diagram.

8)Develop an UML Collaboration Diagram.

9)Develop an UML State Chart Diagram.

10) Develop an UML Activity Diagram.

11)To prepare PROBLEM STATEMENT for Library management system.

TESTSING

12) Write a simple JAVA code and perform unit testsing.

REVERSE ENGINEERING

13) Perform reverse engineering from a simple JAVA code.

14)Develop a University Result Management System using Classical Life Cyclemodel.

15) Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

Continuous Internal Assessment

The Internal Assessment mark for a total of 25 marks which are to be distributedas follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1. https://www.col.org
2. https://www.thegoodtrade.com
3. https://www.udemy.com
4. https://www.upwork.com

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D651.1	3	3	3	3	3	3	3	3	3	3
D651.2	3	3	3	3	3	3	3	3	3	3
D651.3	3	3	3	3	3	3	3	3	3	3
D651.4	3	3	3	3	3	3	3	3	3	3
D651.5	3	3	3	3	3	3	3	3	3	3
D651 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

Correlation level 1- Slight (low)

Correlation level 2- Moderate (Medium)

Correlation level 3- Substanial (high)

CTD651 SOFTWARE ENGINEERING PRACTICAL

MODEL QUESTION PAPER

S.No	Experiments	CO	PO
1	1) Develop requirements specification for student Management system such as overall problem description, system features, external interface requirements andnon-functional requirements.	**D651.1**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	Draw the following Structural modeling diagrams for student Management system:	**D651.2**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Develop an UML ClassDiagram.		
3	Develop an UML ObjectDiagram.		
4	Develop an UML ComponentDiagram.		
5	Develop an UML DeploymentDiagram.		
6	**Draw the following Dynamic modeling diagrams for Library Management system:** Develop a Use caseDiagram.	**D651.3**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Develop an UML SequenceDiagram.		
8	Develop an UML CollaborationDiagram.		
9	Develop an UML StateChartDiagram.		
10	Develop an UML ActivityDiagram.		
11	Write a simple JAVA code and perform unit testsing.	**D651.4**	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Perform reverse engineering from a simple JAVA code		
13	Develop a University Result Management System using Classical Life Cycle model.		
14	Develop a University Result Management System using Classical Life Cycle model.	**D651.5**	PO1,PO2,PO3,PO4, PO5, PO6,PO7
15	Mini Project The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper	**D651.5**	PO1,PO2,PO3,PO4, PO5.,PO6,PO7

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CTD652 MULTIMEDIA SYSTEMS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
Multimedia Systems Practical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

S.NO	DESCRIPTION	MARKS
1	Procedure / Program Writing – One Question	45
2	Execution	30
3	Result with printout	10
4	VIVA - VOCE	5
5	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

The competencies which form the basis for this practical enable students to develop skills with interactive visual and auditory technology. This lab prepares students to use digital multimedia for communication, creativity, collaboration, critical thinking. This practical is to bring awareness to the students regarding the numerous resources available in the area of multimedia. Students will become a skilled and creative user of current multimedia technology with an increased understanding of multimedia concepts and techniques

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement:

1. Desktop PCs– 30 Nos
2. Laser Printer Monochrome, Color – 1 Each
3. Digital (Video) Camera - 1No.
4. Flat bed A4 size Scanner - 1 No.

Software Requirement:

Operating system: Windows 7, Windows 10, Linux

Software tools: Open Source Software or Commercial Software.

The following is the suggestive list of open source software and their commercial replacement.

Experiments may be done using either open source software or commercial software.

3D Graphics and Animation

1. Art of Illusion Replaces: AutoDesk Maya
2. Blender Replaces: AutoDesk Maya

Audio Players

3. a Tunes, Audacious, Clementine are Replaces: iTunes
4. CoolPlayer, MPH-HC Replaces: Windows Media Player
5. Zing Replaces: Windows Media Player

Audio Recorders and Editors

6. Audacity Replaces: Sonar X1, Sony ACID, Adobe Audition
7. Frinika Replaces: Sonar X1, Sony ACID

Audio Ripping and Conversion

8. free ac, BonkEnc Exact Audio Copy, Audio Convertor Studio
9. CUE Ripper, CDex Exact Audio Copy
10. MMConvert Exact Audio Copy

Multimedia Players

11. VLC Media Player Replaces: Windows Media Player
12. Mplayer Replaces: Windows Media Player
13. KODI Replaces: Windows Media Player
14. MediaPortal Replaces: Windows Media Player

Video Editing

15. Cinelerra Replaces: Adobe Premiere
16. OpenShot Video Editor Replaces: Adobe Premiere Pro CS5
17. Avidemux Replaces: Adobe Premiere
18. Kdenlive Replaces: Adobe Premiere Pro CS5
19. CineFX Replaces: Adobe Premiere Pro CS5

Video File Conversion

20. DVDx Replaces: Movavi Video Converter, Zamzar
21. DVD Flick Replaces: Movavi Video Converter, Zamzar
22. FFDShow Replaces: Movavi Video Converter, Zamzar

Video Player

23. Miro Replaces: Windows Media Player

CD / DVD Burners

24. Infrared Recorder **DVD**

Authoring

25. DVD Flick, DVDStyler**,** Bombono DVD

OBJECTIVES:

After the completion of this lab students will be able to

- Create Audio / Video hardware & software applications.
- Record & edit digital audio using sound editing software.
- Learn about video editing.
- Apply various filters & Compression techniques in Multimedia Applications.
- Learn photo editing software.
- Learn about 2D, 3D and cloud animation.
- Learn about chroma key technique.

COURSE OUTCOMES:

Course	**CTD562 ELECTIVE PRACTICAL I – MOBILE COMPUTING PRACTICAL**
After successful completion of this course, the students should be able to	
D652.1	Develop, apply and to create applications Audio / Video hardware
D652.2	Learn photo editing software
D652.3	To develop curriculum and applying various filters
D652.4	To learn about photo editing software, and multimedia applications
D652.5	To learn about 2D,3D, cloud animation ,chroma key technique and develop the Mini Project with report

CTD652 MULTIMEDIA SYSTEMS PRACTICAL

List of experiments to be conducted

1. Use a audio processing software and perform the audio editing tasks – Import audio, select and edit the sound, create fade-in and fade-out effects, label audio segments, use noise remove filter, mix multiple sound sources, change stereo to mono tracks, export audio to different format and save.
2. Use a video processing software to perform – Trim video clips, rotate video, merge video, split video, add titles, add special effects and edit video dimensions, bit rate, frame rate, sample rate, channel.
3. Create a movie from video clips to demonstrate – Audio-Video mixing, add music,video effects, video transition and titles.
4. Use suitable software and perform a) compress / decompress audio / video files. b) Convert audio/video to different format.
5. Use a scanner to create two or more partial scanned images of large poster/photo. Create a panoramic view of multiple photos by stitching together them using any panorama software
6. Develop a web page which shows animation with sound effect using any professional HTML editor.
7. Convert the given image into pencil sketch using suitable photo editing software.
8. Design a certificate for sports day with different text effects using suitable software.
9. Import any two pictures, Morph, Merge and Overlap those two pictures.
10. Draw the raindrop that falls on the ground. Show the splash effect and sound effectusing suitable software.
11. Create a moving cloud animation using any animation software.
12. Create a 2D animation using motion guide layer and masking.
13. Create a 2D animation of an aeroplane take off using suitable software.
14. Design a metallic text using 3D animation tool
15. To create an animation to indicate a ball bouncing on steps.
16. Mini Project

    The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**

TOTAL		**25 Marks**

LEARNING WEBSITES

1.http://www.tutorialspoint.com/

CO- POs & PSOs MAPPING MATRIX

CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PSO1**	**PSO2**	**PSO3**
D652.1	3	3	3	3	3	3	3	3	3	3
D652.2	3	3	3	3	3	3	3	3	3	3
D652.3	3	3	3	3	3	3	3	3	3	3
D652.4	3	3	3	3	3	3	3	3	3	3
D652.5	3	3	3	3	3	3	3	3	3	3
D652 Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

CTD652 MULTIMEDIA SYSTEMS PRACTICAL

MODEL QUESTION PAPER

S.NO	PART A	CO	PO
1	Use a audio processing software and perform the audio editing tasks – Import audio, select and edit the sound, create fade-in and fade-out effects, label audio segments, use noise remove filter, mix multiple sound sources, change stereo to mono tracks, export audio to different format and save.	D652.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
2	Use a video processing software to perform – Trim video clips, rotate video, merge video, split video, add titles, add special effects and edit video dimensions, bit rate, frame rate, sample rate, channel.	D652.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
3	Create a movie from video clips to demonstrate – Audio-Video mixing, add music,video effects, video transition and titles.	D652.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Use suitable software and perform a) compress / decompress audio / video files. b) Convert audio/video to different format.	D652.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
5	Use a scanner to create two or more partial scanned images of large poster/photo. Create a panoramic view of multiple photos by stitching together them using any panorama software	D652.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
6	Develop a web page which shows animation with sound effect using any professional HTML editor.	D652.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
7	Convert the given image into pencil sketch using suitable photo editing software.	D652.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
8	Design a certificate for sports day with different text effects using suitable software.	D652.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
9	Import any two pictures, Morph, Merge and Overlap those two pictures.	D652.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
10	Draw the raindrop that falls on the ground. Show the splash effect and sound effectusing suitable software.	D652.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
11	Create a moving cloud animation using any animation software.	D652.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
12	Create a 2D animation using motion guide layer and masking.	D652.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
13	Create a 2D animation of an aeroplane take off using suitable software.	D652.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
14	Design a metallic text using 3D animation tool	D652.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
15	Mini Project	D652.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD653 DATA SCIENCE AND BIG DATA PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			
Elective Practical II - Data Science and Big Data Practical	4	64	Internal Assessment	Autonomous Examination	Total	Duration
			25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

S.NO	DESCRIPTION	MARKS
1	Procedure / Program Writing – One Question	40
2	Execution	30
3	Result with printout	15
4	VIVA - VOCE	5
5	Mini Project	10
TOTAL		**100**

Mini Project Evaluation (10 marks)

Breakup Details

1	Project Description	05
2	Project Demo	05
	Total	**10**

COURSE DESCRIPTION:

The data science process is about analyzing, visualizing, extracting, managing and storing data. It enables companies to efficiently understand large volume of data from multiple sources and derive valuable insights to make smarter data-driven decisions. Data Science is widely used in various industry domains, including marketing, healthcare, finance, banking, policy work, and more. This practical subject helps students understand how they can use Python NumPy, Pandas and Matplotlib to critically examine a dataset with summary statistics and graphs, and extract meaningful insights. Also, the data analysis using Microsoft Excel has been included to familiarize some advanced features like data analysis. Microsoft Excel has been chosen as the software to start with in this subject because many of our students are already be familiar with Excel, so very little further time will be required for them to learn to apply Excel for Data Processing. Processing unstructured data in the form of text files is also introduced. Basic statistics and data visualization techniques have been introduced as simple exercises

HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement:

1. Desktop Computers – 30 Nos
2. Laser printer - 1 No.

For the optimal student experience, we recommend the following hardware configuration:

3. Processor: Intel Core i5 or equivalent
4. Memory: 4 GB RAM
5. Storage: 35 GB available space

Software Requirement:

1. Python
2. Microsoft Excel

OBJECTIVES :

On Completion of the exercises in this practical subject, the students will be able to

- Install the required packages to set up a data science coding environment
- Load different types of data into a Python Environment.
- Use basic operation with NumPy and Pandas libraries to prepare data
- Preprocess the data by handling missing data, duplicate values
- Aggregate the data
- Create data subsets
- Perform data cleaning operations
- Develop a single dataset by merging various datasets together
- Examine statistical summaries

- Use Matplotlib to create data visualizations
- Find the relationship between the data attributes
- Measure the basic statistical properties of the data
- Fit a regression model and understand the predictive capabilities of the models.
- Understand the basic text processing concepts.

COURSE OUTCOMES:

Course	**CTD653 DATA SCIENCE AND BIG DATA PRACTICAL**
After successful completion of this course, the students should be able to	
D653.1	Develop, apply and Load different types of data into a Python Environment
D653.2	To perform basic operation with NumPY and Pandas
D653.3	Develop a single dataset by merging various datasets together
D653.4	Using Matplotlib to create data visualizations.
D653.5	Measuring basic statistical properties, predictive capabilities of the models , basic text processing concepts and develop the Mini Project with report.

CTD653 DATA SCIENCE AND BIG DATA PRACTICAL

List of experiments to be conducted

1 Load the data about the exam fee paid by the students of all branches of your college. Perform the following operations on it using Excel.

a. Arrange the data branch wise within the branch and arrange register numbers. Replace all names with CAPITAL.

b. Count the number of students in each branch and semester

c.Calculate the total fee paid by students of each branch.

d. Find the minimum and the maximum fee paid by the student.

e. Find the sum, average, max, min of fee paid in each branch

2 Load the data collected from all students during online answer paper submission with the following details for each exam. Regno, name, course_code, subject_code, semester, number_of_pages(nop), mode_of_dispatch, email_id, mobile_number. Perform the following operations using Excel

a.Check the file for any missing data in the columns.

b. Count the number of students appeared for the exam.

c. Count the number of papers (subjects) submitted by each student (Using register number)

d. Create a new column by concatenating register number and the subject code. Using this column, perform the vlookup function to find the number of pages (nop) written by the students in that subject, and the mode of dispatch.

e. Count the number of students appeared (submitted) for each subject.

f. Count the number of different (unique) subject_codes that have been submitted.

3 Read the dataset from the Auto-MPG repository and perform the descriptive statistics on the data using Excel-Data Analysis. Verify the same using the statistical functions of Excel.

4 Read the dataset from the Auto-MPG repository and

a) Identify the relationship between the variables using correlation.

b) Identify the independent and the dependent variables.

c) Perform the linear regression on the related variables and find theregression equation.

d) Estimate the performance of the regression model

5 Load any external csv data file and store it in a Pandas DataFrame

a. Check the shape and column types of the DataFrame (rows andcolumns). [Note: Use df.info () and df.shape()]

b. Subset the data column by names, by index, by range

c. Subset data based on index label, row index, multiple rows

d. Subset based on rows and columns

6 DESCRIPTIVE STATISTICS using Python-Pandas

a) Write a Python script to find basic descriptive statistics on AUTO-MPG dataset.

b) Find the values of the descriptive statistics.

c) Determine the measures of a central location, such as mean, markers suchas quartiles or percentiles, and measures of variability or spread, such as the standard deviation.

7 READING AND WRITING DIFFERENT TYPES OF DATASETS

a) Reading different types of data sets (.txt, .csv) from Web and disk and writing in file in specific disk location

b) Reading Excel data sheet using Pandas

c) Export the values from the DataFrame to several other formats.

8 DATA VISUALIZATION

a)Load the Auto-MPG dataset from csv file into pandas.

b) Analyze the Behavior of the Number of Cylinders and Horsepower Using aBoxplot

c) Find the relationship between horsepower and weight using the scatter plotusing the data from Auto-MPG:

d) Find the outliers using plot.

e) Plot the histogram, bar chart and pie chart on sample data.

9 COVARIANCE and CORRELATION

a) Find the correlation and covariance between two variables.

b)Plot the correlation plot on the dataset and visualize giving an overview ofrelationships among data

c)Fit a simple linear regression model using libraries such as Numpy or Scikitlearn.

importLinearRegression from sklearn.linear_model)

- Import the packages and classes you need.
- Provide data for independent and dependent variables.
- Create a regression model and fit it with existing data
- Check the results of model fitting to know whether the model is satisfactory.

10 OUTLIER Detection

When analysing data collected as part of a science experiment it may be desirable to remove the most extreme values before performing other calculations. Write a function that takes a list of values and an non-negative integer, n, as its parameters

The function should create a new copy of the list with the n largest elements and the n smallest elements removed. Then it should return the new copy of the list as the function's only result. The order of the elements in the returned list does not have to match the order of the elements in the original list.

11 Text Processing

a) Open a text file and read all the lines of the file.

b) Tokenise (separate the words) the text.

c) Count the total number of lines, total number of words and unique words

d) Sort the words alphabetically

e) Find the most frequent and least frequent words.

f) List the words having certain suffixes.

Note: You can open a Tamil text file using 'UTF-16' encoding.

12 Text Processing-II

Load a text file containing a list of words into aDataFrame. Apply the following functions and verify the results. Replace(), repeat(), count(pattern), startswith(pattern), endswith(pattern), find(pattern), findall(pattern)

Develop any data science application using Python/Excel for processing your college data.

13 Installation of Single Node Hadoop Cluster on Ubuntu

14 Mini Project

The mini project is activity based and it may be given to group of maximum of six students for hands on experience and to create scientific temper

CONTINUOUS INTERNAL ASSESSMENT

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:

a) Attendance (Award of marks same as theory courses)	:	**05 Marks**
b) Procedure/ observation and tabulation/ Other Practical related Work	:	**05 Marks**
c) Tests#	:	**10 Marks**
d) Student Centered Learning (SCL) work sheet	:	**05 Marks**
TOTAL		**25 Marks**

LEARNING WEBSITES

1.https://archive.ics.uci.edu/ml/machine-learning-databases/auto-mpg/

2.https://archive.ics.uci.edu/ml/machine-learning-databases/iris/iris.data

3.https://www.kaggle.com/rohankayan/years-of-experience-and-salary-dataset

CO- POs & PSOs MAPPING MATRIX

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
D653.1	3	3	3	3	3	3	3	3	3	3
D653.2	3	3	3	3	3	3	3	3	3	3
D653.3	3	3	3	3	3	3	3	3	3	3
D653.4	3	3	3	3	3	3	3	3	3	3
D653.5	3	3	3	3	3	3	3	3	3	3
D653Total	15	15	15	15	15	15	15	15	15	15
Correlation Level	3	3	3	3	3	3	3	3	3	3

CTD653 DATA SCIENCE AND BIG DATA PRACTICAL

MODEL QUESTION PAPER

S.No	Part A	CO	PO
1	Load the data about the exam fee paid by the students of all branches of your college. Perform the following operations on it using Excel.	D653.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Arrange the data branch wise within the branch and arrange register numbers. Replace all names with CAPITAL.		
	b. Count the number of students in each branch and semester		
	c.Calculate the total fee paid by students of each branch.		
	d. Find the minimum and the maximum fee paid by the student.		
	e. Find the sum, average, max, min of fee paid in each branch		
2	Load the data collected from all students during online answer paper submission with the following details for each exam. Regno, name, course_code, subject_code, semester, number_of_pages(nop), mode_of_dispatch, email_id, mobile_number. Perform the following operations using Excel	D653.1	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a.Check the file for any missing data in the columns.		
	b. Count the number of students appeared for the exam.		
	c. Count the number of papers (subjects) submitted by each student (Using register number)		
	d. Create a new column by concatenating register number and the subject code. Using this column, perform the vlookup function to find the number of pages (nop) written by the students in that subject, and the mode of dispatch.		
	e. Count the number of students appeared (submitted) for each subject.		
	f. Count the number of different (unique) subject_codes that have been submitted.		
3	Read the dataset from the Auto-MPG repository and perform the descriptive statistics on the data using Excel-Data Analysis. Verify the same using the statistical functions of Excel.	D653.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
4	Read the dataset from the Auto-MPG repository and	D653.2	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a) Identify the relationship between the variables using correlation.		
	b) Identify the independent and the dependent variables.		
	c) Perform the linear regression on the related variables and find theregression equation.		
	d) Estimate the performance of the regression model		
5	Load any external csv data file and store it in a Pandas DataFrame	D653.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a. Check the shape and column types of the DataFrame (rows andcolumns). [Note: Use df.info () and		

	df.shape()]		
	b. Subset the data column by names, by index, by range		
	c. Subset data based on index label, row index, multiple rows		
	d. Subset based on rows and columns		
6	DESCRIPTIVE STATISTICS using Python-Pandas	D653.3	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a) Write a Python script to find basic descriptive statistics on AUTO-MPG dataset.		
	b) Find the values of the descriptive statistics.		
	c) Determine the measures of a central location, such as mean, markers suchas quartiles or percentiles, and measures of variability or spread, such as the standard deviation.		
7	READING AND WRITING DIFFERENT TYPES OF DATASETS	D653.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a) Reading different types of data sets (.txt, .csv) from Web and disk and writing in file in specific disk location		
	b) Reading Excel data sheet using Pandas		
	c) Export the values from the DataFrame to several other formats.		
8	DATA VISUALIZATION	D653.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a) Load the Auto-MPG dataset from csv file into pandas.		
	b) Analyze the Behavior of the Number of Cylinders and Horsepower Using aBoxplot		
	c) Find the relationship between horsepower and weight using the scatter plotusing the data from Auto-MPG:		
	d) Find the outliers using plot.		
	e) Plot the histogram, bar chart and pie chart on sample data .		
9	COVARIANCE and CORRELATION	D653.4	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a) Find the correlation and covariance between two variables.		
	b) Plot the correlation plot on the dataset and visualize giving an overview ofrelationships among data		
	c) Fit a simple linear regression model using libraries such as Numpy or Scikitlearn. (importLinearRegression from sklearn.linear_model)		
	• Import the packages and classes you need.		
	• Provide data for independent and dependent variables.		
	• Create a regression model and fit it with existing data		
	• Check the results of model fitting to know whether the model is satisfactory.		
10	OUTLIER Detection	D653.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	When analysing data collected as part of a science experiment it may be desirable to remove the most extreme values before performing other calculations. Write a function that takes a list of values and an non-negative integer, n, as its parameters		

	The function should create a new copy of the list with the n largest elements and the n smallest elements removed. Then it should return the new copy of the list as the function's only result. The order of the elements in the returned list does not have to match the order of the elements in the original list.		
11	Text Processing	D653.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	a) Open a text file and read all the lines of the file.		
	b) Tokenise (separate the words) the text.		
	c) Count the total number of lines, total number of words and unique words		
	d) Sort the words alphabetically		
	e) Find the most frequent and least frequent words.		
	f) List the words having certain suffixes.		
	Note: You can open a Tamil text file using 'UTF-16' encoding.		
13	Text Processing-II	D653.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7
	Load a text file containing a list of words into aDataFrame. Apply the following functions and verify the results. Replace(), repeat(), count(pattern), startswith(pattern), endswith(pattern), find(pattern), findall(pattern)		
	Develop any data science application using Python/Excel for processing your college data		
14	Mini Project	D653.5	PO1,PO2,PO3,PO4, PO5,PO6,PO7

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CTD660 PROJECT WORK AND INTERNSHIP

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester :16 Weeks

Subject	Instruction		Examination			
Project Work and Internship	Hours/ Week	Hours/ Semester	Marks			
			Internal Assessment	Autonomous Examination	Total	Duration
	6	96	25	100*	100	3Hrs

***Examinations will be conducted for 100 marks and it will be reduced to 75 marks**

DETAILED ALLOCATION OF MARKS

S.NO	DESCRIPTION	MARKS
1	Demonstration/Presentation	25
2	Report	25
3	Viva Voce	30
4	Internship report	20
TOTAL		**100**

COURSE DESCRIPTION:

Project Work aims at developing innovative skills in the students whereby they apply the knowledge and skills gained through the course by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, so as to participate and manage a large software engineering projects in future.

OBJECTIVES :

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment.
- Develop software packages or applications to implement the actual needs of the community.
- Get exposure on industrial environment and its workethics.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge asrequired

- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final projectreport.
- Expose students to the field of computing and to gain experience in softwaredesign.
- Understandand gain knowledge about disastermanagement.

GUIDELINES FOR PROJECT FORMULATION

The project work constitutes a major component in most of the professional programmes and it is to be carried out with due care and should be executed with seriousness by the candidates. Batch size : Maximum 6 students per batch

TYPE OF PROJECT

As majority of the students are expected to work out a real life project in some industry / research and development laboratories / educational institutions / software companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. Students are encouraged to work in the areas listed at the end. However, it is not mandatory for a student to work on a real life project. The student can formulate a project problem with the help of Guide.

PROJECT PROPOSAL (SYNOPSIS)

The students of all the Diploma Courses have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamil Nadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester. The project work is approved during the V semester by the properly constituted committee with guidelines.**

The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project work should compulsorily include the software development. The project proposal should contain complete details in the followingform:

1. Title of theProject.
2. Introduction and Objectives of theProject.
3. Project Category (DBMS/OOPS/Networking/Multimedia/ArtificialIntelligence/Expert Systemsetc.).
4. Tools / Platform, Hardware and Software Requirementspecifications.
5. Analysis (DFDs at least up to second level , ER Diagrams/ Class Diagrams/ DatabaseDesign etc. as per the project requirements).
6. A complete structure which includes: Number of modules and their description to provide an estimation of the student's effort onVthe project. Data Structures as per theproject requirements for all themodules.
    - Process logic of eachmodule.
    - Testsing process to beused.

- Reports generation (Mention tentative content of report).

7. Are you doing this project for any Industry/Client? MentionYes/No
   If Yes, Mention the Name and Address of the Industry or Client.
8. Future scope and further enhancement of the project. Also mention limitation of theproject.

AREAS OF PROJECT WORK:

- Database Management Systems
- Software Engineering and Software Development
- Web page Designing
- Digital Image Processing
- Computer Graphics andAnimation
- Multimedia Systems
- Computer Networks
- Artificial Intelligence
- Internet ande-commerce
- Computer Security and Cryptography
- Computer hardware and embedded systems
- Internet Of Things
- Cloud Computing
- Any other related area found worth.

INTERNSHIP TRAINING

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year "Project Work & Internship" for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Autonomous examination.

INTERNAL ASSESSMENT:

The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	**Period of assessment**	**Max.Marks**
First Review	6^{th} week	10
Second Review	12^{th} week	10
Attendance	Entire semester	5
Total		**25**

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Board Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

CTD610 COMPUTER HARWARE AND SERVICING

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3= 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	What is a chipset?	I	R	D610.1	PO1,PO3
2	Define Hardware, software and firm ware.	I	U	D610.1	PO1,PO3
3	What is primary memory? What are its Characteristics?	II	U	D610.2	PO1,PO3
4	What is Blu-ray?	II	R	D610.2	PO1,PO3
5	What are the four main functions of BIOS?	III	U	D610.3	PO1,PO3
6	What are the different types of LED display?	III	U	D610.3	PO1,PO3
7	How will you update the system software?	IV	R	D610.4	PO1,PO3
8	What is Tablet PC?	IV	R	D610.4	PO1,PO3
9	Define MRAM.	V	R	D610.5	PO1,PO3
10	What are the limitationsof RDMA technology?	V	R	D610.5	PO1,PO3

	PART-B (5 X 14 = 70Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Discuss the features of different bus standards.	07	I	U	D610.1	PO1,PO3,PO4
	(ii) Explain the quad core processor.	07	I	U	D610.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the structure of the generic mother board.	07	I	R	D610.1	PO1,PO3,PO4
	(ii) Explain features of Core i3,i5,i7.	07	I	U	D610.1	PO1,PO3,PO4
12	(A) (i) Explain the working principle of harddisk.	07	II	U	D610.2	PO1,PO3,PO4
	(ii) Explain the scanner mechanism.	07	II	U	D610.2	PO1,PO3,PO4

	(OR)					
	(B) (i) Explain the Recordable DVD.	07	II	U	D610.2	PO1,PO3,PO4
	(ii) Explain the common problems encountered in printer and provide its solutions	07	II	U	D610.2	PO1,PO3,PO4
13	(A).(i) Explain the principle of LCD in detail	07	III	U	D610.3	PO1,PO3,PO4
	(ii) Explain the working of Plasma display.	07	III	An	D610.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the basic principles and Operationsof SMPS.	07	III	U	D610.3	PO1,PO3,PO4
	(ii) Write short notes on Cold and warm booting, BIOS error codes.	07	III	U	D610.3	PO1,PO3,PO4
14	(A) (i) What are the basic problems associated with RAM?.	07	IV	U	D610.4	PO1,PO3,PO4
	(ii) How will you install the operating system in mobile?	07	IV	U	D610.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the active and passive maintenance.	07	IV	U	D610.4	PO1,PO3,PO4
	(ii) Explain the types of diagnostics software	07	IV	U	D610.4	PO1,PO3,PO4
15	(A) (i) Explain the architecture of NVM technology.	07	V	U	D610.5	PO1,PO3,PO4
	(ii) Discuss about Ferro electric Random-Access Memory.	07	V	An	D610.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Describe working principleof RDMA	07	V	U	D610.5	PO1,PO3,PO4
	(ii) What are the advantages and applications of Embedded devices.	07	V	U	D610.5	PO1,PO3,PO4

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD620 COMPUTER NETWORK AND SECURITY

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3= 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Explain different computer network topologies and give examples.	I	R	D620.1	PO1,PO3
2	Explain functionality of routers and switche	I	U	D620.1	PO1,PO3
3	Explain TCP/IP protocol and its purpose	II	R	D620.2	PO1,PO3
4	Explain MAC address and IP address sub netting and super netting techniques	II	R	D620.2	PO1,PO3
5	Explain Broadband Next Gen(BNG) and its use case	III	U	D620.3	PO1,PO3
6	Explain different types of network attacks.	III	U	D620.3	PO1,PO3
7	Explain different cryptography techniques	IV	R	D620.4	PO1,PO3
8	List different hacking techniques.	IV	R	D620.4	PO1,PO3
9	Explain Web security and various protocols uses.	V	R	D620.5	PO1,PO3
10	Explain MACSEC and its purpose	V	R	D620.5	PO1,PO3

PART-B (5 X 14 = 70 Marks)						
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain the different types of connections in networks	07	I	U	D620.1	PO1,PO3,PO4
	(ii) Describe in detail about service provider networks	07	I	U	D620.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain about the different network guided media types in detail	07	I	R	D620.1	PO1,PO3,PO4

	(ii) Write down the features of wired and wireless routers	07	I	U	D620.1	PO1,PO3,PO4
12	(A) (i) Explain functionality of all OSI layers in detail.	07	II	U	D620.2	PO1,PO3,PO4
	(ii) Explain the concepts and PDU format of CSMA/CD.	07	II	U	D620.2	PO1,PO3,PO4
	(OR)					
	(B) (i) Compare the features of 802.4 and 802.5.	07	II	U	D620.2	PO1,PO3,PO4
	(ii) Explain about the protocols involved in WAN networks.	07	II	U	D620.2	PO1,PO3,PO4
13	(A).(i) Write notes on connection oriented and connectionless oriented service	07	III	U	D620.3	PO1,PO3,PO4
	(ii) CompareTCP and UDP sockets.	07	III	An	D620.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain in detail the functionality and importance of OAM.	07	III	U	D620.3	PO1,PO3,PO4
	(ii) Explain about the protocols and techniques involved in traffic engineering	07	III	U	D620.3	PO1,PO3,PO4
14	(A) (i) Write notes on software supply chain attacks	07	IV	U	D620.4	PO1,PO3,PO4
	(ii) Compare AES and DES	07	IV	U	D620.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain in detail about the public key cryptography principles.	07	IV	U	D620.4	PO1,PO3,PO4
	(ii) Explain about the IP Security architecture	07	IV	U	D620.4	PO1,PO3,PO4
15	(A) (i) Write notes on historical hacking techniques.	07	V	U	D620.5	PO1,PO3,PO4
	(ii) Compare RAID Level 1 and RAID level 3.	07	V	An	D620.5	PO1,PO3,PO4

	(OR)					
	(B) (i) Explain in detail about the transmission security	07	V	U	D620.5	PO1,PO3,PO4
	(ii) Explain about the Message Authentication codes and Hashes	07	V	U	D620.5	PO1,PO3,PO4

QUESTION PAPER SETTING

The teaching learning process and assessment are being carried out in accordance with the revised Bloom's Taxonomy. The question paper should consist of 90% questions based on Lower Order Thinking (LOTs) and the remaining 10% based on Higher Order Thinking (HOTs) as detailed below.

Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD631 SOFTWARE ENGINEERING

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3= 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	What is SDLC? Mention any 2 models.	I	U	D631.1	PO1,PO3
2	What is SRS?	I	U	D631.1	PO1,PO4
3	What is Internal documentation?	II	R	D631.2	PO1,PO3
4	What is software metrics?	II	R	D631.2	PO1,PO3
5	What is risk?	III	R	D631.3	PO1,PO3
6	When is flow graph used?	III	U	D631.3	PO1,PO3
7	What is a tests case?	IV	R	D631.4	PO1,PO3
8	What Is performance/ load testsing tools?	IV	R	D631.4	PO1,PO3
9	Define Software Quality.	V	R	D631.5	PO1,PO3
10	List out the classification of failures?	V	R	D631.5	PO1,PO3

	PART-B (5 X 14 = 70 Marks)					
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) What are the characteristics of software engineering?	07	I	R	D631.1	PO1,PO3,PO4
	(ii) Differentiate program vs software products.	07	I	U	D631.1	PO1,PO4,PO5
	(OR)					
	(B) (i) .Explain waterfall model with neat diagram?	07	I	U	D631.1	PO1,PO3,PO5
	(ii) .What are the advantages of prototyping and spiral model.	07	1	R	D631.1	PO1,PO3,PO5
12	(A) (i) What are the objectives of software design?.	07	11	U	D631.2	PO1,PO3,PO5
	(ii) Explain about human computer interface.	07	11	U	D631.2	PO1,PO5,PO6

	(OR)					
	(B) (i) Write about the architecture of CASE environment.	07	11	R	D631.2	PO1,PO3,PO5
	(ii) How to execute sprints for agile model?	07	11	U	D631.2	PO1,PO3,PO5
13	(A).(i) Explain about software configuration management activities	07	III	U	D631.3	PO1,PO3,PO4
	(ii) What are the categoriesof Maintenance?.	07	III	U	D631.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain in detail about risk management?	07	III	U	D631.3	PO1,PO3,PO5
	(ii) Write notes on Gantchart.	07	III	U	D631.3	PO1,PO3,PO5
14	(A) Explain in detail about whitebox testsing	07	IV	E	D631.4	PO1,PO3,PO5
	(ii) a. Write notes on tests plan.	07	IV	U	D631.4	PO1,PO3,PO5
	(OR)					
	(B) (i) Write about the Characteristics of bugs.	07	IV	U	D631.4	PO1,PO3,PO4
	(ii) Explain the life cycle of a debugging task	07	IV	U	D631.4	PO1,PO3,PO4
15	(A) (i) Write about the software quality attributes.	07	V	U	D631.5	PO1,PO3,PO4
	(ii) What are the important qualities of software products.	07	V	U	D631.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain in about detail there liability metrics and measurement process.	07	V	U	D631.5	PO1,PO3,PO4
	(ii) Explain in detail about reverse engineering tasks.	07	V	R	D631.5	PO1,PO3,PO5

QUESTION PAPER SETTING

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Bloom's Taxonomy	Lower Order Thinking Skills (LOTs)	Higher Order Thinking Skills (HOTs)
Level	R-Remember, U-Understand , Ap-Apply	An-Analyze, E-Evaluate, C-Create
% to be included	90%	10%

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CTD 632 MUTLIMEDIA SYSTEMS

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	Define hypermedia document.	I	U	D632.1	PO1,PO3
2	Whatis Open GL?	I	U	D632.1	PO1,PO3
3	Differentiate vector image and bitmap image.	II	R	D632.2	PO1,PO3
4	What are the characteristics of digital audio?	II	R	D632.2	PO1,PO3
5	List down the advantages and disadvantages of fractal compression.	III	U	D632.3	PO1,PO3
6	Write the data types used in multimedia database.	III	U	D632.3	PO1,PO3
7	What is OCR software?	IV	R	D632.4	PO1,PO3
8	Write the role of multimedia designer.	IV	R	D632.4	PO1,PO3
9	Define media on demand.	V	R	D632.5	PO1,PO3
10	What is internet telephony?	V	U	D632.5	PO1,PO4

PART-B (5 X 14 = 70 Marks)						
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain the various multimedia elements.	07	I	U	D632.1	PO1,PO3,PO4
	(ii) Explainin detail the structure of VRML file	07	I	U	D632.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain the Multimedia work station architecture	07	I	R	D632.1	PO1,PO3,PO4
	(ii) Explain in detail about Hypermedia document	07	I	U	D632.1	PO1,PO3,PO4
12	(A) (i) Explain color image processing and enhancement.	07	II	U	D632.2	PO1,PO3,PO4
	(ii) Explain the various audio formats supported by Internet.	07	II	U	D632.2	PO1,PO3,PO4

	(OR)					
	(B) (i) Explain any two animation techniques	07	II	U	D632.2	PO1,PO3,PO5
	(ii) Explain how video works are displayed	07	II	U	D632.2	PO1,PO3,PO5
13	(A).(i) Explain TWAINE architecture	07	III	U	D632.3	PO1,PO3,PO4
	(ii) Write about search by Illumination in variance in C-BIRD	07	III	An	D632.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain about JPEG compression	07	III	U	D632.3	PO1,PO3,PO4
	(ii) Explain about multimedia file format.	07	III	U	D632.3	PO1,PO3,PO4
14	(A) (i) Explain the architecture of video capture board	07	IV	U	D632.4	PO1,PO3,PO4
	(ii) Explain the types of authoring tool.	07	IV	U	D632.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain briefly voice recognition system	07	IV	U	D632.4	PO1,PO3,PO5
	(ii) What are the roles of different team members in multimedia development?	07	IV	U	D632.4	PO1,PO3,PO5
15	(A) (i) How sound is embedded in a web document?	07	V	U	D632.5	PO1,PO3,PO5
	(ii) Explain briefly about E-learning and education	07	V	An	D632.5	PO1,PO3,PO5
	(OR)					
	(B) (i) Explain the streaming architecture.	07	V	U	D632.5	PO1,PO3,PO4
	(ii) Define plug-in. Explain its types.	07	V	U	D632.5	PO1,PO3,PO5

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% to be included	90%	10%

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CTD 633 DATA SCIENCE AND BIG DATA

MODEL QUESTION PAPER

Time: 3 Hrs **Max. Marks: 100**

Note: Answer all questions. All questions carry equal marks

PART-A (10 X 3 = 30Marks)					
Note: Answer any TEN questions. All questions carry equal marks					
S.No	**Questions**	**UNIT**	**Bloom's Level**	**CO**	**PO**
1	List some features of python	I	U	D633.1	PO1,PO3
2	List some data formats for loading and saving files	I	U	D633.1	PO1,PO3
3	How will you add a column to a pandas data frame?	II	U	D633.2	PO1,PO3
4	What is linear regression?	II	R	D633.2	PO1,PO3
5	What is the core Hadoop components used in big data analytics?	III	U	D633.3	PO1,PO3
6	Write short notes on replication in big data storage	III	U	D633.3	PO1,PO3
7	Differentiate between parallel and distributed data processing	IV	R	D633.4	PO1,PO3
8	Write the features of NoSQL.	IV	R	D633.4	PO1,PO3
9	Write short notes on JSON file format for data storage	V	R	D633.5	PO1,PO3
10	List some applications of big data in Medicine	V	U	D633.5	1

PART-B (5 X 14 = 70 Marks)						
	Note: Answer all questions choosing A Or B in each question. All questions carry equal marks					
S.No	**Questions**	**Marks**	**UNIT**	**Bloom's Level**	**CO**	**PO**
11	(A) (i) Explain how VLOOKUP works in Excel?	07	I	U	D633.1	PO1,PO3,PO4
	(ii) Explain about handling missing values in a dataset.	07	I	U	D633.1	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain any two descriptive statistical measures used in data analysis	07	I	R	D633.1	PO1,PO3,PO4
	(ii) Explain about any four data pre processing steps	07	I	U	D633.1	PO1,PO3,PO4

12	(A) (i) Explain the simple line arregression model.	07	II	U	D633.2	PO1,PO3,PO4
	(ii) Describe how you will identifythe relationship among the attributes.	07	II	U	D633.2	PO1,PO3,PO5
	(OR)					
	(B) (i) Explain the Decision tree classification model	07	II	U	D633.2	PO1,PO3,PO5
	(ii) .Explain multiclass classification in machine learning.	07	II	U	D633.2	PO1,PO3,PO5
13	(A).(i) Explain the life cycle of big data analytics with a neat sketch.	07	III	U	D633.3	PO1,PO3,PO5
	(ii) Discuss about various sources of Bigdata and its need.	07	III	An	D633.3	PO1,PO3,PO4
	(OR)					
	(B) (i) Discuss briefly about Hyper Connected Communities and Devices.	07	III	U	D633.3	PO1,PO3,PO4
	(ii) Explain why dataquality is important in data analytics	07	III	U	D633.3	PO1,PO3,PO4
14	(A) (i) Describe Consistency, Availability, and Partition tolerance theorem	07	IV	U	D633.4	PO1,PO3,PO4
	(ii) Write note on NoSQL Databases and its types.	07	IV	U	D633.4	PO1,PO3,PO4
	(OR)					
	(B) (i) Explain various Hadoop ecosystem tools used in Bigdata analytics	07	IV	U	D633.4	PO1,PO3,PO4
	(ii) Explain the Hadoop distributed file system architecture.	07	IV	U	D633.4	PO1,PO3,PO4
15	(A) (i) Explain the importance of clustering in machine learning.	07	V	U	D633.5	PO1,PO3,PO4
	(ii) Explain thevarious map and reduce tasks involved in batch processing.	07	V	An	D633.5	PO1,PO3,PO4
	(OR)					
	(B) (i) Describe briefly about natural language processing and sentiment analysis	07	V	U	D633.5	PO1,PO3,PO4
	(ii) Explain how big data helps in health care systems	07	V	U	D633.5	PO1,PO3,PO4

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PERIYAR CENTENARY POLYTECHNIC COLLEGE

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(AUTONOMOUS INSTITUTION)

DIPLOMA IN COMPUTER ENGINEERING

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SEMESTER SYSTEM

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