ABOUT THE INSTITUTION

The Kovai Kalaimagal Educational Trust established in the year 1992 with an aspiration to quench the educational thirst of the poor and the needy strata of the society particularly from rural area. It sprouted with the establishment of a school and soon extended to add Kovai Kalaimagal College of Arts and Science in the year 1996 – 1997, Coimbatore Institute of Management and Technology in 1996 – 1997, Coimbatore Institute of Engineering and Technology in 2001 – 2002 and CIET School of Architecture in 2013 – 2014. The trust is managed by the dedicated team of trustees Dr. T. Banumathi, Dr. T. Namradha, Dr. K. A. Chinnaraju, Tmt. P. Shanmugadevi, Thiru. S. Subramanian and Thiru. M. Thangavelu who fully devote their time for the development of the institutions under the trust and it is due to their tireless efforts, the colleges have carved a name for themselves in the academic circle.

The college is situated in a serene atmosphere surrounded by picturesque mountains offering a very conducive environment for the academic perseverance. It is an ISO 9001:2008 certified institution and it has also been accredited by NAAC with 'A' grade. Committed to make quality education affordable especially to economically weaker sections particularly from rural area and strengthen the areas of research, enhance the process of sensitizing the students to personal values, spiritual growth and social responsibility. The college has taken every effort to ensure sustenance and enhancement of the quality in education.

Promoting Body

The Kovai Kalaimagal Educational Trust (KKET) was started in 1992 to establish educational institutions with the motto: 'Light the Light within'. The trust has, so far, established Kovai Kalaimagal College of Arts and Science, Coimbatore Institute of Engineering and Technology, CIET School of Architecture and Coimbatore Institute of Management And Technology at Vellimalaipattinam, Narasipuram Post, Thondamuthur Via, Coimbatore - 641 109.

Environment

KKCAS is located at Vellimalaipattinam, near Narasipuram, sprawling over a land area of 10.58 acres, surrounded by green hillocks. The campus has a serene and studious atmosphere with least disturbance and distraction. The students find the environment to be very conducive for their studies. Facilities in the campus meet their needs for extra / co-curricular activities.

ISO 9001:2008

As our institution is an ISO 9001:2008 certified institution, we have a strong system which takes care of the planned activities for enhancing quality in every respect. The institution implemented the Quality Management System and registered for the ISO certification since 2002. After implementation of the Quality Management System, not a single non-conformance was noticed in any of the QMS audit.

NAAC

Our institution was accredited with "A" grade by NAAC in the year 2011 and again Re-accredited with "A" grade by NAAC from September 2016.

Centre for Research

There is a research committee constituted in KKCAS which takes care of the promotion of research activities. Majority of members of faculty of Computer Science are the research guides guiding the scholars who pursue MPhil programme. This committee motivates the eligible faculty to apply for more number of research projects sponsored by UGC in topics of current interest.

The committee reviews the progress made by the research scholars periodically and advises them accordingly. In case the progress is not satisfactory, the reason for the same is found out and a solution to progress further is provided.

The committee recommends the research scholars and faculty pursuing Ph.D to participate and present papers in seminars and conferences and also publish research articles in reputed national and international journals. Those who are yet to register for pursuing M.Phil or Ph.D programmes are advised to register immediately and necessary support is also provided for finding suitable guides. The committee also recommends cash awards to those who publish research articles in refereed journals and sanction of additional increments and promotions to those who complete the Ph.D degrees. This has created a good impact as is evidenced by the number of faculty coming forward to pursue Ph.D programme.

Placement Cell

The institution has a placement cell which is effectively functioning under a placement officer and a placement coordinator. The responsibility of the placement officer is to identify the skills that are required to be possessed by the students as per the requirements of the companies and arrange for training programs for developing such skills among the students. Thus a number of

training programs are organized to develop the communication skills, mathematical and English aptitude, group discussion and technical skills by the professors and professional trainers.

It also arranges career-counselling programmes through psychometric tests. These tests bring out the students strengths, weaknesses and their personal interests and attitude towards various career options available to them. If needed, it arranges for any follow-up programmes to overcome the weaknesses. Regular seminars are organized to enhance their capability for grabbing various career options.As a results nearly 75% of students are able to get placements from reputed companies.

Hostel

Separate and comfortable accommodation for boys and girls is provided within the college campus to accommodate 650 boys and 750 girls. Facilities for playing indoor games and common reading rooms with audio visual equipments are available in all the hostels.

The institution plans for providing residential accommodation to the staff and there is a proposal for the construction of staff quarters. As there is a separate RO plant, purified and safe drinking water is provided to all the students.

Recognitions

The college has been recognized for the welfare schemes implemented for the benefit of the students and has been rewarded with "Best College Award" during 2007 – 2008 by the Bharathiar University. It has also been awarded with "Third Best College Award" for overall performances during the year 2008-2009 based on ten different criteria such as Results of University Examinations, Conducting Seminars, Workshops, Symposia and State and National Level Conferences, Self Development Programmes for Students, Number of Placements made in the Campus Interviews, Student Supporting Services, Faculty Development Programmes, Publication of Books and Research articles in Journals and Magazines, Research Activities, Social Service through NSS, YRC and RRC and achievements in Sports and Games. The institute was awarded with "A" Grade by National Assessment and Accreditation Council (NAAC). The college was granted Autonomous status by UGC, New Delhi for six years with effect from 2016-2017.

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

(An Autonomous Institute Affiliated to Bharathiar University)

Re - accredited with "A" grade by NAAC

Regulations for Undergraduate Programmes

(Under Choice Based Credit System)

(Effective from 2017 – 2018)

1. REGULATIONS

This regulation is effective from the academic year 2017 -2018.

1.1. Eligibility for Admission

Course	Eligibility Condition
UG - Science Stream	A pass in higher secondary course. Preference will be given to those who have studied Mathematics as one of the subjects.
UG - Arts Stream	A pass in higher secondary course.

1.2. Duration and Course of Study

Three Academic years with six semesters, the duration of the first, third and fifth Semesters from June to November and the second, fourth and sixth Semesters from December to April. The duration of each semester is 90 working days.

1.3. The Medium of Instruction and Examinations

The medium of instruction and examinations shall be English.

1.4. Requirements for Attendance

1. A candidate will be permitted to take the examination for any semester, if he/she secures not less than 75% of attendance out of the 90 working days during the semester.

2. A candidate who has secured attendance less than 75% but 65% and above shall apply with the prescribed fee for the condonation of lack of attendance. On the recommendation of the Principal, he/she will be permitted to take up the examination.

3. A candidate who has secured attendance less than 65% but 55% and above in any semester, will be permitted to continue the course but will not be permitted to appear for the examination in the current papers. However he/she will be permitted to appear for the

examination in the papers in which he/she has arrears. He/she will have to compensate the shortage of attendance in the subsequent semester and take the examination in the papers of both the semester together .

4. A candidate who has secured less than 55% of attendance in any semester will not be permitted to take the regular examinations and to continue the study in the subsequent semester. He/she has to re-do the course by rejoining in the semester in which the attendance is less than 55%.

A candidate who has secured less than 65% of attendance in the final semester has to compensate his / her attendance shortage in a manner to be decided by the Head of the Department concerned after rejoining the course.

1.5   Restriction to take the Examinations

• Any candidate having arrear paper(s) shall have the option to take the examinations in any arrear paper(s) along with the subsequent regular semester papers.

• Candidates who fail in any of the papers shall pass the paper(s) concerned   within five years from the date of admission to the said course. If they fail to do so, they shall take the examination in the revised text / syllabus, if any, prescribed for the immediate next batch of candidates. If there is no change in the text / syllabus they shall take the examination in that paper with the syllabus in vogue, until there is a change in the text or syllabus.

    In the event of removal of that paper consequent to the change of regulations and / or curriculum after a five year period, the candidates shall have to take up an equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per regulations/curriculum for the award of the degree.

1.6   The Evaluation System

The major objective of the institution's evaluation system is to motivate all students to excel in their performance. The students' performance is continually assessed through Continuous Assessment (CIA) and End Assessment (EAE). The CIA, EAE break up for theory papers is 25:75 and practical is 40:60.

1.6.1. Break Up of Continuous Internal Assessment (CIA) Marks

For UG Courses – Theory (Languages, English, Core, Allied and Elective)

Content	Marks Awarded
Internal Assessment Test	05
Online Test	05
Model Examination	10
Assignment (2 Numbers)	05
Total	**25**

For UG Courses – Theory (Communication Skills, Mathematics for Competitive Examinations and Aptitude & Soft Skills) #

Content	Marks Awarded
Internal Assessment Test I	25*
Internal Assessment Test II	
Internal Assessment Test III	25
Total	**50**

*Test I and Test II will be evaluated for 25 marks each and the average of these two will be considered.

Internal Evaluation only.

For UG Courses - Practical

Content	Marks Awarded (Max Marks: 100)	Marks Awarded (Max Marks: 50)
Minimum ten Experiments / Practical Paper / Semester	20	05
Internal Assessment Test	05	05
Model Exam	10	05
Record Note Book	05	05
Total	**40**	**20**

For UG Courses - Project Viva Voce

Content	Marks Awarded
Review and content Presentation (3 Reviews)(3*20)	60
Record	20
Total	**80**

1.6.2. End Assessment Examinations (EAE)

- Semester examination will be conducted at the end of each semester after completing a minimum of 90 working days.
- End Assessment Examination for the odd semester will generally be held during November and even semester during April.
- The question papers for all the courses will be set by the external examiners.
- The exams for Languages, English, Core, Allied and Elective will be conducted for a maximum of 75 marks for three hours. The passing minimum is 40% (30 out of 75 marks) and overall passing minimum putting the CIA and EAE marks together will be 40%.
    - Question Paper Pattern: (**Languages, English, Core, Allied and Elective**)

Part A	10 Marks	10 Questions - 1 Mark each – Objective type
Part B	25 Marks	5 Questions- 5 Marks each – either or type.
Part C	40 Marks	5 Questions- 8 Marks each – either or type.
Total	**75 Marks**	

- The exams for Value Based Education & Non Major Elective will be conducted for a maximum of 50 marks for three hours. The passing minimum is 40% (20 out of 50 marks).
    - Question Paper Pattern: (**Value Based Education & Non Major Elective**)

Part A	50 Marks	• Questions - either or type of question - 10 Marks each

- Question paper pattern : (**Extra Credit Courses**)

Part A	40 Marks	5 Questions- 8 Marks each – either or type.
Part B	60 Marks	5 Questions- 12 Marks each – either or type.
Total	**100 Marks**	

- The mark secured in the extra credit course will get reflected in the mark sheet only if the candidate has secured 40% marks and above.
- The students will be allowed to choose only two papers per semester under the extra credit courses from third semester onwards.
    - The students who have opted for the languages other than tamil part1 should undergobsic tamil course during the second year of their study as non credit course which involves only internal Evaluation.

- **For UG Courses - Practical**

Content	Marks Awarded (Max Marks: 100)	Marks Awarded (Max Marks: 50)
Program - 1	20	10
Program - 2	20	10
Viva voce	10	05
Record	10	05
Total	**60**	**30**

- **For UG Courses - Project Viva Voce**

Content	Marks Awarded
Viva Voce	20
Total	**20**

- There will be one independent valuation for all theory papers of UG courses by external examiner.
- A candidate may request for re-totalling/revaluation of his/her answer script by submitting an application addressing to the Controller of Examination through the Principal, paying the prescribed fee. This provision is available for all theory papers taken in the EAE. However there is no provision for revaluation of Practical papers.
- Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear once within a period of subsequent two semesters. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.

- Supplementary examination will be conducted for the benefit of final year students after 15 days of the declaration of the final semester results. Candidate who has arrears in any semester subject to a maximum of three papers can appear for the supplementary exam conducted after the final semester.

1.7   Grading

The following table gives the marks, grade points, letter grades and classification to indicate the performance of the candidate.

Conversion of Marks to Grade Points and Letter Grades (Performance in a Course/Paper)

Range of Marks	Grade Points	Letter Grade	Description
90-100	9.0-10.0	O	Outstanding
80-89	8.0-8.9	D+	Excellent
75-79	7.5-7.9	D	Distinction
70-74	7.0-7.4	A+	Very Good
60-69	6.0-6.9	A	Good
50-59	5.0-5.9	B	Above Average
40-49	4.0-4.9	C	Average
00-39	0.0	U	Re - Appearance
ABSENT	0.0	AB	Absent

C_i = Credits earned for course i in any semester

G_i = Grade Point obtained for course i in any semester

n = refers to the semester in which such course were credited

For a Semester:

GRADE POINT AVERAGE [GPA] = $\sum_i C_i G_i / \sum_i C_i$

$$GPA = \frac{\text{Sum of the multiplication of grade points by the credits of the courses}}{\text{Sum of the credits of the courses in a semester}}$$

For the Entire Programme:

CUMULATIVE GRADE POINT AVERAGE [CGPA] = $\sum_n \sum_i C_{ni} G_{ni} / \sum_n \sum_i C_{ni}$

$$\text{CGPA} = \frac{\text{Sum of the multiplication of grade points by the credits of the entire programme}}{\text{Sum of the credits of the courses of the entire programme}}$$

CGPA	Grade	Classification of Final Result
9.0 and above up to 10.0	O+	First Class – Exemplary*
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First Class with Distinction*
8.0 and above but below 8.5	D+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
6.5 and above but below 7.0	A+	
6.0 and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	
4.5 and above but below 5.0	C+	Third Class
4.0 and above but below 4.5	C	
0.0 and above but below 4.0	U	Re – Appearance

Classification of Successful candidates

A candidate who passes all the examinations in Part I to Part IV securing following CGPA and Grades shall be declared as follows for each part:

CGPA	Grade	Classification of Final Result
9.5 and above up to 10.0	O+	First Class – Exemplary*
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First Class with Distinction*
8.0 and above but below 8.5	D+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
6.5 and above but below 7.0	A+	
6.0 and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	

4.5 and above but below 5.0	C+	Third Class
4.0 and above but below 4.5	C	
0.0 and above but below 4.0	U	Re-Appearance

* The candidates who have passed in the first appearance and within the prescribed semester of the Programme (Major, Allied and Elective Course alone) are eligible.

1.8   Course Completion

Students shall complete the programme within a period not exceeding three years for UG courses from the date of admission.

SCHEME OF EXAMINATION AND PROGRAMME STRUCTURE
B.Sc (Computer Science) (2017 -2020)

Part	Sub Code	Study Components	Ins.Hrs/week	CIA	Uni.Exam	Total	Credits
		Semester -I					
I	17U1TALT01	Language 1: Paper I	5	25	75	100	3
II	17U1ENLT01	Language 2 : Functional English I	5	25	75	100	3
III	17U1CSCT01	**Core 1:** C Programming	5	25	75	100	4
	17U1CSCT02	**Core 2:** Digital Fundamentals and Architecture	5	25	75	100	4
	17U1CSCP03	**Core 3:**C Programming – Practical	4	40	60	100	3
	17U1CSAT01	**Allied 1:** Numerical Methods and Statistics	5	25	75	100	4
IV	17U1VBET01	**Value Based Education 1:** Environmental Studies	2	-	50	50	2
	17U3SBST01	**Skill Based Subject 1:** Mathematics for Competitive Examinations - I	2	50	-	50	2
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
		Total Credits					**25**
		Semester : II					
I	17U2TALT02	Language 1 : Paper II	5	25	75	100	3
II	17U2ENLT02	Language 2 : Functional English II	5	25	75	100	3
III	17U2CSCT04	**Core 4:** C++ Programming	5	25	75	100	4
	17U2CSCT05	**Core 5:** Data Structures	5	25	75	100	4
	17U2CSCP06	**Core 6:** C++ Programming – Practical	4	40	60	100	3
	17U2CSAT02	**Allied 2:** Discrete Mathematics	5	25	75	100	4
IV	17U2VBET02	**Value Based Education 2:** Ethics and Culture	2	-	50	50	2
	17U3SBST01	**Skill Based Subject 2:** Mathematics for Competitive Examinations – II	2	50	-	50	2
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
		Total Credits					**25**
		Semester : III					
III	17U3CSCT07	**Core 7:** Operating Systems	5	25	75	100	4
	17U3CSCT08	**Core 8:** Java Programming	6	25	75	100	4
	17U3CSCT09	**Core 9:** Data Communications and Networks	5	25	75	100	4
	17U3CSCP10	**Core 10:** Java Programming - Practical	6	40	60	100	3
	17U3CSAT03	**Allied 3:** Operations Research	5	25	75	100	4
	17U3NMET01	**Non Major Elective 1:** Food Science and Nutrition	2	-	50	50	2

IV	17U3SBST01	**Skill Based Subject 3:** Mathematics for Competitive Examinations - III	2	50	-	50	2
	17U3SBST02	**Skill Based Subject 4:** Communication Skills - I	2	50	-	50	2
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
		Total Credits					**25**
		Semester: IV					
III	17U4CSCT11	**Core 11:** Web Designing	5	25	75	100	4
	17U4CSCT12	**Core 12:** Network Security & Cryptography	6	25	75	100	4
	17U4CSCT13	**Core 13:** Software Engineering	5	25	75	100	3
	17U4CSCP14	**Core 14:** Web Designing - Practical	6	40	60	100	3
	17U4CSAT04	**Allied:4** Business Accounting	5	25	75	100	4
IV	17U4NMET02	**Non Major Elective 2:** Floriculture	2	-	50	50	2
	17U3SBST03	**Skill Based Subject 5:** Mathematics for Competitive Examinations - IV	2	50	-	50	2
	17U3SBST04	**Skill Based Subject 6:** Communication Skills - II	2	50	-	50	2
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
		Total Credits					**24**
		Semester: V					
III	17U5CSCT15	**Core 15:** ASP .NET and C#	5	25	75	100	4
	17U5CSCT16	**Core 16:** PHP & MYSQL	5	25	75	100	4
	17U5CSCP17	**Core 17:** ASP .NET and C# - Practical	6	40	60	100	4
	17U5CSCP18	**Core 18:** PHP & MY SQL - Practical	6	20	30	50	3
		Elective 1:	4	25	75	100	3
		Elective 2:	4	25	75	100	3
IV	17U5NCCT01	**Non Credit Course 1:** Apptitude and Softskills - I	3	50*	-	-	-
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
		Total Credits					**21**
		Semester: VI					
III	17U6CSCT19	**Core 19:** Graphics & Multimedia	5	25	75	100	4
	17U6CSCP20	**Core 20:** Software Testing – Practical	5	20	30	50	3
	17U6CSCP21	**Core 21:** Graphics & Multimedia - Practical	6	40	60	100	3
	17U6CSCV22	**Core 22:** Project and Viva Voce	6	80	20	100	4
		Elective 3:	4	25	75	100	3
		Elective 4:	4	25	75	100	3

IV	17U5NCCT02	**Non Credit Course 2:** Apptitude and Softskills - II	3	50*	-	-	-
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
					Total Credits		**20**
						3800	**140**

* will not be considered for the calculation of CGPA.

Project and Viva Voce:

Project Work carries 100 marks with 4 credits. The breakup of marks will be as follows:-

Internal assessment: 80 marks (60 Marks for 3 reviews and 20 Marks for Record) and External assessment : 20 marks (Viva Voce).

List of Electives

List of Electives		
	Sub. Code	**Subjects**
Elective 1	**17U5CSET1A**	Data Mining and Data warehousing
	17U5CSET1B	Mobile Computing
	17U5CSET1C	Embedded Systems
Elective 2	**17U5CSET2A**	E-Commerce
	17U5CSET2B	Client Server Technology
	17U5CSET2C	Software Project Management
Elective 3	**17U6CSET3A**	Artificial Intelligence & Expert Systems
	17U6CSET3B	Software Testing
	17U6CSET3C	Enterprise Resource Planning
Elective 4	**17U6CSET4A**	Compiler Design
	17U6CSET4B	Android Operating System
	17U6CSET4C	Cloud Computing

Extra Credit Courses

Sub.Code	Subjects	Credits
17UCSECC01	Human Resource Management	2
17UCSECC02	Principles and Practice of Marketing Services	2
17UCSECC03	Investment Management	2
17UCSECC04	Consumer Marketing	2
17UCSECC05	International Marketing	2
17UCSECC06	Operations Management	2
17UCSECC07	Entrepreneurial Development	2
17UCSECC08	Management Information System	2
17UCSECC09	Executive Business Communication	2
17UCSECC10	Brand Management	2
17UCSECC11	Stress Management	2
17UCSECC12	E-Commerce	2
17UCSECC13	Theory of Computation	2

SEMESTER – I
Tamil I

Subject Code: 17U1TAL01   Total Hrs: 75   No. of Credits: 3

முதல் பருவம் (செய்யுள்இ சிறுகதைஇ இலக்கணம் இ இலக்கிய வரலாறு)

நோக்கம்
* சமூகம் பற்றிய சிந்தனைகளைத் தமிழ்ப் படைப்பிலக்கியங்கள் மூலம் ஏற்படுத்துதல்
* புதுக்கவிதைகள் இ சிறுகதைகள் ஆகியவற்றைப் படிக்க வைத்தல்.∴எழுத வைத்தல்
* போட்டித் தேர்வுகளுக்கு மாணவர்களைத் தயார் செய்தல்

அலகு – 1   செய்யுள் திரட்டு : மரபுக் கவிதைகள்   (15 மணிநேரம்)

1. பாரதியார்   -   யோகசித்தி (பாரதியார் கவிதைகள்)
2. பாரதிதாசன்   -   தமிழுனுக்கு வீழ்ச்சியில்லை (பாரதிதாசன் கவிதைகள்)
3. கவிமணி   -   கவிதை (மலரும் மாலையும்)
4. கண்ணதாசன்   -   ஆதியிலே வார்த்தை இருந்தார் (இயேசு காவியம்)

அலகு – 2   செய்யுள் திரட்டு : புதுக் கவிதைகள்   (13 மணிநேரம்)

1. புவியரசு   -   கதாநாயகி (ஒரு முக்கிய அறிவிப்பு)
2. அப்துல் ரகுமான்   -   தவறான எண் (ஆலாபனை)
3. வைரமுத்து   -   உன் ஆன்மீகத்தின் அர்த்தம் (கவிராஜன் கதை)
4. சிற்பி பாலசுப்பிரமணியம்   -   கொடும்பாவி சாகாளோ (ஒரு கிராமத்து நதி)
5. கலாப்பிரியா   -   உயிர்த்தெழுதல் (கலாப்பிரியா கவிதைகள்)
6. இளம்பிறை   -   அசதி (முதல் மணி)

அலகு – 3   சிறுகதைத் தொகுப்பு   (20 மணிநேரம்)

1. புதுமைப்பித்தன்   -   பொன்னகரம் (புதுமைப்பித்தன் சிறுகதைகள்)
2. ஆ.மாதவன்   -   சுசிலாவின் கதை (ஆ.மாதவன் கதைகள்)
3. ஜெயகாந்தன்   -   தேவன் வருவாரா? (தேவன் வருவாரா?)
4. சுஜாதா   -   தர்மு மாமா (விஞ்ஞானச் சிறுகதைகள்)
5. அசோகமித்திரன்   -   அப்பாவின் சிநேகிதர் (அப்பாவின் சிநேகிதர்)
6. வண்ணதாசன்   -   ஆலங்கட்டிமழை (வண்ணதாசன் கதைகள்)
7. நாஞ்சில் நாடன்   -   சூடிய பூ சூடற்க (சூடிய பூ சூடற்க)
8. எஸ்.இராமகிரு'ணன்   -   தெரிந்தவர்கள் (எஸ்.இராமகிரு'ணன் கதைகள்)
9. வண்ணநிலவன்   -   இரண்டாவது சொர்க்கம்(வண்ணநிலவன் கதைகள்)
10. அம்பை   -   பிளாஸ்டிக் டப்பாவில் பராசக்தி முதலியோர்
                                                   (காட்டில் ஒரு மான்)

அலகு – 4   தமிழ் இலக்கிய வரலாறு   (15 மணிநேரம்)

தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையம் நடத்தும் போட்டித்   தேர்வுக்குரிய பொதுத் தமிழ்ப் பாடத்திட்டம் - ஓர் அறிமுகம்

1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
2. சிறுகதையின் தோற்றமும் வளர்ச்சியும்
3. புகழ்பெற்ற தமிழ் நூல்கள்இ நூலாசிரியர்கள் (சிறுகதைஇ புதுக்கவிதை)
   (பார்வை நூல்: தமிழ் இலக்கிய வரலாறு)
4. அடைமொழியால் குறிக்கப்பெறும் நூல்கள் இ நூலாசிரியர்கள்
   (பார்வை நூல்: தமிழ் இலக்கிய வரலாறு)
5. ஆங்கிலச் சொல்லிற்கு இணையான தமிழ்ச் சொல்
   (பார்வை நூல்: நற்றமிழ் இலக்கணம்)

அலகு – 5 இலக்கணம்   (12 மணிநேரம்)

1. வேர்ச்சொல் அறிதல் இ அகர வரிசைப்படி சொற்களை மாற்றியமைத்தல்.
2. செய்வினைஇ செயப்பாட்டுவினைஇ உடன்பாடுஇ எதிர்மறைஇ கலவை வாக்கியங்களும் வாக்கிய வகைகளும்.
3. பெயர் இ வினைஇ இடைஇ உரிச்சொற்கள்.
4. லகர-ளகர-ழகரஇ ணகர-னகர – வேறுபாடுகள்.

பாட நூல்கள்

- செய்யுள் திரட்டு , சிறுகதைத் தொகுப்பு
  (தமிழ்த்துறை வெளியீடு : ஜூன் - 2017)

பார்வை நூல்கள்

- புலவர் வெற்றியழகன்(தொ.ஆ), "பாரதியார் கவிதைகள்", ராமையா பதிப்பகம், சென்னை.
  முதற் பதிப்பு: ஏப்ரல் - 2008.

- தொ.பரமசிவன்(ப.ஆ), "பாரதிதாசன் கவிதைகள்", நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை.
  மூன்றாம் பதிப்பு: டிசம்பர் - 1998.

- வித்துவான் சிவ கன்னியப்பன், "மலரும் மாலையும்", பூம்புகார் பதிப்பகம், சென்னை.
  முதற் பதிப்பு: செப்டம்பர் - 2002.

- கவியரசு கண்ணதாசன், "இயேசு காவியம்", கலைக்காவிரி பதிப்பகம், திருச்சி.
  ஐந்தாம் பதிப்பு: 1997.

- புவியரசு, "ஒரு முக்கிய அறிவிப்பு", விஜயா பதிப்பகம், கோவை.
  இரண்டாம் பதிப்பு: டிசம்பர் - 2005.

- அப்துல் ரகுமான், "ஆலாபனை", நேசனல் பப்ளிர்ஸ், சென்னை.
  நான்காம் பதிப்பு: ஏப்ரல் - 2003.

- வைரமுத்து, "கவிராஜன் கதை", திருமகள் பதிப்பகம், சென்னை.
  பனிரெண்டாம் பதிப்பு: செப்டம்பர் -2007.

- சிற்பி,"ஒரு கிராமத்து நதி", கவிதா பதிப்பகம், சென்னை. எட்டாம் பதிப்பு: ஆகஸ்ட்டு-2011.

- கலாப்பிரியா, "கலாப்பிரியா கவிதைகள்", தமிழினி பதிப்பகம், சென்னை.
  முதற் பதிப்பு: டிசம்பர் - 2001.

- இளம்பிறை, "முதல் மழி", தமிழ் நெஞ்சம், மயிலாடுதுரை. முதற் பதிப்பு: டிசம்பர் -2003.

- சுஜாதா, "விஞ்ஞானச் சிறுகதைகள்", உயிர்மை பதிப்பகம், சென்னை – 18. நான்காம் பதிப்பு: ஜூலை - 2011

- புதுமைப்பித்தன் கதைகள், பூம்புகார் பதிப்பகம், சென்னை. இரண்டாம் பதிப்பு: ஜூலை – 2006.

- மாதவன்,"ஆ.மாதவன் கதைகள்", தமிழினி பதிப்பகம்,சென்னை. முதற்பதிப்பு: டிசம்பர்- 2001.

- ஜெயகாந்தன், "தேவன் வருவாரா", மீனாட்சி புத்தக நிலையம், மதுரை. நான்காம் பதிப்பு: ஜூன் - 1996.

- அசோகமித்திரன், "அப்பாவின் சிநேகிதர்", நர்மதா வெளியீடு, சென்னை. இரண்டாம் பதிப்பு: டிசம்பர் - 1996.

- வண்ணதாசன், கனிவு, சந்தியா பதிப்பகம், சென்னை. இரண்டாம் பதிப்பு: ஏப்ரல் - 2011.

- நாஞ்சில் நாடன், "சூடிய பூ சூடற்க", தமிழினி பதிப்பகம், சென்னை. மூன்றாம் பதிப்பு: 2010.

- எஸ்.ராமகிருஷ்ணன், "எஸ்.ராமகிருஷ்ணன் கதைகள்", கிழக்கு பதிப்பகம், சென்னை. இரண்டாம் பதிப்பு: ஏப்ரல் - 2005.

- வண்ணநிலவன், "வண்ணநிலவன் சிறுகதைகள்", நற்றிணை பதிப்பகம், சென்னை. இரண்டாம் பதிப்பு: ஆகஸ்ட்டு - 2013.

- அம்பை, "காட்டில் ஒரு மான்", காலச்சுவடு பதிப்பகம், சென்னை. மூன்றாம் பதிப்பு: டிசம்பர் - 2003.

- வல்லிக்கண்ணன், "புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்", அகரம், கும்பகோணம். நான்காம் பதிப்பு: ஜூலை - 1999.

- கா.கோ.வெங்கட்ராமன், "தமிழ் இலக்கிய வரலாறு", கலையக வெளியீடு, திண்டுக்கல். இரண்டாம் பதிப்பு: ஜூன் - 2002.

- மது.ச.விமலானந்தம், "தமிழ் இலக்கிய வரலாறு", முல்லை நிலையம், சென்னை. 2014.

- மு.பரமசிவம், "நற்றமிழ் இலக்கணம்", சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி. முதற் பதிப்பு: 1995.

French I

Subject code: 17U2FRLT01   Total Hours: 75   No.of Credits: 3

Prescribed text   :   ALORS I

Units   :   1-5

Authors   :   Marcella Di Giura
                                            Jean-Claude Beacco

Available at   :   Goyal Publishers Pvt Ltd
                                            86, University Block
                                                 Jawahar Nagar (Kamla Nagar)
                                             New Delhi - 110007.
                                            Tel : 011 - 23852986 / 9650597000

Question Paper Pattern : Semester I

(ALL QUESTIONS TO BE SET ONLY FROM THE PRESCRIBED TEXT)

Maximum Marks: 75   Time: 3 hrs.

SECTION A (10)
CHOISISSEZ LA MEILLEURE RÉPONSE: (10X1=10)

SECTION B (20)
2. TRADUISEZ LES TEXTES SUIVANTS EN ANGLAIS:(4/5) (4X5=20)
(Pg Nos : 26 ex-6,44 ex-3,56 ex-4,74ex-4,80.)

SECTION C (45)
3. COMPRÉHENSION (8x1=8)
4. EXERCICES DE GRAMMAIRE:(5X5=25) (EITHER/OR)
5. FAITES DES PHRASES:(6/8) (6X1=6)
6. TRADUISEZ LES EXPRESSIONS EN ANGLAIS :(6/8) (6X1=6)

Hindi I

Subject code: 16U2HILT01   **Total Hours: 75**   **No.of Credits: 3**

(Prose, Non-detailed , Grammar & Translation)

1. PROSE : NUTHAN GADYA SANGRAH

        Editor: Jayaprakash
        (Prescribed Lessons – only 6)
        Lesson 1 – Bharthiya Sanskurthi
        Lesson 3 - Razia
        Lesson 4 – Makreal
        Lesson 5- Bahtha Pani Nirmala
        Lesson 6 – Rashtrapitha Mahathma Gandhi
        Lesson 9 – Ninda Ras.
        Publisher: Sumitra Prakashan
        Sumitravas, 16/4 Hastings Road,
        Allahabad – 211 001.

2. NON DETAILED TEXT: KAHANI KUNJ.

        Editor: Dr.V.P.Amithab.
        (Stories 1 -6 only)
        Publisher : Govind Prakashan
        Sadhar Bagaar, Mathura,
        Uttar Pradesh – 281 001.

3. GRAMMAR : SHABDHA VICHAR ONLY

        (NOUN,PRONOUN, ADJECTIVE, VERB, TENSE,CASE ENDINGS)
        Theoretical & Applied.
        Book for reference : Vyakaran Pradeep by Ramdev.
        Publisher : Hindi Bhavan,
        36,Tagore Town
        Allahabad – 211 002.

4. TRANSLATION: English- Hindi only.

        ANUVADH ABHYAS – III
        (1-15 lessons Only)
        Publisher: DAKSHIN BHARATH HINDI PRACHAR SABHA
        CHENNAI -17.

5. COMPREHENSION : 1 Passage from ANUVADH ABHYAS – III (16- 30)
        DAKSHIN BHARATH HINDI PRACHAR SABHA
        CHENNAI- 17.

Malayalam I

Subject code: 17U2MLLT01   **Total Hours: 75**   **No.of Credits: 3**

(Prose, Composition & Translation)

This paper will have the following five units:

Unit I & II   -   Novel

Unit III & IV -   Short story

Unit V   -   Composition & Translation

Text books prescribed:

Unit I & II   -   Naalukettu – M.T. Vasudevan Nair
                               (D. C. Books, Kottayam, Kerala)

Unit III & IV -   Nalinakanthi – T.Padmanabhan
                               (D. C. Books, Kottayam, Kerala)

Unit V   -   Expansion of ideas, General Essay and Translation of a simple passage from
                               English about 100 words) to Malayalam

Reference books:

1. Kavitha Sahithya Charitram –Dr. M. Leelavathi (Kerala Sahithya Academy, Trichur)

2. Malayala Novel Sahithya Charitram – K. M.Tharakan (N.B.S. Kottayam)

3. Malayala Nataka Sahithya Charitram – G. Sankarapillai (D.C. Books, Kottayam)

4. Cherukatha Innale Innu – M. Achuyuthan (D.C. Books, Kottayam)

5. Sahithya Charitram Prasthanangalilude - Dr. K .M. George, (Chief Editor)

(D.C. Books, Kottaya**m**

SEMESTER-I

Language II-Functional English - I

Subject Code:17U1ENLT01
Total Hrs: 75
No. of Credits: 3
Objective:

1. To enable the students to understand the basic English grammar

2. To develop the skills of speaking and writing without flaws

3. To develop an interest in the minds of the students to enjoy and appreciate the literary works in English.

Unit -I-Poetry

1. On His Blindness- John Milton

2. Menelaus and Helen- Rupert Brooke

3. The Solitary Reaper- William Wordsworth

Unit- II- Prose

1. Sweets for Angels- R.K.Narayan

2. The Post Master- Rabindranath Tagore

3. The Golden Touch- Nathaniel Hawthorne

Unit- III- Grammar and Vocabulary

1. Subject Verb agreement

2. Articles, Preposition

3. Words Often Confused

4. Synonyms and Antonyms

5. Homophones

Unit-IV- Verbal Aptitude

1. Cloze Test

2. Phrasal Verbs

3. One Word Substitutes

4. Eponyms

Unit- V- Dialogue Writing (Conversation Exercises)

1. Greeting , Introducing , Requesting, Inviting & Congratulating

Text Books:

1. An Anthology of Popular Essays and Poems– A.G.Xavier (Macmillan)
2. Gifts to Posterity– An Anthology of Modern Short Stories– Prof. A.E.Subramanian (Chitra Publications, Chennai)

Reference Books:

1.Modern English– A Book of Grammar Usage and Composition– N.Krishnaswamy
2.Essential English Grammar Usage & Composition– by Prof.K.Ramappa, Re td.

CORE 1: C PROGRAMMING

Subject Code: 17U1CSCT01   **Total Hours:60**   **No. of Credits:4**

Objectives:
- To provide the knowledge on problem-solving strategies, techniques and skills that can be applied to computers and problems in other areas.
- To help students to develop the logic and ability to solve the problems efficiently using C programming.
- To learn various concepts and techniques for problem solving and to implement those ideas using C programs.

UNIT I   **Hours:12**

Overview of C - Introduction – Structure of C - Character set - C tokens - Keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators – **Arithmetic Expressions:** - Evaluation of expression - Procedure of arithmetic operators – Type conversion in expression - operator precedence & associative - Mathematical functions - Reading & Writing a character- Formatted input and output.

UNIT II   **Hours: 12**

Decision making and Branching - Decision making with IF statement - simple IF statement - The IF ELSE Statement - Nesting of IF ...ELSE statements - The ELSE IF ladder - The switch statement - The?: operator - The GOTO statement -- Decision Making and Looping - The WHILE statement - The DO statement - The FOR statement – Jumps in Loop:, - **Arrays** - One Dimensional - Two Dimensional - Multidimensional arrays - Character string Handling - Declaring and initializing string variables - Reading strings from technical -- writing strings to Screen - Arithmetic operation on character – Putting strings together - comparison of two strings - String handling Functions - Table of Strings.

UNIT III   **Hours: 12**

Funtions: User - defined Functions - Need for user Defined functions - A multi function program - The form of C functions - Return values and their types - Calling a function - Category of functions – **Arguments:** No Arguments and no return values - Arguments but no return values - Arguments with return values - Handling of non-integer functions. Nesting of functions - Recursion - Functions with arrays

UNIT IV   **Hours: 12**

Structure : Structure definition - Giving values to members – Structure initialization - comparison of structure variables - Arrays of structures - Arrays within structures - Structures within structures- Structures and functions - unions - size of structures - Bit fields**. Pointers** - Understanding pointers - Accessing the Address of' a variable - Declaring and initializing pointers - Accessing a variable through its pointers - pointer expressions pointer increments and scale factor – pointers and arrays - pointers and character strings – pointers and functions – pointers and structures.

UNIT V   **Hours: 12**

File management in C - Defining and opening a file - closing file - I/O operations on files - Error handling during I/0 operations - Random access to files - Command line arguments - The Preprocessor.

TEXT BOOK:
1. E. Balagurusamy- **"Programming in ANSI C "** - Tata Mc. Graw Hill , 5 th Edition,– 2012.

REFERENCE BOOKS:
1. Byron Gottfried, "Programming with C"- First Edition (Schaum's Outline Series) – Tata Mc Graw – Hill Publishing Company – 1998.
2. Ashok. N. Kamathane, "Programming with ANSI and Turbo C", Pearson EdUCAtion Asia –2002, First Edition.
3. Yeswanth Kanethkar, "Let us C" Tata Mc. Graw Hill, 1992, First Edition.

SEMESTER – I
CORE 2:DIGITAL FUNDAMENTALS AND ARCHITECTURE

Subject Code: 17U1CSCT02   **Total Hours:75**   **No. of Credits: 4**

Objectives:
- To know about number system and binary codes.
- To learn about various circuits and digital logics.
- To understand the basics of combinational logic circuits and its operations.
- To know about the sequential circuits and its designing architecture.
- To know about the input – output and memory organization.

UNIT I   **Hours: 15**

Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. **Arithmetic Circuits**: Half adder, Full adder, Parallel binary adder, BCD adder, Halfsubtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

UNIT II   **Hours: 15**

Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications.

UNIT III   **Hours: 15**

Sequential circuits: Flip-Flops: RS, D, JK, T - Multiplexers – Demultiplexers – Decoder – Encoder - Counters.

UNIT IV   **Hours: 15**

Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. **Asynchronous data transfer**: Strobe Control and Handshaking – Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.

UNIT V   **Hours: 15**

Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory Page Table, Page Replacement.

TEXT BOOKS:
1. Digital Electronics Circuits and Systems - V.K. Puri, TMH.
2. Computer System Architecture - M. Morris Mano, PHI.

REFERENCE BOOKS:
1. Digital principles and applications, Albert Paul Malvino, Donald P Leach, TMH, 1996.
2. Computer architecture, Carter, Schaum's outline series, TMH.

SEMESTER - I
CORE 3: C PROGRAMMING PRACTICAL

Subject Code: 17U1CSCP03   **Total Hours:60**   **No. of Credits: 3**

PROGRAMS LIST

1. To write a program using arithmetic Operations.
2. To write a program using Logical and Relational Operations.
3. To write a program using control statements .
4. To write a program using arrays (single and two dimensional).
5. To write a program using strings and array of strings.
6. To write a program using Functions.
7. To write a program using nested functions.
8. To write a program using function and arrays.
9. To write a program using structures.
10. To write a program using structure and functions.
11. To write a program using Recursive functions.
12. To write a program using Pointers.
13. To write a program using array of pointers.
14. To write a program using files.
15. To write a program using command line arguments.

SEMESTER : I

Common to the Branches (B.Sc.,CS/BCA/ B.Sc.,IT)

Allied 1: NUMERICAL METHODS AND STATISTICS

Subject Code:17U1CSAT01   **Total Hrs: 75**   **No. of Credits: 4**

Objectives:

To understand the different Methods of solving numerical algebraic and Transcendental Equations .

To know Numerical differentiation using various formulae and Integration using various rules.

To have a knowledge of finding numerical solutions of ordinary differential Equations

To learn how to calculate various statistical constants.

UNIT I   **(12 Hrs)**

The Numerical Solution of Algebraic and Transcendental Equations –The Bisection method,

The method of false position , Newton – Raphson method.

UNIT II   **(18Hrs)**

Solution of Simultaneous Linear Algebraic Equations – Gauss Elimination method, Gauss Jordan method, Gauss – Jacobi method, Gauss – Seidel method. Interpolation (For Equal Intervals) Newton's Forward interpolation, Newton's Backward interpolation.

UNIT III   **(18Hrs)**

Numerical Differentiation – Newton's Forward formula, Newton's Backward Formula, Numerical Integration – Trapezoidal Rule, Simpson's one third rule, Simpson's three-eight's rule. Numerical solution of Ordinary differential equations – Taylor Method (first order)– Runge-Kutta method (fourth order)

UNIT IV   **(15Hrs)**

Measure of Central Tendency – Mean, Median, Mode - Measure of Dispersion – Range, Quartile Deviation, Standard Deviation and Mean Deviation -problems.

UNIT V   **(12Hrs)**

Correlation and Regression. No derivation required.

Questions in problems and theory carry 80% and 20% marks respectively.

Text Book:

1.P. Kandasamy, K.Thilagavathy, K.Gunavathi: Numerical methods, S.Chand & Company-2005
2. P.A. Navanitham :Business Mathematics and Statistics. Jai publishers- 2005 .

      Unit I   **:** Chapter 3 (3.1, 3.1.1, 3.3, 3.3.1, 3.4, 3.4.1 – 3.4.3),
      Unit II   **:** Chapter 4 (4.1, 4.2, 4.2.1, 4.8, 4.9)
           Chapter 6 (6.1, 6.2, 6.3).
      Unit III   **:** Chapter 9 (9.1 – 9.3, 9.9, 9.13, 9.14),
           Chapter 11 (11.5, 11.6, 11.7, 11.12, 11.13)
      Unit IV   **:** Chapter 7**,** Chapter 8.
      Unit V   **:** Chapter 12 and Chapter 13.

Reference Books:

1. Dr.M.K. Venkataraman: Engineering MathematicsVolume II , National publishing company-2005

2. R.S.N. Pillai and V. Bhagavathi: Statistical Methods , Sultan chand and Sons company- 2005.

3. P.R.Vittal :Business Mathematics,Margham Publications -1999.

4. A.Singaravelu :Numerical Methods, Meenakshi Publications-2001.

SEMESTER – I
ENVIRONMENTAL STUDIES

Subject Code:17U1VBET01   Total Hrs: **30**   **No. of Credits: 2**

Objectives:

To make the students understand the various types of natural resources and their responsibility in the conservation of the same.

To impart on various eco systems, biodiversity at various levels and their conservation

To make the students know on various types of envirnmental polution, their causes , effects, their prevention and the students role in the same.

UNIT I   (6 hrs)

The Multidisciplinary Nature of Environmental Studies – Definition, Scope and Importance; Need for public awareness, Natural resources – Forest resources, Mineral resources, Food resources, Energy resources and Land resources. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable life style.

UNIT II   (6 hrs)

Ecosystems – Concept of ecosystem, Structure and Functions of an ecosystem. Producer, Consumer, Decomposers, Energy flow in ecosystem, Ecological succession, food chain, food webs and ecological pyramids. Introduction, types, characteristics, features, structure and functions of forest ecosystem, grass land, desert and Aquatic Ecosystems (ponds, streams, lakes, rivers, oceans and estuaries).

UNIT III   (6 hrs)

Biodiversity and its Conservation - Introduction – Definitions: Genetic, Species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at Global, National and local levels. India as a mega–biodiversity nation. Hot spots of biodiversity. Threads of biodiversity: habitat loss, poaching of wild life. Man wild life conflicts. Endangered and endemic species of India. Conservation of biodiversity–insitu and Exsitu conservation of biodiversity.

UNIT IV   (6 hrs)

Environmental Pollution – Definitions, causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution and Thermal pollution. Solid waste management: causes, effects and control measures of Urban and Industrial wastes. Role of an individual in prevention of pollution. Pollutions case studies. Disaster management: Foods, Earthquake, Cyclone and Landslides.

UNIT V   (6 hrs)

Social issues and the Environment – Sustainable development, urban problems related to energy, water conservation, rain water harvesting, water shed management. Resettlement and rehabilitation of people. Environmental ethics: issues and possible solution. Climate change, global warming, ocean layer depletion, acid rain, nuclear accident and holocaust, case studies. Consumerism and waste product. Environmental protection Act. Air (prevention and control of

pollution) Act. Wild life protection act. Forest conservation Act. Issues involved in enforcement of environmental legislation. Public awareness. Human population and the environment.

Text Book:

1. Prof R. Ranganathan: *Environmental Studies.* Bharathiar University Publications- Edition- 1

Reference Books:
1.Ritu Bir : *Environmental Studies* - Vayu Education of India, 2011.
2.Erach Bharucha : *Textbook for Environmental Studies* - University Press India Pvt. Ltd, 2006.
3.Anubha Kaushik & C.P.Kaushik:*Perspectives in Environmental Studies*- New Age International
        Publishers, 2006.

SEMESTER I

SKILL BASED SUBJECT 1 :MATHEMATICS FOR COMPETITIVE EXAMINATIONS -I

Subject Code: 17U1SBST01　　　　　　**Total Hrs: 30**　　　　　　**No. of Credits: 2**

Objectives:

　　To understand the fundamental arithmetic skills and problem solving.

　　To learn about the average and Problems on numbers.

　　To solve problem related to Ages and Calander and Clocks.

UNIT I　　　　　　　　　　　　　　　　　　　　　　　　(6 Hrs)

Numbers - H.C.F and L.C.M of Numbers - Decimal Fractions - Simplification

UNIT II　　　　　　　　　　　　　　　　　　　　　　　(6 Hrs)

Square Roots and Cube Roots - Average – Problems on Numbers

UNIT III　　　　　　　　　　　　　　　　　　　　　　(6 Hrs)

 Problems on Ages – Surds and Indices–Percentage

UNIT IV　　　　　　　　　　　　　　　　　　　　　　(6 Hrs)

Races and games of skill - Calendar

UNIT V　　　　　　　　　　　　　　　　　　　　　　　(6 Hrs)

Clocks - Stocks and shares

　　　　　　　　　　　　(Simple Problems only)

TEXT BOOK:

R. S. Agarwal : Quantitative Aptitude (for Competitive Examinations), S. Chand and Company Limited, 7ᵗʰ Revised Edition –2007.

Unit I　　　　: Chapter 1, 2, 3 and 4

Unit II　　　: Chapter 5, 6 and 7

Unit III　　　: Chapter 8, 9 and 10

Unit IV　　　: Chapter 26, and 27

Unit V　　　: Chapter 28 and 29

Reference Books:

1. Hand Book On Mental Ability And Logical Reasoning prescribed by Bharathiar University.

2. R.V.Praveen: Quantitative Aptitude and Resoning, PHI Learning pvt. Ltd-2012.

3. Abhijit Guha : Quantitative Aptitude for Competitive Examinations, Tata Mc-Graw Hill Publishing

　　Company, 7ᵗʰ reprint-2003.

SEMESTER – II

Tamil II

Subject Code: 17U2TAL02   Total Hrs: 75   No. of Credits: 3

இரண்டாம் பருவம் (செய்யுள்இ உரைநடைஇ இலக்கணம் இ இலக்கிய வரலாறு)

நோக்கம்

• சங்க இலக்கியத்தின் மாண்புஇ இலக்கிய நயம்இ நீதி நெறிகள்இ பக்தியின் தன்மைஇ
  சங்ககால இலக்கண நெறிகள் ஆகியவற்றை அறிந்து கொள்ளுதல்
• வாழ்க்கையை வாழும் நெறிமுறைகள், வெற்றிக்கான உத்திகள், தமிழ் வளர்ச்சிக்கான நமது கடமைகள் ஆகியன குறித்து தெளிவு பெறுதல்

அலகு – 1 செய்யுள் திரட்டு : சங்க இலக்கியங்கள ˙   (20 மணிநேரம்)

1. குறுந்தொகை   - முதல் 5 பாடல்கள் (கடவுள் வாழ்த்து உட்பட)
2. நற்றிணை   - பிரசங்கலந்த வெண்சுவைத்தீம்பால் (பா.எண்-110) இ
                       விளையாடு ஆயமோடு (பா.எண்-68)
3. கலித்தொகை   - சுடர்த் தொடீஇ கேளாய் (பா.எண்-51)
4. புறநானூறு   - ஆவுமானிய பார்ப்பன மாக்களும் (பா.எண்-9)இ
                       காய்நெல் லறுத்துக் கவளம்கொளினே (பா.எண்-184)
5. பத்துப்பாட்டு   - குறிஞ்சிப்பாட்டு முழுவதும்

அலகு – 2 செய்யுள் திரட்டு : நீதிஇ பக்தி இலக்கியம்   (15 மணிநேரம்)

1. திருக்குறள்   - அடக்கமுடைமை (அதிகாரம்-13)இ
                       புறங்கூறாமை (அதிகாரம்-19)
2. நாலடியார்   - கல்வி (அதிகாரம்-14)இ நல்லினம் சேருதல்(அதிகாரம்-18)
3. திருவெம்பாவை   - முதல் 10 பாடல்கள்
4. நாச்சியார் திருமொழி - ஆறாம் திருமொழி

அலகு – 3 உரைநடை: கட்டுரைத் தொகுப்பு   (15 மணிநேரம்)

1. இறையன்பு   - கல்வியும் கடவுள் தன்மையும்
                       (வாழ்க்கையே ஒரு வழிபாடு)
2. அகிலன்   - பதினாறு பேறுகள் (வெற்றியின் ரகசியங்கள்)
3. முனைவர் பாஞ்.இராமலிங்கம் - மானிட உளவியல் (மானிட உளவியல்)
4. வ.செ.குழந்தைசாமி   - தமிழ் வழிக்கல்வி-தயக்கங்கள்இ தடைகள்
                       (தமிழ் வளர்ச்சி)
5. மணவை முஸ்தபா   - தமிழுக்கு அறிவியல் அன்னியமா? (அறிவியல் நோக்கில் கம்பர்)
6. சுகி.சிவம்   - வாழப்பழகுவோம் வாருங்கள்
                       (வாழப்பழகுவோம் வாருங்கள்)
7. இரா. பிரேமா   - பெண்ணியக் கோட்பாடுகளும் தமிழிலக்கிய

ஆய்வில் அதன் தேவையும் பயனும்
(பெண்ணியம் அணுகுமுறைகள்)

அலகு – 4 இலக்கிய வரலாறு   (15 மணிநேரம்)

1. எட்டுத்தொகைஇ பத்துப்பாட்டு நூல்கள்
2. நீதி நூல்கள் - அறிமுகம்
3. நாயன்மார்கள் ஆழ்வார்கள் - அறிமுகம்
4. உரைநடையின் தோற்றமும் வளர்ச்சியும்

அலகு – 5 இலக்கணமும் பயன்பாட்டுத் தமிழும்   (10 மணிநேரம்)

1. அகம்இ புறம் – திணைஇ துறை விளக்கங்கள்
2. முதல் இ கருஇ உரிப்பொருள்
3. மடல்கள்இ விண்ணப்பங்கள்
4. மொழிபெயர்ப்பு (அலுவலகப் பகுதிஇ பொதுப்பகுதி)

பாட நூல்

1. செய்யுள் திரட்டு , கட்டுரைத் தொகுப்பு
   (தமிழ்த்துறை வெளியீடு : டிசம்பர் - 2016)

பார்வை நூல்கள்

1. குறுந்தொகை, கழக வெளியீடு, முதற் பதிப்பு: ஜூன் - 2000

2. புலவர் நா.இராமையாபிள்ளை(உ.ஆ), "நற்றிணை", வர்த்தமானன் பதிப்பகம், சென்னை. முதற் பதிப்பு: 1999.

3. கலித்தொகை, கழக வெளியீடு, முதற் பதிப்பு: டிசம்பர் - 1996.

4. புறநானூறு, கழக வெளியீடு, முதற் பதிப்பு: டிசம்பர் - 1996.

5. புலவர் அ.மாணிக்கனார் (உ.ஆ), "பத்துப்பாட்டு – ஐஜ ஆம் தொகுதி", வர்த்தமானன் பதிப்பகம், சென்னை. 1999.

6. பேரா.அ.மாணிக்கம்(ப.ஆ), "நாலடியார்", மணிவாசகர் பதிப்பகம், சென்னை. முதற் பதிப்பு: செப்டம்பர்-1995.

7. பேரா.அ.மாணிக்கம்(உ.ஆ), "பன்னிரு திருமுறைகள் (தொகுதி 11)", வர்த்தமானன் பதிப்பகம், சென்னை. பிப்ரவரி - 2009.

8. டாக்டர் கதிர்முருகு, "நாச்சியார் திருமொழி", சாரதா பதிப்பகம், சென்னை. முதற் பதிப்பு: ஜூன் - 2010.

9. வெ.இறையன்பு, "வாழ்க்கையே ஒரு வழிபாடு", விஜயா பதிப்பகம், கோவை. எட்டாம் பதிப்பு: டிசம்பர் - 2013.

10. அகிலன், "வெற்றியின் ரகசியங்கள்", தாகம் பதிப்பகம், சென்னை. பதினொன்றாம் பதிப்பு:ஜனவரி – 2001.

11. முனைவர் பாஞ்.இராமலிங்கம், ''மானிட உளவியல்'', சாரதா பதிப்பகம், சென்னை. திருத்திய பதிப்பு: ஜூன்- 2007.

12. வ.செ.குழந்தைசாமி, ''தமிழ் வளர்ச்சி'', பாரதி பதிப்பகம், சென்னை. இரண்டாம் பதிப்பு: ஜூலை – 2007.

13. முணவை முஸ்தபா, ''அறிவியல் நோக்கில் கம்பர்'', வானதி பதிப்பகம், சென்னை. இரண்டாம் பதிப்பு: 2003.

14. சுகி.சிவம்,''வாழப்பழகுவோம் வாருங்கள்'', வானதி பதிப்பகம், சென்னை. ஆறாம் பதிப்பு: நவம்பர் - 2003.

15. இரா.பிரேமா, ''பெண்ணியம் அணுகுமுறைகள்'', தமிழ்ப் புத்தகாலயம், சென்னை- 17. முதல் பதிப்பு: 1998

16. கா.கோ.வெங்கட்ராமன், ''தமிழ் இலக்கிய வரலாறு'', கலையக வெளியீடு, திண்டுக்கல். இரண்டாம் பதிப்பு: ஜூன் - 2002.

17. மது.ச.விமலானந்தம், ''தமிழ் இலக்கிய வரலாறு'', முல்லை நிலையம், சென்னை. 2014.

18. மு.பரமசிவம், ''நற்றமிழ் இலக்கணம்'', சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி. முதற்பதிப்பு:1995.

French II

Subject code: 17U2FRLT02   Total Hours: 75   No.of Credits: 3

Prescribed text   : ALORS I

Units : 6 - 10

Authors   : Marcella Di Giura
                                      Jean-Claude Beacco

Available at   : Goyal Publishers Pvt Ltd
                                       86, University Block
                                        Jawahar Nagar (Kamla Nagar)
                                          New Delhi - 110007.
                                     Tel : 011 - 23852986 / 9650597000

Question Paper Pattern : Semester II
(ALL QUESTIONS TO BE SET ONLY FROM THE PRESCRIBED TEXT)

Maximum Marks: 75   Time: 3 hrs.

SECTION A (10)
        1. CHOISISSEZ LA MEILLEURE RÉPONSE: (10X1=10)

SECTION B (20)
        2. TRADUISEZ LES TEXTES SUIVANTS EN ANGLAIS:(4/5) (4X5=20)
          (Pg Nos :86 ex-4,104 ex-3,116 ex-3a,b,134 ex-4,146 ex-
2,162,163,164,165,166,167)

SECTION C (45)
        3. COMPRÉHENSION (8x1=8)
        4. EXERCICES DE GRAMMAIRE:(5X5=25) (EITHER/OR)
        5. FAITES DES PHRASES:(6/8) (6X1=6)
        6. TRADUISEZ LES EXPRESSIONS EN ANGLAIS :(6/8) (6X1=6)

Hindi II

Subject code: 17U2HILT02   Total Hours: 75   No.of Credits: 3

(Modern Poetry, One Act Play , Translation & Letter Writing)

1. MODERN POETRY ; Draupadi by Narendra Sharma

      PUBLISHER   :   Rajkamal Prakashan,
                            1B Nethaji Subash Marg,
                            New Delhi.

2. ONE ACT PLAY: EKANKÏ SANKALAN - Lesson ''Strike' omitted

                  By Veerendra kumar mishra

      PUBLISHER   :   VANI PRAKASHAM

                  NEW DELHI - 110 002.

3. TRANSLATION   :   HINDI - ENGLISH ONLY,

                  (ANUVADH ABYAS - III)

                  Lessons.1 - 15 only

      PUBLISHER   :   DAKSHIN BHARATH HINDI PRACHAR SABHA

                  CHENNAI - 600 017.

4. LETTER WRITING   :   (Leave letter, Job Application, Ordering books,

                  Letter to Publisher, Personal letter)

5. CONVERSATION   :   (Doctor & Patient, Teacher & Student, Storekeeper &

                  Buyer, Two Friends, Booking clerk & Passenger at Railway

                  station, Autorickshaw driver and Passenger)

Reference: Bolchal Ki Hindi Aur Sanchar by Dr. Madhu Dhavan, Vani Prakashan, New Delhi.

Malayalam II

Subject code: 17U2MLLT02   Total Hours: 75   No.of Credits: 3

(Prose : Non–fiction)

This paper will have the following five units:

Unit I & II   –   Biography

Unit III, IV & V   –   Smaranakal

Text books prescribed:

Unit I & II   –   Kanneerum Kinavum– V.T.Bhatahirippad

(D.C. Books, Kottayam)

Unit III, IV & V   –   Balyakalasmaranakal - Madhavikkutty

(D.C. Books, Kottayam)

Reference books:

1. Jeevacharitrasahithyam - Dr. K.M. George (N.B.S. Kottayam)

2. Jeevacharitrasahithyam Malayalathil - Dr. Naduvattom Gopalakrishnan (Kerala Bhasha Institute, Trivandrum)

3. Athmakathasahithyam Malayalathil - Dr. Vijayalam Jayakumar (N.B.S. Kottayam)

4. Sancharasahithyam Malayalathil - Prof. Ramesh chandran. V, (Kerala Bhasha Institute, Trivandrum)

CORE 4: C++ PROGRAMMING

Subject Code: 17U2CSCT04   **Total Hours:75**   **No. of Credits: 4**

Objectives:
- To provide knowledge on object oriented programming concepts using C++.
- To learn about the concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.
- To enhance the students knowledge in writing C++ programs and the concepts of File Handling.

UNIT I   **Hours: 13**

Introduction of C++ - Key Concepts – OOP advantage – OOP language – I/O in C++- C++ declarations.Control Structures : Decision Making statements: if , else ,jump, goto, break, continue, Switch case statements. Loops in C++ : for ,While, do, while loops. Functions in C++ - inline function.

UNIT II   **Hours: 16**

Classes and objects: Declaring Objects – defining member functions – static member Variables and functions – arrays of objects – friend fuctions – overloading member functions – Bit fields and classes - Constructors And Destructors with static members.

UNIT III   **Hours: 16**

Operator overloading: overloading unary, binary operators – overloading friend function – type conversion. Inheritance: Types of Inheritances – single, multilevel, multiple , hierachical, hybrid, Multipath inheritance – virtual base classes – abstract classes.

UNIT IV   **Hours: 15**

Pointers – Declarations – Pointer to class , object – this pointer – pointer to derived classes and base classes – Arrays – characteristics – arrays 0f classes – Memory modals – new and delete operators – dynamic objects – Binding , Polymorphism and virtual Functions.

UNIT V   **Hours: 15**

Files – File Stream classes – File modes – Sequential Read / Write operations – Binary and ASCII files – Random access operation – Templetes – Exception handling – Strings – declaring and initializing string objects – string attributes – miscellaneous functions.

TEXT BOOKS:
6. Ashok N Kamthane, - "Object oriented Programming with Ansi and Turbo C++", Pearson Education Publ, 2003, First Edition.
7. Herbert Schildt, "Teach Yourself C++", Third edition, Tata Mcgraw Hill, 2000.

REFERENCE BOOKS:

1. E.Balagurusamy, "Object Oriented Programming with C++", Tata Mcgraw Hill Publishing Ltd., New Delhi, 2002.

2. Robert Lafore, "Object Oriented Programming in C++", - Galgotia, 1994

3. Yeswant Kanetkar, "Let us C++", BPB Publications, 1999.

4. John R.Hubbard, "Programming with C++", Schaum's Outline Series, 1996.

SEMESTER – II
CORE 5: DATA STRUCTURES

Subject Code: 17U2CSCT05   **Total Hours:60**   **No. of Credits: 4**

Objectives:
19. To make the students to understand the basic concepts of Data Sttructures and Algorithms.
20. To Understand the concepts os stack , Queue and Linked List.
21. To enhance the students knowledge in developing Algorithms using stack , queues, lists, matrices , searching and sorting.

UNIT I   **Hours: 10**
    Introduction - Overview - How To Create Programs Analyze Them. Arrays - Structures - Ordered Lists- Representation of Arrays - Simple Applications

UNIT II   **Hours: 13**
    Stacks And Queues - Fundamentals – Structure-Operations - Multiple Stacks AndQueues. Applications Evaluation Of Expressions.

UNIT III   **Hours: 13**
    Linked Lists - Single Linked Lists- Linked Stacks And Queues - The Storage Pool - Applications - Polynomial Addition, Sparse Matrices. Double Linked Lists- Dynamic Storage Management -Garbage Collection And Compaction.

UNIT IV   **Hours: 12**
    Searching And Sorting: Binary, Sequential, And Fibonacci - Internal Sorting Insertion, Quick, Merge, Heap, Radix Sorts - External Sorting - Sorting With Disks – Kway Merging-Sorting With Tapes - Balanced Merge - Polyphase Merge. Symbol Tables -Static Tree - Dynamic Tree - Hash Tables.

UNIT V   **Hours: 12**
    Files - Queries And Sequential Organizations - Index Techniques. File Organizations Sequential, Random, Linked Organizations - Inverted Files – Cellular Partitions.

TEXT BOOKS:

1. Ellis Horowitz & Sartaj Sahani - " Fundamentals of data structure", Galgothia book source, 1999, Latest Edition.2011.
2. Ashok N Kamthane,-"Programming and Data Structures", PearsonEducation, 2004, Latest Edition

REFERENCE BOOKS:
1. Ellis Horowitz, Sartaj Shani, "Data and File Structures", Galgotia Publication
2. Malik,D,S., 2003. Data structures using C++ [1st Edition] Cengage learning
3. Vaugha H.Patil, 2012. Data Structures Using C++[1st Edition] Oxford Higher Education

SEMESTER – II
CORE 6: C++ PROGRAMMING PRACTICAL

Subject Code:17U2CSCP06   **Total Hours:60**   **No.of Credits: 3**

PROGRAMS LIST
1. To write a program using looping and control statements
2. To write a program using Arrays
3. To write a program using inline functions
4. To write a program using Class and Array of objects
5. To write a program using Objects as function arguments and Function that return objects
6. To write a program using Friend function
7. To write a program using Function Overloading
8. To write a program using constructors
9. To write a program using operator overloading
10. To write a program for Overloading friend functions
11. To write a program using inheritance
12. To write a program using virtual function.
13. To write a program using run time polymorphism
14. To write a program using Pointer to members
15. To write a program using Files

SEMESTER : II
Common to the Branches (BSc.CS/BCA/ B.Sc.,IT)

Allied 2 : DISCRETE MATHEMATICS

Subject Code: 17U2CSAT02   **Total Hrs: 75**   **No. of Credits: 4**

Objectives:

To understand the concept of set theory, Logic and Relations
To learn the concept of languages and Grammars
To know the concept of Graph theory and its applications

UNIT I   (12Hrs)
Set Theory - Types of sets - Venn - Euler Diagrams - Set operations & Laws of set theory - Fundamental Products - Partitions of Sets – Minsets - Algebra of sets and Duality - Inclusion and Exclusion Principle.

UNIT II   (15Hrs)
Mathematical Logic – Introduction - Propositional Calculus – Basic logical Operations - Tautologies – Contradiction – Argument - Predicate Calculus.

UNIT III   (18Hrs)
Relations – Binary Relations – Set operation on relations - Types of Relations – Partial order relation – Equivalence relation – Functions – Types of functions – Invertible functions.

UNIT IV   (18Hrs)
Languages – Operations on Languages – Grammar – Types of Grammars – Finite State Machine – Finite State Automata.

UNIT V   (12Hrs)
Graph Theory – Basic terminology – Paths, Cycle & Connectivity – Sub graphs – Types of Graphs – Representation of Graphs in Computer Memory - Trees – Properties of Trees – Binary trees-Traversing Binary Tree.

Text Book:
J.K. Sharma : Discrete Mathematics ,Macmillan India Ltd – 2007

        Unit I   : Chapter 1   Section - 1.1, 1.4, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12, 1.13, 1.14
Unit II : Chapter 12 Section - 12.1, 12.2, 12.3, 12.8, 12.9, 12.11, 12.14
Unit III: Chapter 3   Section - 3.3, 3.4, 3.5, 3.6, 3.7.
                    Chapter 4   Section - 4.3, 4.4.
Unit IV : Chapter 15 Section - 15.3, 15.3.1, 15.5, 15.5.2, 15.6, 15.7
Unit V : Chapter 9   Section - 9.2, 9.3, 9.4, 9.5, 9.8
                    Chapter 10 Section - 10.2, 10.3, 10.6, 10.8

Reference Books:
  1.J. P Tremblay R Manohar: Discrete Mathematics Structures with Applications to Computer Science Mc Graw Hill International Publications. –Edition 2006.
  2.Dr.M.K.Venketaramen,Dr.N.Sridharan,N.Chandarasekaran: DiscreteMathematics,The National publishing Company - 2006.
  3. V.Sundaresan : Discrete Mathematics ,A.R.Publications - 2001
  4. M.K.Chandborthy: Introduction to Discrete Mathematics, Books and Allied Pvt.Ltd.- 2005

மதிப்பீட்டுக் கல்வி - அறவியலும் பண்பாடும்

Value Education II:

Subject Code: 17U2CCVE2   Total Hrs: 2   No. of Credits: 2

Ethics and ஊரடவரசந (மனிதவள மாண்பு - தனிமனித விழுமியங்கள்இசமுதாய விழுமியங்கள்)

நோக்கம்

1. ஒவ்வொருவரும் தன்னை உயர்த்திக் கொண்டுஇ சமுதாய மக்களுடன் இணக்கமாக வாழ்ந்து சமுதாயத்தையும் உயர்த்த வேண்டும். உன்னத இலட்சியத்திற்காக வாழ்ந்து நமது வாழ்க்கையை அர்த்தமுள்ளதாக ஆக்கிக் கொள்ள வேண்டும்.

2. கவலைக்கு ஆதாரமான ஆசை மற்றும் சினம் ஆகியவற்றைத் தவிர்ப்பதன் மூலம் கவலையை ஒழிப்பதற்கான பயிற்சி பெறுதல்

3. கல்வி, அரசியல், பொருளாதாரம் மற்றும் விஞ்ஞானம் ஆகியவற்றுக்கும் சமுதாயத்திற்கும் உள்ள தொடர்பினை அறிந்து கொள்ளுதல்

அலகு – 1   (5 மணிநேரம்)

மனிதவள மாண்பின் அவசியம் - குறிக்கோள் இ மதிப்புகள் - வாழ்வின் நோக்கமும் தத்துவமும் - வாழ்க்கைத் தேவைகள் இ காப்புகள் - அறநெறிகள் இ அறிவின் நிலைப்படிகள்.

அலகு – 2   (5 மணிநேரம்)

எண்ணம் ஆராய்தல் - எண்ணம் எழக்காரணங்கள் - எண்ணம் ஆராய்தல் பயிற்சி – ஆசை சீரமைத்தல் - ஆசை சீரமைத்தல் பயிற்சி.

அலகு – 3   (5 மணிநேரம்)

சினம் தவிர்த்தல் - சினத்தின் விளைவுகள் - சினம் தவிர்த்தல் பயிற்சி – கவலை ஒழித்தல் - கவலையின் வகைகளும் விளைவுகளும் - கவலை ஒழித்தலுக்கான பயிற்சி.

அலகு – 4   (8 மணிநேரம்)

மனிதனின் பரிணாமம் - பிரபஞ்ச தன்மாற்றம் - உயிரினத் தன்மாற்றம் - ஆறாம் அறிவின் மேம்பாடு – மனித வேறுபாட்டிற்கான காரணங்கள் - ஏழு சம்பத்துகள் - பதினாறு காரணங்கள் - மனத் தூய்மை தரும் சமுதாய நலன்.

அலகு – 5 (7 மணிநேரம்)

கல்வியும் சமுதாயமும் - கல்வியின் சமுதாய நோக்கங்கள் - கல்வியின் சமுதாயப் பணிகள் - அரசியலும் சமுதாயமும் - பொருளாதாரமும் சமுதாயமும் - விஞ்ஞானமும் சமுதாயமும்.

பாட நூல்கள்:

1. தனிமனித விழுமியங்கள், மனிதவள மாண்புக் கல்விக்கான தனி வெளியீடு, என்.ஜி.எம். கல்லூரி, பொள்ளாச்சி. 2015.
2. சமுதாய விழுமியங்கள், மனிதவள மாண்புக் கல்விக்கான தனி வெளியீடு, என்.ஜி.எம். கல்லூரி, பொள்ளாச்சி. 2014.

பார்வை நூல்கள்:

1. வாழ்வியல் விழுமியங்கள், வேதாத்திரி பதிப்பகம், ஈரோடு. பதினொன்றாம் பதிப்பு: 2013
2. மனவளக்கலை யோகா, உலக சமுதாய சேவா சங்கம், வேதாத்திரி பதிப்பகம், பொள்ளாச்சி. பதினொன்றாம் பதிப்பு: ஜூலை – 2015.

SEMESTER II

SKILL BASED SUBJECT 2 :MATHEMATICS FOR COMPETITIVE EXAMINATIONS -II

Subject Code: 17U2SBST02   **Total Hrs: 30**   **No. of Credits: 2**

Objectives:
- To know about concept of Interest and Profit and loss.
- To develop the ability in solving Permutation , Combinations and Bankers Discount.
- To Solve Problems of Permutations and combinations.

UNIT I   (6Hrs)

   Profit and Loss - Ratio and Proportion

UNIT II   (6Hrs)

   Partnership - Chain Rule

UNIT III   (6Hrs)

   Time and Distance - Time and work

UNIT IV   (6Hrs)

   Permutation & Combinations

UNIT V   (6Hrs)

   True Discount- Bankers Discount
                   (Simple Problems only)

Text Book:

R. S. Agarwal : Quantitative Aptitude (for Competitive Examinations), S. Chand and Company Limited, 7ᵗʰ Revised Edition –2007.

Unit I   : Chapter 11 and 12
Unit II   : Chapter 13 and 14
Unit III   : Chapter 15 and 17
Unit IV   : Chapter 30
Unit V   : Chpater 32 and 33

Reference Books:

1. Hand Book On Mental Ability And Logical Reasoning prescribed by Bharathiar University.
2. R.V.Praveen: Quantitative Aptitude and Resoning, PHI Learning pvt. Ltd-2012. 3. Abhijit Guha : Quantitative Aptitude for Competitive Examinations, Tata Mc-Graw Hill Publishing Company, 7ᵗʰ reprint-2003.

SEMESTER – III
CORE 7: OPERATING SYSTEMS

Subject Code: 17U3CSCT07　　　　**Total Hrs:75**　　　　**No. of Credits: 4**
Objectives:

- To gain knowledge on OS concepts and functioning of modern OS.
- To understand the structure of OS , process and Interprocess Communications
- To understand the deadlock & Memory management concepts

UNIT I　　　　　　　　　　　　　　　　　　　　**Hours:15**

Introduction: What is OS -History of OS -Computer Hardare Review- OS Concepts: Processes-Deadlocks-Memory Management-I/O-Files-Security-The Shell-Recycling Concepts.

UNIT II　　　　　　　　　　　　　　　　　　　　**Hours:15**

OS Structure:Monolithic Systems- Layered Systems- Virtual Machines- Exo Kernels-Client Server Models.Processes: The Process Model-Process Creation-Process Termination-Process States. Threads: The Thread Model-Thread Usage-Implementing Threads In User Space & Kernel Space-Hybird Implementations-Schedular Activations-Pop-Up Threads-Making Single-Threaded Code Multithreaded.

UNIT III　　　　　　　　　　　　　　　　　　　　**Hours:15**

Interprocess Communication: Race Condition-Critical Regions-Mutual Exclusion With Busy Waiting-Sleep & Wakeup-Semaphores-Message Passing- Mutexes-Monitors-Barriers.Classical IPC Problems:The Dining Philosophers Problem-The Readers and riters Problems-The Sleeping Barber Problem.Scheduling:Introduction to Scheduling-Scheduling Batch Systems-Scheduling in Interactive Systems—Scheduling in Real-Time Systems-Policy versus Mechanism-Thread Scheduling.

UNIT IV　　　　　　　　　　　　　　　　　　　　**Hours:15**

Deadlocks: Introduction, Deadlock Detection And Recovery: Deadlock Detection With One Resource of Each Type- Deadlock Detection With Multiple Resources of Each Type-Recovery From Deadlock. Deadlock Avoidance: Bankers Algorithm for Single Resource, Bankers Algorithm for Multiple Resources. Dead Prevention:Attacking the Mutual Exclusion Condition- Attacking the Hold and ait Condition- Attacking the No Preemption Condition-Attacking the Circular Wait Condition.

UNIT V　　　　　　　　　　　　　　　　　　　　**Hours:15**

Memory Management: Virtual Memory-Paging-Page Tables-Page Replacement Algorithm: The Optimal Page Replacement Algorithm-The Not Recently Used Page Replacement Algorithm-The First In First Out-The Second Chance Page Replacement Algorithm-The Clock Page Replacement Algorithm-The Least Recently Used.

File Systems: Files: File Naming- File Structure-File Types—File Attributes-File

Operation. Directories: Single Level Directory Systems-Two Level Directory Systems-Hierarchical Directory Systems.

TEXT BOOK:

1. Andrew S. Tanenbaum, "**Modern Operating Systems**", Prentice Hall of India Pvt. Ltd, 2003.

REFERENCE BOOK:

1. Harvey M. Deitel, "**Operating Systems**", Second Edition, Pearson Education Pvt. Ltd, 2002.

2.Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "**Operating System Concepts**", 6th Edition, John Wiley & Sons (ASIA) *Pvt. Ltd, 2003.*

SEMESTER – III
CORE 8 : JAVA PROGRAMMING

Subject Code: 17U3CSCT08   **Total Hrs:90**   **No. of Credits: 4**

Objectives:

- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- To understand the Java Programming concepts so as to enable the students to create wide range of Applications and Applets using Java.

UNIT-I   **Hours:20**

Fundamentals of Object-Oriented Programming : Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.

UNIT-II   **Hours:20**

Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: if, if ..else, nested if, switch, ? : Operator - Decision Making and Looping: while, do, for – Jumps in Loops - Labeled Loops – Classes, Objects and Methods.

UNIT-III   **Hours:17**

Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together – Multithreaded Programming.

UNIT-IV   **Hours:17**

Managing Errors and Exceptions – Applet Programming – Graphics Programming.

UNIT-V   **Hours:16**

Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.

TEXTBOOKS:
1. PROGRAMMING WITH JAVA – A PRIMER - E. Balagurusamy, 3rd Edition, TMH.

REFERENCE BOOKS:
1. THE COMPLETE REFERENCE JAVA 2 - Patrick Naughton& Hebert Schildt, 3rded,TMH
2. PROGRAMMING WITH JAVA – John R. Hubbard, 2ndEdition, TMH

SEMESTER – III
CORE 9:DATA COMMUNICATONS AND NETWORKS

Subject Code: 17U3CSCT09   **Total Hrs:75**   **No. of Credits: 4**

Objectives :
1. To understand the concepts of data communication and modulation techniques.
2. To comprehend the use of different types of transmission media and network devices.
3. To understand the concepts of flow control, error control and LAN protocols.
4. To understand the functions performed by Network Management System.

UNIT I   **Hours : 14**

INTRODUCTION -Data communications – Networks – Network Types – Internet History – Standards and Administration – Network models : Protocol layering – TCP/IP Protocol Suite – OSI model.

UNIT II   **Hours:16**

PHYSICAL LAYER -Data and Signals – Periodic analog signals – Digital signals – Transmission Impairment – Data rate limits – Performance – Digital transmission : Digital to Digital Conversion – Analog to Digital conversion - Transmission modes - Analog transmission : Digital to analog conversion – Analog to Analog conversion .

UNIT III   **Hours:15**

DATA LINK LAYER-Error detection and correction : Block coding – Cyclic coding – Checksum – Forward error correction - Data Link Control (DLC) : DLC services – data link layer protocols – HDLC – Point to point Protocol(PPP) – Media Access Control(MAC) : Random Access – Controlled Access – Channelization.

UNIT IV   **Hours:15**

NETWORK LAYER-Network Layer services - Packet switching – Network layer performance – IPV Address – Forwarding of IP packets – Network layer protocols : Internet protocol (IP) – ICMPv4 – Mobile IP – Next generation IP :IPv6 Adressing – The IPv6 Protocol – The ICMPv6 Protocol – Transition from IPv4 to Ipv6.

UNIT V   **Hours:15**

TRANSPORT LAYER and APPLICATION LAYER-Transport layer protocols - User Datagram Protocol – Transmission Control Protocol – SCTP – Application Layer : Standard client server protocols : WWW and HTTP – FTP _ Electronic mail – Telnet – Secure Shell – Domain Name System – SNMP – ASN.1**.**

Text Book :
1. Behrouz A. Forouzan: "Data Communications and Networking", Fifth Edition, McGraw Hill Education pvt ltd.
Reference Books:
1. Achyut S Godbole: "Data Communications and Networks", Tata McGraw Hill Education pvt Ltd
2. Uyless d. Black: "Data Communications and Networks", Tata McGraw Hill Education Pvt Ltd

SEMESTER – III

CORE 10:JAVA PROGAMMING PRACTICAL

Subject Code: 17U3CSCP10   **Total Hrs:90**   **No. of Credits: 3**

PROGRAMS LIST
1. Write a Java program to generate a Pascal Triangle.
2. Program for counting letter frequencies in a given string
3. Write a Java Program to implement the concept of multiple inheritance using Interfaces.
4. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.
5. Program that counts the number of lines, words and characters in a given text file
6. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.
7. Write a Java Program to draw several shapes in the created windows.
8. Write a Java Program to demonstrate the Multiple Selection List-box.
9. Write a Java Program for creating your own package
10. Write a Java Program to create Menu Bars and pull down menus.
11. Program that generates a human face using applet
12. Create an applet that accepts two numbers in two textfields. Add a button labeled "equals" which when pressed should add the two numbers and display the result in the third text field
13. Write a Java Program to create frames which respond to the mouse clicks. For each events with mouse such as mouse up, mouse down, etc., the corresponding message to be displayed.
14. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.
15. Write a Java Program which open an existing file and append text to that file.

SEMESTER : III
Common to the Branches (BSc.CS/BCA/ B.Sc.,IT)

Allied 3 : OPERATIONS RESEARCH

Subject Code: **Total Hrs: 75**   **No. of Credits: 4**

Objectives:

To Know Operation Research and LPP, solving LPP
To solve transportation and assignment problems
To acquire knowledge of queueing theory, PERT and CPM

UNIT I   (15 Hrs)

Linear Programming–Mathematical Model assumption of Linear programming–Graphical Method–Simplex method– Big-m Method–Problems

UNIT II   (15 Hrs)

The Transportation Problems– Initial Basic Feasible Solution by North West Corner rule–Least Cost Method–Vogel's Approximation Method–The Assignment Problems–Assignment Algorithm–Optimum Solution–Unbalanced Assignment problem–Travelling Salesman Problem.

UNIT III   (15 Hrs)

Game Theory–Concept of pure and Mixed Strategies–Solving 2x2 matrix with and without saddle point– nx2–2xm games–Dominance Property.

UNIT IV   (15 Hrs)

(Derivations Not included) Queueing Theory– definition of waiting line model– Queue discipline–Traffic Intensity– Poison Arrival– Birth Deah process– Problems from single server: finite population model– Problems from multi server: finite population model.

UNIT V   (15 Hrs)

PERT and CPM– Network representation– Backward pass– forward pass– Computation– PERT network.

Text Book:

1. Resource Management Techniques– Prof. V. Sundaresan, K.S. Ganapathy Subramanian, K. Ganesan, Sixth Edition, A.R. Publications, Chennai.

Unit I   : Chapter 2: Section: 2.1–2.5, Chapter 3: Section: 3.1.1–3.1.4, 3.2, 3.2.1
Unit II   : Chapter 7: Section: 7.1
                   Chapter 8: Section: 8.1–8.9
Unit III   : Chapter 16: Section: 16.1–16.7
Unit IV   : Chapter 13: Section: 13.1– 13.6, 13.8

Unit V   **:** Chapter 15: Section: 15.1-15.7

Reference Books:

1. Operation Research– Kanti Swarup, P.K. Gupta and Man Mohan, Sultan Chand & sons, 13th Edition, New Delhi.

2. Operation Research– Prem Kumar Gupta D.S, Hira S, Chand & Company Ltd, Ram Nagar, New Delhi.

3. Problems in Operation Research– P.K. Gupta and Man Mohan–11th Edition, Sultan Chand & Sons, New Delhi.

SEMESTER – III

NON MAJOR ELECTIVE 2 : FOOD SCIENCE AND NUTRITION

Subject Code: 17U3NMET03   **Total Hrs: 30**   **No. of Credits: 2**

Objectives

To understand the importance of Nutrition and the role of food in health.
To know about the functions, deficiency and toxicity of nutrients.
To understand Malnutrition and its prevention
To know about various adulterants in food and the methods of detecting them.
To have an awareness on the prevailing food laws, hygiene and sanitation of foods.

UNIT 1   **Hours : 6**

Introduction to Nutrition: Terms used in Nutrition and Health. Definitions - Health, Nutrition, Nutrients, Foods, Diet, R.D.A., Balanced diet, Malnutrition, Under nutrition, Over nutrition, Optimum nutrition. Five Food Groups and Food guide, relationship between food and nutrition, functions of food, classification of nutrients, factors affecting food consumption and food acceptance. Elementary idea of probiotics, prebiotics and organic food.

UNIT 2   **Hours : 6**

Basic Nutrition: WATER- Functions, sources, requirements, water balance, dehydration (ORS) and toxicity. CARBOHYDRATE - Composition and classification, source, functions, requirements. LIPIDS- composition, sources, functions, requirements, deficiency and excess; fatty acids- essential and non-essential, SFA, USFA, MUFA, PUFA, significance of fatty acids, Rancidity. PROTEINS- composition, classification sources, functions, requirements, deficiency. ENERGY- unit of energy, food as a source of energy, definition of calorie and joules, energy requirement and factors affecting it- BMR, RMR, SDA.

UNIT 3   **Hours : 6**

VITAMINS- classification, sources, functions, requirements, deficiency and excess of the following: Vitamin A, D, E, K, C, Thiamin, Riboflavin, Niacin and B Complex. MINERALS - distribution in body, functions andsources, requirement, deficiency and excess of the following. Calcium, Phosphorus, Iron and Iodine. FIBRE- definition, types, sources, functions, importance in disease prevention.

UNIT 4   **Hours : 6**

Ecology of malnutrition- Definition, causes and consequences of malnutrition Ecological factors leading to malnutrition such as income, family size, dietary pattern, occupation, customs, food fads, fallacies and other factors. Measures to overcome malnutrition (only introduction)- Increased agricultural production through food technology, food fortification and enrichment, Nutrition education, Nutrition intervention programme genesis, objectives and operation of school lunch programme and ICDS, Organizations that combat malnutrition- International organization –

FAO, WHO, UNICEF National Organizations – ICMR, NIN, CFTRI, DFRL, ICAR

UNIT 5   **Hours : 6**

Food Adulteration and Food Laws- Definition,Types, Common adulterants and home scale methods of detecting adulterants; Food Laws (only introduction) – PFA, BIS, AGMARK, FPO, HACCP. Food toxicants- Naturally occurring toxicants in canned foods, Alcoholic and non alcoholic beverages Sugars, preservatives, mushrooms Carcinogens in heated foods.

Text Book

Healthy Vittles and Bits- Dr.A.Indhuleka

Reference Books:

1. Guthrie Helen (1986) Introductory Nutrition. Times Mirror/ Mosby College Publishing.

2. Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, NewAge International Pvt. Ltd.

SEMESTER III

SKILL BASED SUBJECT 3 :MATHEMATICS FOR COMPETITIVE EXAMINATIONS -III

Subject Code: 17U3SBST03   **Total Hrs: 30**   **No. of Credits: 2**

Objectives:
- To make the students to know the concept of Pipes, Cistern and Probablity.
- To solve problem related to Problems on Boats and Streams .
- To make the students to know the concept of Alligation or mixture,Problem of Heights and distance,odd man out series.

UNIT I   (6Hrs)

 Pipes and cisterm – Probablity

UNIT II   (6Hrs)

Problems on trains

UNIT III

                                                  (6Hrs)

Problems on Boats and Streams

UNIT IV   (6Hrs)

Alligation or mixture

UNIT V   (6Hrs)

Heights & Distance- Odd Man Out & Series

            (Simple Problems only)

TEXT BOOK:

R. S. Agarwal : Quantitative Aptitude (for Competitive Examinations), S. Chand and Company Limited, 7th Revised Edition -2007.

Unit I   : Chapter 16 and 31
Unit II   : Chapter 18
Unit III   : Chapter 19
Unit IV   : Chapter 20
Unit V   : Chapter 34 and 35

SEMESTER-III

Communication Skills- I

Subject Code:17U3SBST03   **Total Hrs: 30**
No. of Credits: 2

Objectives:

1.To enhance Listening, Speaking, Reading and Writing Skills among students.

2. To familiarise the students with the Sounds and Symbols used in English Language.

3. To emphasize the importance of Communication in the Global Scenario.

Unit –I- Communication

1. Verbal and Non-Verbal Communication

2. Barriers to Communication

Unit- II- Listening Skills

- Types of Listening
- Tips for Effective Listening
- Traits of Good Listening

Unit- III- Speaking

- Role Play
- Group Discussion
- Speaking at Different Types of Interviews
- Making Effective Telephone Calls
- Telephone Etiquette

Text Books:

1. Communication Skills by Meenakshi Raman (Oxford University Press)

2. Essential Communication Skills by Shalini Aggarwal (Ane Books Pvt.Ltd. New Delhi)

Reference Books:

1. Communication Skills a multi- skill course by Course team, Bharathiyar University(Macmillan)

2. Developing Communication Skills by Krishna Mohan(Macmillan)

3. Techinical English – II by Joyce Pereire(Vijay Nicole Imprints Pvt.Ltd.)

SEMESTER – IV
CORE 11: WEB DESIGNING

Subject Code: 17U4CSCT11   **Total Hrs:75**   **No. of Credits: 4**

Objectives:
1. To get practiced with creating the schemas and XML Document.
2. To acquire knowledge on creating web page to deploy the web applications.
3. To understand scripting language in java & VB.

UNIT I   **Hours:15**

Internet : Introduction to the Internet – Internet Technologies-Browser-**HTML:** HTML command tags- Head and Body section – Tags with Automatic Line Breaks – Values – Designing web pages – Formatting Text in html – Text color – Ordered and Unordered Lists Creating Liks – Table Handlin – DHTML and Style sheets – frames.

UNIT II   **Hours:15**

Cascading Style sheets : Introduction to CSS – Creating Style Sheets- Commen Tasks with CSS - Colours – The Font Family – Assigning Classes – The Layer Tag – Css Tags

UNIT III   **Hours:15**

Extensive Markup Language (XML) : Introduction – Features of XML – Support and usage – Compatability of XML with others:-CSS and XSL-Xlinks and Xpointers-URLs Verurs URIs-XMl and SGML .

UNIT IV   **Hours:15**

Structure of a XML Documnets - Common Errors - Structure in XML:- well formed Xml Documents-Logical Structures-Physical structures-Mark-Up and Character data-White spaces-Xml Declaration-Tags and Elements-Tag Name-Creating Document Type Declaration.

UNIT V   **Hours:15**

Java Script: Introduction – operators – starting with Java Scripts – Statements in Javavscripts – Working with objects – properties – Browser objects – data objects – math objects – string objects – defining objects – Handling Events in JavaScripts – Event handling Attributes Window Events – Form Elements – User Actions – Frame Objects – Document Object -Document Objects – Navigation Objects – Screen objects – Images and Animation

TEXT BOOK :
1. C Xavier , "World Wide Web Design with HTML",Tata McGraw Hill Education Private Limited,New Delhi.2006.
2. Ramesh Bangia, "Web Technology (Including HTML, CSS,XML,ASP,JavaScript,VB Script), published by Firewall Media ,2008

REFERENCE BOOK :
1. L.Mathu Krithigha Venkatesh , " Web Technology",Margham Publications.

SEMESTER – IV

CORE 12:NETWORK SECURITY AND CRYPTOGRAPHY

Subject Code: 17U4CSCT12   **Total Hrs:90**   **No. of Credits: 4**

Objectives:
- To understand the various concepts and technical issues related to security.
- To learn about various Security Approaches.
- To know about the Computer based key cryptography Algorithms.

UNIT I   **Hours: 20**

  Introdutction to the Concepts of Security: Introduction-The need for Security-Security Approaches-Principles of Security-Types of Attacks.**Cryptographic Techniques:I**ntoduction-Plain Text and Cipher Text-Substitution Techniques-Transposition Tchniques-Encryption and Decryption-Symmentric and Asymmentric Key Cryptography-Stegnography.

UNIT II   **Hours: 18**

  Computer based symmetric key Cryptography Algorithms: Introduction-Algorithm Types and Modes-overview os symmentric key cryptography-Data Encryption Standard(DES)-International Data Encryption Algorithm(IDEA)-RC5-Blowfish-Advanced Encryption Standards(AES).

UNIT III   **Hours:18**

  Computer based Asymmetric key Cryptography Algorithms: Intoduction-History and Overview of   Asymmetric key Cryptography-The RSA Alogorithm-Comparision between symmetric and Asymmetric Key Cryptography-Digital Signatures-Knapsack Algorithm-**Public key Infrastures(PKI):-I**ntroduction-Digital certificates-Public Key Cryptography Standards.

UNIT IV   **Hours: 18**

  Internet Security Protocols: Basic concepts-Secure Socket Layer(SSL)-Secure Electronic Transaction(SET)- Firewalls-IP Security

UNIT V   **Hours: 16**

  Data Security : Meaning – Fundamental requirements – Precautions – Encryption – Advantages of Encryption technology – Means of encryption of data – Public key Infrastructure – Cyber Security issues in India – Digital signature – Features– Types– Components of a Digital Signature Certificate – Use of Digital Signature Certificate – **Intellectual Property Rights :** Introduction – Laws - Law Firms – Need of Intergovernmental Intellectual Property Organization – Mission of WIPO – Global Innovation Index(GII) – Advantages of GII – Electronic Copyright Management System(ECMS) – Advantages – Indian Copy Rights Act on Soft Property Works - Indian Patents Act on Soft Property Works.

TEXT BOOKS:
1. Cryptography and Network Security By Atul Kahate,Tata McGraw-Hill Publishing Company Limited.
2. Dr.B.Kirubashini., P.Kavitha., "Cyber Law" Nandhini Pathippagam, 2013 (Unit-V)

REFERENCE BOOKS:
1. Willium Stallings,"Cryptography and NetworkSecurity Principles and Practices",Fourth Edition,PHI Education Asia.
2. Behrouz A.Forouzan,"Cryptography and Network Security,TMH.

SEMESTER – IV
CORE 13: SOFTWARE ENGINEERING

Subject Code: 17U4CSCT13 **Total Hrs:75** **No. of Credits: 3**

Objectives:
To enable the students
- To provide knowledge on Software engineering concepts
- To understand various techniques of cost estimation of software , software design and software Requirements.
- To understand various issues in implementation of software , verification , validation and maintenance of software to give a roadmap to design a new software project.

UNIT I **Hours:15**

Introduction to Software Engineering : Introduction-Basic definitions- Distribution of effort- Project Size Categories – Managerial Issues -Quality and Productivit Factors – Software Cost Factors. **Planning a Software Project:** Introduction – Software life Cycle Models – Waterfall Model – Work Products and Reviews – Prototype Model – Spiral Model – Concurrent Development Model – Component Assembly Model – Rapid Application Development Model – The incremental Model – Planning an Organizational Structure.

UNIT II **Hours:15**

Software Cost Estimation : Introduction- Software Cost Estimation Techniques – Staffing Level Estimation – Software Maintenance Cost Estimation.**Software Requirements Analysis:** Software Requirements Analysis – Facilitated Application Specification Technique – Quality Function Deployment – Elements of Requirements Analysis- Classical Analysis Methods.

UNIT III **Hours:15**

Software requirements Definition: Software Requirements Specification- Formal Specification Techniques – Languages and Processors for SRS**. Software Design:** Introduction – Types of Design – Design Strategies – Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techiques – Distributed and Real Time System Design.

UNIT IV **Hours:15**

Source Code Development : Introduction – Structured Programming Techniques – Coding Style – Documentation Guidelines. **Verification and Validation :** Introduction – Software Quality – Verification and Validation Methods – Software Quality Assurance – Formal Technical review- Structured Walkthrough – Inspection – Audit – Testing – Testing Strategies – Debugging – Source Code Metrics- Static Analysis – Symbolic Execution – Formal Verification.

UNIT V **Hours:15**

Software Testing Methods: Flowgraph and Graph Matrix- Software Testing Methods – White box testing – White Box Testing Techniques – Black box Testing - Black box Testing Techniques – Characteristics of testable software. **Software maintenance and Configuration management:** Introduction: Managerial Aspects of software maintenance – Enhancing Maintainablility during development – Software Configuration management. **Advanced Topics in Software Engineering:** Software Reliablity techniques- Risk managemnt – Total Quality movement – Capability maturity model integration – Cleanroom Software Engineering – Software Reengineering- Reverse Engineering.

TEXT BOOK:
   1. " Software Engineering", A.K.R.S. Anusha, Charulatha Publications, december 2016.

REFERENCE BOOKS:
   1. Software Engineering for Internet Applications – Eve Anderson, Philip Greenspun, Andrew Grumet, 2006, PHI.
   2. Fundamentals of SOFTWARE ENGINEERING – Rajib Mall, 2nd edition, PHI
   3. Software Engineering – Stephen Schach, 7th edition, TMH

SEMESTER – IV
CORE 14: WEB DESIGNING PRACTICAL
Subject Code: 17U4CSCP14   **Total Hrs:90**   **No. of Credits: 3**

PROGRAMS LIST

1. Create Tables using colspan and rowspan
2. Linking using Image map
3. Embedding flash file in Html
4. Create web page in Html using frames
5. Apply effects to text and image using CSS
6. Change the font text color and background picture.
7. Changing the background color using onmouseover, on click, on change events.
8. Displaying the radio button and combo box elements in the text box
9. Moving text or image with mouse
10. Checking the shift key, Right mouse button, Left mouse button is pressed or not and finding X, Y co,ordinates.
11. Changing the background of the button in the tables using mouse over.
12. Displaying the text in the status bar
13. Movement of text of different boxes into single text box
14. Program For Personal Details using XML and DTD
15. Program For State Details using XML and CSS
16. Program For College Details using XLINK

SEMESTER–IV

ALLIED 4: BUSINESS ACCOUNTING

Subject code:16U4CSAT04   Total Hours: 75   No of credits:4

Objectives:

- To make the students understand the basic accounting concept and conventions.
- To enlighten the students on the importance of cost ascertainment reductionand control.
- To enable the students to understand the preparation of budgets in the business organizations.

UNIT -I

(15 Hours)

 Itroduction - Accounting Principles - Braches of accouting - accounting rules – Journalising - Ledger - Subsidiary book including cash books - Trial balance

UNIT - II

(15 Hours)

 Preparation of Final accounts: Trading, Profit and Loss Account and Balance sheet with simpe adjustmets - Outstanding Expenses and Income, Prepaid expenses, Pre received Income, Depreciation - Provisin for bad debts

UNIT - III

(15 Hours)

 Cost Accounting: Meaning and elements of cost - Preparation of cost sheet with simple adjustments

UNIT - IV

(15 Hours)

Cost Accounting: Meaing and Importance – Stores Ledger: FIFO - LIFO - Weighted average and Simple average method. Managemet Accounting: Its meaning and objectives - Difference between management accounting, financial accounting and cost accounting.

UNIT - V

(15 Hours)

 Budget and Budgetary control - Preparation of various budgets: Fexible budget - Production budget - Cash budget - Sales budget.

   (Questions on problems and theory carry 80% and 20% of marks respectively)

Text Books:

1. T. S. Reddy & A. Murthy : Financial Accounting - Margham Publication, Chennai , 2016.

2. K.L. Nagarajan, N. Vinayakam, P.L. Nagarajan: Principles of Accountancy - S.

Chand & Sons Company Limited, Reprint 2010.

3. N.P.Srinivasan & Sakthivel Murugan : Accounting for management - S. Chand & Company Limited, Reprint 2010.

4. T.S.Reddy & Y Hari Prasad Reddy : Cost Accounting – Margham publications, Reprint 2012

5. S.Reddy & Y Hari Prasad Reddy : Management Accounting– Margham publications, Reprint 2012

SEMESTER – IV

NON MAJOR ELECTIVE 2 : FLORICULTURE

Subject Code: 16U4NMET04   **Total Hrs: 30**   **No. of Credits: 2**

Objectives:

To learn about the cultivation of flowers and ornamental crops from the time of planting to the time of harvesting.

To focus on the promotional and awareness aspects by motivating them to grow traditional as well as non-traditional floral crops and houseplants for commercial purpose.

To learn the basics of growing and fertilizing plants and flowers.

To learn design techniques and work on dried and live bouquets, arrangements, corsages and boutonnières.

UNIT I   **Hours: 6**

Floriculture – Definition, Introduction and Scope of Floriculture. Status of floriculture in India.

Development of Floriculture

UNIT II   **Hours: 6**

Cut Flowers- Types of cut flowers, Arranging bouquets, Using floral design tools. Loose

Flowers- Scope of loose flower trade, Significance in the domestic market/export,

UNIT III   **Hours: 6**

Design- Types of design Flower choice for design, Corsages/Boutonnières, Vase design,

Basket/mug design.

UNIT IV   **Hours: 6**

Propagation-Types of propagation, Annuals & Perennials, Varieties, Growing seasons, Potting

techniques.

UNIT V   **Hours: 6**

Careers in Floriculture. Export/Import and marketing in floriculture. Government Incentives and

Schemes. The role of supporting agencies.

Text Book:

1. Introduction to Floriculture – Dr.S.N.Suresh

Reference Books:

1.Know your Garden Plants – Jacob Varghese Kunthara

2.Production Technology of Ornamental Crops and Landscape Gardening – Dr. B. Hemlanaik

SEMESTER IV

SKILL BASED SUBJECT 4 :MATHEMATICS FOR COMPETITIVE EXAMINATIONS - IV

Subject Code: 17U4SBST05   **Total Hrs: 30**   **No. of Credits: 2**

Objectives:
To make the students to know the concept of Problems of Interest andVenn Diagrams
To solve problem related to Problems on Sequence and series.
To develop the skills in solving problems in Mental Ability and Logical reasoning.

UNIT I   (6Hrs)
Simple Interest-Compound Interest -Logcal Venn Diagram

UNIT II   (6Hrs)

Logarithms – Sequence and series

UNIT III   (6Hrs)

Area-Volume and Surface areas

UNIT IV   (6Hrs)

Tabulation-Bar Graphs-Puzzles

UNIT V   (6Hrs)
Pie Charts-line Graphs- Mental Ability and Logical reasoning

(Simple Problems only)

TEXT BOOK:
R. S. garwal : Quantitative Aptitude (for Competitive Examinations), S. Chand and Company Limited, 7ᵗʰ Revised Edition –2007.
Unit 1: Chapter 21 and 22
Unit 2: Chapter 23
Unit 3: Chapter 24 and 25
Unit 4: Chapter 36 and 37
Unit 5: Chapter 38 and 39
Reference Books:
   1. *Hand Book On Mental Ability And Logical Reasoning prescribed by Bharathiar University. 2. R.V.Praveen: Quantitative Aptitude and Resoning, PHI Learning pvt. Ltd-2012. 3. Abhijit Guha : Quantitative Aptitude for Competitive Examinations, Tata Mc-Graw Hill Publishing Company, 7ᵗʰ reprint-2003.*

SEMESTER-IV

Communication Skills- II

Subject Code:17U4SBST04   **Total Hrs: 30**
No. of Credits: 2

Objectives:

1. To enhance Listening, Speaking, Reading and Writing Skills among Students.

2. To familiarise the students with the Sounds and Symbols used in English Language.

3. To emphasize the importance of Communication in the Global Scenario.

Unit-I : Reading & Writing

1.   Reading Techniques (Skimming and Scanning)

2.   Types of Reading -   Intensive Reading and Extensive Reading

3.   Brain Storming

4.   Resume Preparation

5.   Report Writing

6.   Minutes of a Meeting

7.   Data Representation and Interpretation

8.   Memos

Unit- II : Sounds & Symbols

1.   Vowels

2.   Consonants

3.   Dipthongs

4.   Stress and Intonation

Text Books:

22. Communication Skills by Meenakshi Raman (Oxford University Press)

23. Essential Communication Skills by Shalini Aggarwal (Ane Books Pvt.Ltd. New Delhi)

Reference Books:

8.   Communication Skills a multi- skill course by Course team, Bharathiyar
      University(Macmillan)

9.   Developing Communication Skills by Krishna Mohan(Macmillan)

10. Techinical English – II by Joyce Pereire(Vijay Nicole Imprints Pvt.Ltd.)

SEMESTER – V
CORE 15: ASP .NET AND C#

Subject Code: 17U5CSCT15   **Total Hours: 75**   **No.of Credits: 4**

Objectives:
To enable the students
- To learn about the basic concepts of ASP .NET.
- To learn about the ASP .NET object model and its architecture.
- To learn about the C# and its functions.

Unit I   **Hours:15**

Getting set up: ASP .NET? Setting up, environment, overview. Programming basics: basics, program flow, coding techniques, designing applications, dynamic website application, processing ASP .NET applications, visual basic .NET.

Unit II   **Hours:15**

Programming ASP .NET with Visual Basic .NET Web Forms and ASP .NET: web forms. ASP .NET configuration, Scope and State: Configuration, state, Application object, ASP Sessions, Session object and sample project.

Unit III   **Hours:15**

ASP .NET objects and components: scripting object model, components and controls, project example, more active components. Web services and ASP .NET: web service development, WSDL and SOAP, web services background. ASP .NET and SQL Server: using SQL server, using databases in ASP .NET, ActiveX data objects, ADO .NET object model, Coding SQL and Project.

Unit IV   **Hours:15**

Understanding .NET: C# framework - .Net strategy, origins, framework, CLR, base classes, Visual Studio .Net, languages, benefits. Overview of C#: simple program, namespaces, main returning value, passing string objects, command line arguments, mathematical functions, compile time errors, structure. Literals, Variables and Data types.

Unit V   **Hours:15**

Operators and Expressions, Decision making and branching, Decision making and looping, Handling Arrays.

TEXT BOOKS:
1. ASP .NET – A Beginner's Guide, Dave Marcer, Third Edition, McGraw Hill Education India Private Limited.
2. Programming in C# - A Primer, E. Balagurusamy, Third Edition, Tata McGraw Hill Pvt Ltd.

SEMESTER – V

CORE 16 :PHP & MYSQL

Subject Code: 17U5CSCT16   **Total Hrs: 75**   **No. of Credits: 4**

Objectives:
- To presents the introduction to open source tools.
- **This enables the s**tudents to learn concepts of PHP AND MYSQL

UNIT I   **Hours:15**
   What is PHP? Why use PHP? Embedding PHP with HTML, Enhancing further, PHP Language Basics: Using variable in PHP, understanding Data types, operator and expressions. Making decisions: simple decision with if statements, switch, ternary operator, do..while loop, for statement, break, loop skip iteration, nested loop, Function: calling functions, working with variable functions, own functions references, recursive functions.

UNIT II   **Hours:15**
   Arrays: creating and accessing array elements, looping through arrays, multidimensional array, **manipulating array Strings: creating and accessing strings, searching strings, replacing text within strings and formatting strings.**

UNIT III   **Hours:15**
   Handling HTML forms with PHP: HTML forms work, capture form data with PHP, multi value **fields, web forms with PHP, storing PHP variables in forms, create file upload forms, redirecting PHP.**

UNIT IV   **Hours:15**
   Introducing Database and SQL: Deciding how to store data, quick play with MYSQL, connecting to MYSQL from PHP, retrieving data from MYSQL with PHP.

UNIT V   **Hours:15**
   Manipulating MYSQL data with PHP insert, update, delete records- Working with files anddirectories: understanding files and directories, getting information on files, opening and closing files,reading files and writing files , file permissions, Copying ,renaming and deleting files, working withdirectories. **Case Study:** Building a text editor (to be given as assignment).

TEXT BOOK:
1. Matt Doyle, Beginning PHP 5.3,Wunley India Edition,2012 .

REFERENCE BOOKS:
1. VikramVaswani, PHP: A Beginners guide,TataMcgraw Hill,2009.
2. Lawpoint, Guide to PHPLP Computer series, 2007.
3. Larry Ullman, PHP 6 and MySQL 5,Pearson Education,2000

SEMESTER – V
CORE 17: ASP.NET AND C# PROGRAMMING PRACTICAL

Subject Code: 17U5CSCP17   **Total Hrs:75**   **No. of Credits: 5**

PROGRAMS LIST
1. Write a C# program to allocate dynamic arrays.
2. Write a C# program for converting numbers into words.
3. Write a C# program for arithmetic operations – addition, subtraction, multiplication and division using Switch case statement.
4. Write a C# program to check whether given string is a palindrome or not.
5. Write a C# program to read number and check ODD or EVEN.
6. Write a C# program that prints out Fibonacci Series.
7. Write a C# program to convert from Fahrenheit to Celsius and Celsius to Fahrenheit.
8. Write a C# program to check whether the given year is a leap year or not.
9. Write a ASP .NET program to perform arithmetic operation.
10. Write a ASP .NET program to convert decimal number to binary, octal and hexadecimal.
11. Write a ASP .NET program to develop a simple calculator.
12. Write a ASP .NET program to demonstrate the text control.
13. Write a ASP .NET program to demonstrate the checkbox control.
14. Write a ASP .NET program to design simple registration form using asp .net objects.
15. Develop OnLine Shoping applications using ADO.Net.

SEMESTER – V

CORE 18: PHP & MYSQL PRACTICAL

Subject Code: 17U5CSCP18   **Total Hrs:75**   **No. of Credits: 3**

PROGRAMS LIST

1. Write a program to create different variables.
2. Develop a PHP program using controls and functions
3. Develop a PHP program to design a college application form using MYSQL table.
4. Write a program to send an HTML formatted Email in PHP.
5. Develop a PHP program to display student information using MYSQL table.
6. Write a program to do different types of Sorting in PHP.
7. Write a program to do String Manipulation in PHP.
8. Write a PHP program to get color code from the user which displays the color name.
9. Write a PHP program to do calculator functions
10. Write a program to upload a file in PHP.
11. Write a program for login authentication using PHP and MySQL
12. Create a Pay slip for an employee using PHP and MySQL
13. Write a program to demonstrate how a web page can communicate with a web server while a user type characters in an input field
14. Develop a PHP program using session
15. Develop a PHP program using cookie and session

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SEMESTER-V

Aptitude & Soft Skills- I

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Subject Code: 16U5NCCT01   **Total Hrs: 45**

Objectives:

1.To develop Positive attitude among students by mastering Soft Skills.

2.To enable the students to face the personal Interviews Successfully.

Unit I: Soft Skills

1. Empathy

2. Intrapersonal Skills

3. Interpersonal Intelligence

4. Problem Solving Skills

5. Critical Thinking

6. Aptitude and Assessment Test

Unit II: Aptitude

1. Numerical Reasoning

2. Mental Ability

3. Logical Reasoning

Text Books:

1.Techinical English – I by Prof .N. Lakshmana Perumal (Sri Krishna Hitech Publishing Company Pvt. Ltd.)

2.Quantitative Aptitude for Competitive Examinations, Revised 2017 EDITION by R. S. Aggarwal (English, Paperback).

Reference Book:

1. Techinical English – II by Joyce Pereire(Vijay Nicole Imprints Pvt.Ltd.)

SEMESTER – VI
CORE 19: GRAPHICS AND MULTIMEDIA

Subject Code: 17U6CSCT19   **Total Hrs:75**   **No. of Credits: 3**

Objective:
- To provide thorough knowledge to the students the basic concepts of Graphics & Multimedia .

UNIT I   **Hours:15**

Overview of Graphics Systems:Video Display Devices – Raster Scan Systems – Random Scan Systems – Graphics Monitors and Workstations – Input devices.

UNIT II   **Hours:15**

Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. Attributes of Output Primitives: Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.

UNIT III   **Hours:15**

2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. 2D Viewing: The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations.

UNIT IV   **Hours:15**

Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats. Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT V   **Hours:15**

Audio: Introduction – Acoustics – Nature of Sound Waves – Types and Properties of Sound – Components of an Audio Systems – Digital Audio – Synthesizers – MIDI. Video: Introduction – Motion Video – Analog Video Camera – Analog Video Signal Representation – Television Systems – Video Color Spaces . Compression: Basic Concepts – Lossless Compression Techniques – Lossy Compression Techniques – Image Compression – Audio Compression.

TEXT BOOKS:
1. Computer Graphics, Donald Hearn, M.Pauline Baker, 2nd edition, PHI. (UNIT-I: 3.1-3.6,4.1-4.5 & UNIT-II: 5.1-5.4,6.1-6.5)
2. Principles of Multimedia, Ranjan Parekh, 2007, TMH. (UNIT III: 4.1-4.7,5.1-5.16 UNIT-IV:7.1-7.3,7.8-7.14,7.18-7.20,7.22,7.24,7.26-28 UNIT-V: 9.5-9.10,9.13,9.15,10.10-10.13)

REFERENCE BOOKS:

1. Computer Graphics, Amarendra N Sinha, Arun D Udai, TMH.
2. Multimedia: Making it Work, Tay Vaughan, 7th edition, TMH

SEMESTER – VI
CORE 20 : SOFTWARE TESTING PRACTICAL

Subject Code: 17U6CSCP20   **Total Hrs:75**   **No. of Credits: 3**

PROGRAMS LIST

1. Performing a test in the Apache JMeter Testing Tool to implement the factorial concepts.
2. Performing a test in the Apache JMeter Testing Tool to analyze the suitable problem and displaying the results.
3. Performing a test in the Apache JMeter Testing Tool to find the fibonaaci series
4. Testing the java program:Biggest of three numbers using Logical Operators.
5. Creating test cases and testing the functionality of calculator.
6. Creating test cases and testing the java Program which generates sum of a individual digit of a 5-digit number until a single digit is produced.
7. Testing the java program:Matrix Multiplication
8. Testing the java program:Matrix Addition
9. Testing the java program: Sort and store the elements two arrays of integers into the third list.
10. Testing the java program: Multiple Inheritance.
11. Testing the java Program: Palindrome string checking program.
12. Testing the java Program: String Manipulation.
13. Testing the java Program: Employee details using constructors.
14. Testing the java program:Reading and writing a files.
15. Testing the java program:Exception Handling

SEMESTER – VI
CORE 21 : GRAPHICS AND MULTIMEDIA PRACTICAL

Subject Code: 17U6CSCP21   **Total Hrs:90**   **No. of Credits: 3**

PROGRAMS LIST
Multimedia

1. Create Sun Flower using Photoshop.
2. Animate Plane Flying in the Clouds using Photoshop.
3. Create Plastic Surgery for the Nose using Photoshop.
4. Create See-through text using Photoshop.
5. Create a Web Page using Photoshop.
6. Convert Black and White Photo to Color Photo using Photoshop.
7. Design a Visiting Card containing at least One Graphic and Text Information.
8. Take a photographic image, Give a title for the Image. Put the border. Write your names and the name of the institution and place.

Animation

9. Changing the color
10. Shape Animations
11. Twinkle a star
12. Simple games

Graphics

13. Moving a car
14. rotate an image
15. DDA Algorithms

SEMESTER – VI
CORE 22 : PROJECT VIVA VOCE

Subject Code : 17U6CACV22   **Total Hrs : 90**   **No of Credits : 4**

GUIDELINES FOR PROJECT WORK

1. The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.

2. Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.

3. The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

FINAL VIVA

1. Project work carries 100 marks with 4 credits
2. Internal Assessment: 80 marks (60 marks for 3 reviews and 20 marks for record) and External Assessment : 20 marks (Viva Voce)
3. For awarding a pass, a candidate should have obtained 40% of the total 100 Marks.(Viva - Voce)
4. The evaluation would be done jointly by both the examiners(Internal and External). Students who fail in the project work and viva-voce examination or who are absent for the project viva-voce who fail to submit the project report before the due date will have to re-submit the project work and appear for the viva-voce examination during the subsequent year.

<u>**PROJECT WORK**</u>

TITLE OF THE PROJECT
Bonafide Work Done by
STUDENT NAME
REG. NO.

Project submitted in partial fulfillment of the requirements

for the award of Bachelor of Computer Science of
Bharathiar University ,Coimbatore-46

College emblem

GUIDE   HOD

Submitted for the Viva-Voce Examination held on _____

Internal Examiner   External Examiner

MONTH – YEAR

<u>**CONTENTS**</u>

DECLARATION

CERTIFICATE

ACKNOWLDGEMENT

CONTENTS

SYNOPSIS

1. INTRODUCTION

    1.1 ORGANIZATION PROFILE

    1.2 SYSTEM SPECIFICATION

    1.2.1 HARDWARE CONFIGURATION

    1.2.2 SOFTWARE SPECIFICATION

2. SYSTEM STUDY

    2.1 EXISTING SYSTEM

    2.1.1 DRAWBACKS

    2.2 PROPOSED SYSTEM

    2.2.1 FEATURES

3. SYSTEM DESIGN AND DEVELOPMENT

    3.1 FILE DESIGN

    3.2 INPUT DESIGN

    3.3 OUTPUT DESIGN

    3.4 DATABASE DESIGN

    3.5 SYSTEM DEVELOPMENT

    3.5.1 DESCRIPTION OF MODULES

    (Detailed explanation about the project work)

4. TESTING AND IMPLEMENTATION

5. CONCLUSION

    BIBLIOGRAPHY

    APPENDICES

    A. DATA FLOW DIAGRAM

    B. TABLE STRUCTURE

    C. SAMPLE CODING

    D. SAMPLE INPUT

    E. SAMPLE OUTPUT

SEMESTER-VI
NON CREDIT COURSE2: APTITUDE & SOFT SKILLS - II

Subject Code: 16U5NCCT02   **Total Hrs: 45**

Objectives:

1.To develop Positive attitude among students by mastering Soft Skills.

2.To enable the students to face the personal Interviews Successfully.

Unit I: E- Materials

1.   Interactive Exercises for Grammar and Vocabulary

2.   Audio/Video Excerpts of different Accents

3.   Interpreting Posters

Unit II: Aptitude

1. Numerical Reasoning

2. Mental Ability

3. Logical Reasoning

Text Books:

1.Techinical English – I by Prof .N. Lakshmana Perumal (Sri Krishna Hitech Publishing Company Pvt. Ltd.)

2.Quantitative Aptitude for Competitive Examinations, Revised 2017 EDITION by R. S. Aggarwal (English, Paperback).

Reference Book:

1. Techinical English – II by Joyce Pereire(Vijay Nicole Imprints Pvt.Ltd.)

SEMESTER – V
ELECTIVE 1 : DATA MINING AND DATA WAREHOUSING

Subject Code:17U5CSET1A   **Total Hrs:60**   **No. of Credits: 4**

Objectives:

To enable the students
- To know the basics of data mining and warehousing.
- To Understand various techniques in data mining.
- To learn about architecture of data warehouse and its applications

UNIT I   **Hours: 12**

Introduction – Data mining – Data mining functionalities – kinds of patterns can be mined – classification – major issues. Data warehouse – A multidimensional data model – Data warehouse architecture – Data warehouse implementation – From data warehouse to data mining.

UNIT II   **Hours: 11**

Data pre-processing – Data cleaning – Data Integration and Transformation – Data Reduction – Discretization and concept hierarchy generation – Data mining primitives – Data mining Task.

UNIT III   **Hours: 13**

Association Rule Mining – Mining single dimensional Boolean association rules from transactional databases –. Classification and prediction – Issues regarding classification and prediction – Bayesian classification- Classification by Back propagation – classification based on concepts from association rule mining.

UNIT IV   **Hours: 12**

Cluster Analysis – A categorization of Major clustering methods - Partitioning methods- Hierarchical methods – Grid based methods -Model based clustering methods – Density – based methods.

UNIT V   **Hours: 12**

Applications and Trends in Data Mining – Data mining system products and Research prototypes – Additional themes on Data mining – Social Impacts of Data Mining – Trends in Data mining-Mining Spatial Databases – Mining Time - series and sequence data – Mining the World wide web.

TEXT BOOKS:
1. Jiwei Han, Michelien Kamber, Data Mining Concepts and Techniques, Morgan Kaufmann Publishers an Imprint of Elsevier,Latest Edition. 2003.
2. Arun K.Pujari, Data Mining Techniques, Universities Press (India) Limited,

REFERENCE BOOKS:

1. George M. Marakas, Modern Data warehousing, Mining and Visualization: Core Concepts, Printice Hall, First Edition, 2002.

2. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson, 2008.

3. Soman K. P, Shyam Diwakar, V. Ajay, Data Mining, Printice Hall, 2008.

SEMESTER – V
ELECTIVE 1 : MOBILE COMPUTING

Subject Code: 17U5CSET1B   Total Hrs:60   **No. of Credits: 3**

Objectives:
- To introduce the mobile communication fundamentals.
- To enable the students to write android based script for application development.
- To make the students learn and understand eclipsed based IDE programming for the mobile environment.

UNIT I   **Hours: 12**
    Introduction: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middlewar e and Gateways – Application and services- Developing Mobile computer Applications – security in mobile computing – Standards - Why is it necessary – Standard bodies. MOBILE COMPUTTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – Three-tier architecture – Design considerations for mobile computing – Mobile comput ing through Internet – Making exiting applications mobile enabled

UNIT II   **Hours: 12**
    MOBILE COMPUTING THROUGH TELEPHONY: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVRApplication – Voice XML – TAPI

UNIT III   **Hours: 12**
    EMERGING TECHNOLOGIES: Blue Tooth – RFID – WiMAX –Mobile IP –IPv6 – Java Card. **GSM** : Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM –PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations –Authentications and Security.- **SMS**

UNIT IV   **Hours: 12**
    GPRS – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Applic ation for GPRS- Limitations – Billing and Charging. **WAP** : MMS – GPRS Applications

UNIT V   **Hours: 12**
    CDMA and 3G: Spread spectrum technology – Is 95 – CDMA vs GSM – Wireless Data – Third generation networks – Applications on 3G WIRELESS LAN: Wireless LAN advantages – IEEE 802.11standards – Architecture – Mobile in Wireless LAN – Deploying wireless LAN – Mobile adhoc networks and sensor networks –Wireless LAN Security –WiFi vs 3G

TEXT BOOK:
1. MOBILE COMPUTING, Asoke K Talukder , Roopa R Yavagal, TMH, 2005 , 2nd Edition.

REFERENCES BOOK:
1. J.Schiller, Mobile Communications, Second Edition, Second Impression, Pearson Education Limited.

SEMESTER – V
ELECTIVE 1 : EMBEDDED SYSTEMS

Subject Code: 17U5CSET1C   Total Hrs:60   **No. of Credits: 3**

Objectives:
- To make the students to have basic Knowledge and understanding of fundamental embedded systems design paradigms, architectures, possibilities and challenges, both with respect to software and hardware
- Ability to analyze a system both as a whole and in parts and their interaction in the functionality and properties of the system.
- To make the students to have a clear understanding on industrial embedded systems and intelligent embedded system development.

UNIT I   **Hours: 12**

Introduction To Embedded System: Embedded System - Processor Embedded Into a System - Embedded Hardware Units And Devices In a System - Embedded Software In a System - Examples Of Embedded System - Embedded System-On-Chip(Soc)And Use Of VLSI Circuit Design Technology. Memory Organization: Processor And Memory Organization – Memory Types - Memory Maps And Address – Processor Selection - Memory Selection.

UNIT II   **Hours: 12**

Devices And Communication Buses For Devices Network: IO Types And Examples - Serial Communication Devices - Parallel Device Ports - Sophisticated Interfacing Features In Device Ports - Wireless Devices - Timer And Couting Devices - ISR Concept - Interrupt Sources - Interrupt Servicing(Handling)Mechanism - Multiple Interrupt.

UNIT III   **Hours: 12**

Programming Concept And Embedded Programming In C, C++ & Java: Software Programming In Assembly Language(Alp) and In High Level Language 'c' – C Program Element: Header and Source File And Preprocessor Directives - Program Elements: Macro And Functions -program Elements : Data Types, Data Structures, Modifiers, Statements, Loops And Pointers - Object - Oriented Programming - Embedded Programming In C++ - Embedded Programming In Java.

UNIT IV   **Hours: 12**

Inter Process Communication And Synchronization Of Process,Threads And Tasks: Multiple Processes In An Application - Multiple Threads In An Application – Tasks - Inter Process Communication - Message Queue Function - Mailbox Function - Pipe Function - Socket Function – RPC Function.

UNIT V   **Hours: 12**

Real Time Operating System: OS Services - Process Management - Timer Function - Event Function - Memory Management – Devices, Files and IO Sub System Management - Interrupt Routines RTOS Environment And Handling Of Interrupt Source Calls - Real-Time Operating System -Basic Design Using An RTOS - RTOS Task Scheduling Models, Interrupt Latency And Response Of The Task As Performance Metrics.

TEXT BOOKS:
1. Embedded Systems – Architecture , Programming and Design – Raj Kamal - 2 nd edition.2012.

REFERENCE BOOKS:
1. Embedded Systems – Architecture , Programming and Design – Raj Kamal TATA McGRAW-HILL EDITION, New Delhi.2007.

SEMESTER – V
ELECTIVE 2 : E-COMMERCE

Subject Code: 17U5CSET2A   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
To enable the students
- To have an understanding of the Basics of E-Commerce and Technology infrastructure required for implementing the same.
- To know about various methods and strategies for selling on the web
- To Know in detail about E-Marketing and E-Strategies..

UNIT I   **Hours:12**
   INTRODUCTION: Traditional commerce and E commerce-Internet and WWW-role of WWW-value chains-Strategic business and industry value chains-role of e commerce.

UNIT II   **Hours:12**
   INFRASTRUCTURE FOR E COMMERCE: Packet Switched Networks - Tcp / IP Protocol Script-Internet Utility Programmes- SGML, HTML and XML -Web Client And Servers-Web Client / Server Architecture-Intranet And Extranets.

UNIT III   **Hours:12**
   WEB BASED TOOLS FOR E COMMERCE: Web Sercer-Performance Evaluation - Web Server Software Feature Sets-Web Server Software And Tools-Web Protocol-Search Engines-Intelligent Agents-EC Software-Web Hosting-Cost Analysis**.**

UNIT IV   **Hours:12**
   SECURITY: Computer Security Classification-Copy Right And Intellectual Property-Electronic Commerce Threats-Protecting Client Computers-Electronic Payment Systems-Electronic Cash-Strategies For Marketing-Sales And Promotion-Cryptography-Authendication.

UNIT V   **Hours:12**
   INTELLIGENT AGENTS: Definition and capabilities -Limitation of agents-Security-Web based marketing-Search engines and Directory registration-Online advertisments-Portables anf info mechanics-Website design issues.

TEXT BOOK:
1. V.Thomas Sacraties, E-Commerce Mailam Engineering collage.
2. N.Mary Shyamala, E-Commerce I.F.E.T.Collage of Engineering**.**

REFERENCE BOOKS:
1. E-Commerce (Concepts and Applications) Nidhi Dhawan,International Book House PVT.LTD-1941.
2. E-Commerce Strategy, Technologies and Applications, David Whiteley,Manchester Metropolitan University,Tata McGraw-Hill Publishing Company Limited New Delhi.

SEMESTER – V
ELECTIVE 2 : CLIENT SERVER TECHNOLOGY

Subject Code: 17U5CSET2B   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
To enable the students
- To understand the concepts of client/server
- To learn the components of client and server application-Client & Server
- To learn the components of client and server application-Connectivity
- To learn the components of client and server application-Software & Hardware

UNIT I   **Hours:12**
Client/Server Computing :Mainframe -Centric Client/Server Computing-Downsizing and Client/Server Computing .Advantages of Client / Server Computing -Connectivity –Ways to improve Performance –How to reduce network Traffic

UNIT II   **Hours:12**
Components of Client/Server Applications –The Client: Role of a Client –Client Services – Request for Service-RPC. Components of Client/Server Applications –The Server: The Role of a Server –Server Functionality in Detail –The Server Operating system.

UNIT III   **Hours:12**
Components of Client/Server Applications –Connectivity: Open System Interconnect – Communications Interface Technology – Inter process communication –WAN Technologies.

UNIT IV   **Hours:12**
Components of Client/Server Applications–Software: Factors Driving demand for application software development –Rising Technology Staff costs –Need to improve Technology –Need for Common Interface across Platforms –Client/Server System Development Methodology-OOP.

UNIT V   **Hours:12**
Components of Client/Server Applications–Hardware: Hardware/Network Acquisition –PC-Level Processing Units –Macintosh, notebooks, Pen –UNIX Workstation –x-terminals –Disk, Tape, Optical Disks, NIC and UPS. The Future of Client/Server Computing: Enabling Technologies –Transformational Systems.

TEXT BOOKS:
1. Client /Server Computing, Patrick N.Smith with Steve L.Guengerich, 2nd edition, PHI,2012.

REFERENCE BOOKS:
1. Robert Orfali, Dan Harkey, Jeri Edwards: The Essential Client/Server Survival Guide, 3rd edition, WileyIndia, 2011.
2. Client/ Server Computing, Dewire and Dawanatravis, 1st edition,Tata Mcgraw Hill Pub,2008.

SEMESTER – V
ELECTIVE 2 : SOFTWARE PROJECT MANAGEMENT

Subject Code: 17U5CSET2C   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
- To get knowledge of how to handle project development activities
- To understand the threats and opportunities in Project managements
- To study various project cost, time estimation models.
- To study how to make quality software products.
- To Appreciate management issues like team structure and group dynamics

UNIT I   **Hours:10**
       SOFTWARE PROJECT MANAGEMENT : Introduction, Need for Software Project Management – Software Project versus other projects – Overview of Project planning.

UNIT II   **Hours:10**
       PROJECT EVALUATION : Introduction, Strategic assessment, Technical Assessment, Cost benefit Analysis, Cash flow forecasting, Cost benefit Evaluation Techniques Risk Evaluation – Selection of appropriate project planning.

UNIT III   **Hours:14**
       ACTIVITY PLANNING : Objectives of activity planning, Project schedules, Projects and activities, Sequencing and scheduling activities, Network Planning models –Formulating network models, Using dummy activities, Identifying critical path, identifying critical activities. Risk Analysis and Management: Nature of risk, Managing risk, Risk identification, Risk analysis, reducing the risks, evaluating the risks.

UNIT IV   **Hours:14**
       SOFTWARE EFFORT ESTIMATION: Problems with over and under estimate, the basis for software estimation, software estimation Techniques. Expert judgments, Estimating by analogy, Function point analysis. Resource Allocation: Identifying resource requirements, Scheduling resources, Monitoring and control, Managing people and organization teams.

UNIT V   **Hours:12**
       PROJECT MANAGEMENT : Project Management in the Testing phase – Introduction, test scheduling, test types, issues, management structures for testing, metrics for testing phase, Project Management in the Management phase – Introduction, activities, management issues, configuration management, estimating size, effort and people resources, advantages, metrics.

TEXT BOOKS:
       1. Bob Hughes and Mike Cotterell, "Software Project Management", Hill 5th Edition,
Tata   McGraw
       2. Gopalaswamy Ramesh, "Managing Global Software Projects", 2001, TMH.

REFERENCE BOOKS
   1. Walker Royce, "Software Project Management", 1998, Addison Wesley
   2. Stellman & Greener, "Applied software project management" SPD.

SEMESTER – VI
ELECTIVE 3: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Subject Code: 17U6CSET3A   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
* To understand the expert-level knowledge about a particular domain and to know how to use its knowledge to respond properly.
* To understand the area of domain within which the task is being performed.
* To understand the source of knowledge may come from a human expert and/or from books, magazines and internet.
* To understand the functioning of expert systems and knowledge-based systems.

UNIT I   **Hours:12**
Artificial Intelligence : Intelligence, AI Concepts, Various definitions of AI, Knowledge, Knowledge Pyramid, People and Computers: What computers can do better that people, what people can do better than computers; Characteristics of AI Problems, Problem Representation in AI, Components of AI, AI Evolution, Application Areas of AI, History of AI, The Turing Test, The Revised Turing Test.

UNIT II   **Hours:12**
Expert System: Components of Expert System: Knowledge Base, Inference Engine, User Interface,Features of Expert System, Expert System Life Cycle, Categories of Expert System, Rule Based vs.Model Based Expert Systems,Advantages/Limitations of Expert System.

UNIT III   **Hours:12**
Developing an Expert System: Identification, Conceptualization, Formalization, Implementation, Testing, Using an Expert System, Application Areas of Expert System.

UNIT IV   **Hours:12**
AI and Search Process: Brute Force Search –Depth First/Breadth First Search, Heuristic Search: Hill Climbing, Constraint Satisfaction, Mean End Analysis, Best First Search, A* Algorithm, AO*Algorithm, Beam Search.

UNIT V   **Hours:12**
Natural Language Processing: Introduction, Need, Goal, Fundamental Problems in Natural Language Understanding, How People overcome Natural Language Problems. Speech Recognition: Introduction,Advantages and Approaches, Introduction to Robotics: Parts of a Robot, Controlling a Robot, Intelligent Robots, Mobile Robots.

TEXT BOOKS:
1. Henry C.Mishkoff, "Understanding Artifical Intelligence"
2. V SJanakiraman, "Foundation of Artificial Intelligence and Expert Systems",2004.

REFERENCE BOOKS:

1. Artificial Intelligence and Machine Learning – Vinod Chandra S.S and Anand Hareendran .S, PHI Learning, First Edition, 2014.
2. Artificial Intelligence – Elaine Rich, Kevin Knight, Shivashankar B.Nair, Third Edition 2012.

SEMESTER – VI
ELECTIVE 3: SOFTWARE TESTING

Subject Code: 17U6CSET3B   **Total Hrs:60**   **No. of Credits: 3**
Objective:
- To understand of Software Testing.
- To discuss the distinctions between validation tests and defect testing.
- To describe the principles of system and component testing.
- To describe strategies for generating system test cases.
- To understand the essential characteristics of tool used for test automation.

UNIT I   **Hours:12**
Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing – Challenges in White-Box Testing.

UNIT II   **Hours:12**
Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash.

UNIT III   **Hours:12**
System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT IV   **Hours:12**
Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT V   **Hours:12**
Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.

TEXT BOOK:
  1. Software Testing Principles and Practices, Srinivasan Desikan & Gopalswamy Ramesh, 2006, Pearson Education.

REFERENCE BOOKS:
  1. Effective Methods of Software Testing, William E. Perry, 3rd ed, Wiley India.
  2. Software Testing, Renu Rajani, Pradeep Oak, 2007, TMH.

SEMESTER – VI
ELECTIVE 3: ENTERPRISE RESOURCE PLANNING

Subject Code: 17U6CSET3C   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
- To develop the capability to streamline the different organizational processes and work flows in ERP.
- To understand the ways of Improving efficiency, performance, and productivity levels of ERP Projects.

UNIT I   **Hours:12**

ERP: Introduction : Define – Functional Module in ERP System – Evolution of ERP Systems - Characteritics of ERP – Process Intergration With ERP Systems. Benefits of ERP Applications – Technology Behind ERP Systems. **ERP Market and Vendors:** ERP Market – ERP Vendors – Service Oriented Architecture - ERP Package features.

UNIT II   **Hours:12**

Extended ERP Services: Defining Extended ERP – SCM and ERP – ERP and BI – ERP and E-Commerce. **Business Process Re-engineering And ERP:** Defining Business Process Reengineering- Enterprise redesign principles – Business process reengineering - BPR and Change Management – Different Approaches BPR Implementaion – Methodology for BPR Implementaion – Role of IT in BPR – BPR and EPR Systems – BPR sucess / failure factors.

UNIT III   **Hours:12**

Planning for ERP – Planning for ERP Implementaion – Understanding Organizational Requirements. - Understanding Economic and Strategies Justification – Analysing Project Scope – Determing Resources – Creating Budget for ERP Implementaion – Selecting the Right ERP Package- Preparing Organizations for ERP Implementaion. **Implementation of ERP:** Designing for ERP systems – ERP implementaion approaches – ERP implementaion Life cycle.

UNIT IV   **Hours:12**

Managing ERP Projects: Risk Failure factors in ERP Implementaion – Examples of ERP Failure- Mitigating implementaion risks – Management and complexity of Large scale ERP Projects- Training users to use ERP Systems. - Evaluating ERP Projets.

UNIT V   **Hours:12**

ERP Going live and post implementaion: Preparing to go live – Strategies for migration – to new ERP systems – Go live performance surprises – Managing ERP after go live – Maintenance of ERP Systems. **Expanding ERP Boudaries:** Service oriented architecture – Enterprises application integration – Application Services provider – Model for ERP implementaion.

TEXT BOOKS:
1. Ashim raj singla – Enterprise Resource Planning – Cengage Learning india Pvt . Ltd 2008.

REFERENCE BOOKS:
1. Alexis Leon, " ERP Demystified" II Edition , Tata McGraw Hill, New Delhi, 2000

2. Alexis Leon," Enterprise Resource Planning: II Edition, Tata McGraw Hill.

SEMESTER – VI
ELECTIVE 4: COMPILER DESIGN

Subject Code: 17U6CSET4A   **Total Hrs:60**   **No. of Credits: 3**

Objectives:

To enable the students

- To learn the fundamentals of Compiler Designes
- To gain knowledge on High level Programming languages
- To gain an insight into the lexical Analysis components viz. the algorithms for implementation of finite automata
- To know the components and management aspects of parsing tables, types of Error and the methods Detection and Recovery

UNIT I   **Hours:12**

Introduction to Compilers: Compilers and Translators – The Structure of a Compiler Lexical Analysis – Syntax analysis – Intermediate Code generation – Optimization – Code generation- Book keeping – Error handling – Compiler writing tools. **Programming languages:** High level Programming languages- Definitions – lexical and Syntactic structure of a language – data elements data structures – operators – assignment – statements.

UNIT II   **Hours:12**

Finite Automata and lexical Analysis: The role of the lexical analyzer – simple approach – regular expressions -finite automata – from regular expressions to finite automata – minimizing the number of states – implementation of lexical analyzer.**The Syntactic Specifications of programming languages :** Context free Grammers – Derivations and Parse Trees – Capabilities of Context free Grammers.

UNIT III   **Hours:12**

Basic Parsing Techniques: Parsers – Shift – reduce parsing – operator- precedence parsing – Top down parsing – Predictive parsers**. Automatic Constuction of Effective parsers :** LR parsers – Canonical Collection of LR (0) items - Constructing SLR parsing tables – Constructing Canonical LR paqrsing tables – Constructing LALR parsing tables.

UNIT IV   **Hours:12**

Symbol tables : the Contents of a symbol tables – data structures – Representing scope information.**Error Detection and Recovery :** Errors – Lexical phase errors – Syntactic phase errors – Semantic errors.

UNIT V   **Hours:12**

Introduction to Code Optimization : The principal sources of optimization – Loop Optimization – DAG representation of basic blocks – Value numbers and algebric laws- global data flow analysis.**Loop Optimization:**Dominators – Reducible Flow graphs – depth first search – Loop invariant computations – Induction variable elimination – Some other loop optimizations.

TEXT BOOK:

1. Principles of Compiler Design,Alfred V. Aho, Jeffrey D.Ullman,Narosa publishing house.

REFERENCE BOOKS:

1. Compilers : Principles, Techniques and Tools (2nd Edition) by Alfred V.Aho and Monica S.Lam, Sep 10 , 2006.

SEMESTER – VI
ELECTIVE 4: ANDROID AND ITS APPLICATIONS

Subject Code: 17U6CSET4B   **Total Hrs:60**   **No. of Credits: 3**

Objectives:
- To understand the principles, tools and patterns that underlie Android development.
- **T**o understand the Methods of developing various applications using android pratice.

UNIT I   **Hours:12**

     Getting Started-Understanding The Android Life Cycle-Installing .apk Files Onto An Emulator Via The Adb-Installing Apps Onto An Emulator Via Slideme-Sharing Java Classes From Another Eclipse Project-Referencing Libraries To Implement External Functionality-Using SDK Samples To Help Avoid Head Scratching-Keeping The Android Sdk Updated**.**

     Testing-Doing Test-Driven Development(TDD)In Android-Setting Up In Android Virtual Device (AVD) For App Testing-Testing On A Huge Range Of Devices With Cloud Based Testing-Creating And Using A Test Project –troubleshooting Application Crashes-Getting Bug Reports From Users Automatically With Bug Sense-Reproducing Activity Life Cycle Scenario For Testing.

UNIT II   **Hours:12**

     Inter-/Intra-ProcessCommunication-Introduction: Inter-/Intra-Process Communication-Opening A Webpage, Phone Number Or Anything Else With An Intent-Emailing Text From A View-Sending An Email With Attachments-Creating a Responsive Application using Threads-Sending Messages Between Threads Using An Activity Thread Queue And Handler-Creating An Android Epoch HTML/JAVA Script Calendar.

     Content Provider-Introduction-Content Provider**-**Retreiving Data From A Content Provider-Writing A Content Provider-Writing An Android Remote Service**.**

UNIT III   **Hours:12**

     Graphics-Introduction-Using A Custom Font-Drawing A Spinning Cube With Opengl Es-Adding Controls To The Opengl Spinning Cube-Freehand Drawing Smooth Curves Taking A Picture Using Intent –taking A Picture Using Android.Media.Camera-Scanning A Barcode Or Qr Code With The Google ZXing Barcode Scanner-Using Androidplot To Display Charts And Graphs-Using Inkspace To Create An Android Launcher Icon-Creating Easy Launcher Icons From Open Clipart.Org Using Paint.Net-Using Nine Patch Files-Creating HTML5 Charts With Android RGRAPH-Adding A Simple Raster Animation-Using Pinch To Zoom**.**

UNIT IV   **Hours:12**

     Android Security Design And Architecture-Understanding Android System Architecture-Understanding Security Boundaries And Enforcement-Androids Sandbox-Android Permissions-Looking Closer At The Layers-Android Applications-The Android Framework-The Dalvik Virtual Machine-User-Space Native Code-The Kernel-Complex Security,Complex Exploits.

UNIT V   **Hours:12**

     Case Study-Telephone Applications-Networked Applications-Gaming And Animation-Social Networking-Location And Map Applications.

TEXT BOOKS:
- Android Cook Book-Edited by Ian F. Darwin Shroff Publishers and Distributors PVT Limited.

REFERENCE BOOKS:
1. Android Hackers Handbook -Wiley , Joshua J . Drake

SEMESTER – VI
ELECTIVE 4: CLOUD COMPUTING

Subject Code: 17U6CSET4C **Total Hrs:60** **No. of Credits: 3**

Objectives:

To enable the students

- To learn the basics of cloud computing .
- To Understand the Cloud computing architectures, applications and challenges
- To learn about various cloud storages.

UNIT I **Hours:12**

   INTRODUCTION: Cloud Computing Introduction, From, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.

UNIT II **Hours:12**

   CLOUD COMPUTING FOR EVERYONE: Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedulesm managing projects, presenting on road.

UNIT III **Hours:12**

   USING CLOUD SERVICES : Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

UNIT IV **Hours:12**

   OUTSIDE THE CLOUD : Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis

UNIT V **Hours:12**

   STORING AND SHARING: Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, exploring on line photo editing applications, exploring photo sharing communities, controlling it with web based desktops.

TEXT BOOKS:
   1. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009
   2. Anthony T. Velte,Cloud Computing A Practical Approach 1st Edition, Tata Mcgraw Hill *Education Private Limited (2009)*
 REFERENCE BOOKS:
   1. Cloud Computing: A Hands-On Approach Paperback – Import, 9 Dec 2013 by Arshdeep Bahga

EXTRA CREDIT COURSES : HUMAN RESOURCE MANAGEMENT

Subject Code : 17UCSECC01   **No.of Credits : 2**

Objectives
- To understand the nature of human resources and its significance to the organization
- To familiarise students with the various techniques in HRM that contribute to the overall effectiveness of an Organization.
- To bring the attention of the students on the latest trends in managing human resources in an organization.

UNIT I

Human Resource Management : Definition – Objectives – Functions - evolution and growth of HRM– qualities of a good HR manager – changing roles of a HR Manager-– problems and challenges of a HR manager.

UNIT II

Planning the Human resources : Definitions of human resource planning – objectives – steps in human resources planning – dealing with surplus and deficient man power - job analysis – job description – job specification.

UNIT III

Recruitment & Selection : Recruitment and selection – objectives of recruitment – sources – internal and external recruitment – application blank – testing – interviews.

UNIT IV

Training & Development : Training and development – principles of training – assessment of training needs – on the job training methods - off the job training methods – evaluation of effectiveness of training programmes.

UNIT V

Performance Appraisal : Performance appraisal– process – methods of performance appraisal – appraisal counseling – Motivation process – theories of motivation – managing grievances and discipline.

TEXT BOOKS:
1. Tripathi - Personnel Management, Sultan Chand & Sons, New Delhi, 2000
2. L M Prasad, Human Resource Management, Sultan Chand & Sons, New Delhi, 2005

REFERENCES BOOKS:
1. Aswathappa, Human Resource Management, Tata Mc Graw Hill Publishing Company, New Delhi, 1999
2. Davis and Werther, Human Resource Management, Tata Mc Graw Hill Publishing Company, New Delhi, 2000

EXTRA CREDIT COURSES: PRINCIPLES AND PRACTICE OF MARKETING SERVICES

Subject Code: 17UCSECC02   **No of Credits: 2**

Objectives:
- To enable the students to gain knowledge on marketing of various services.
- To enlighten the students'knowledge on marketing services.
- To make the students understand about practice of marketing services.

UNIT I

Meaning of Services Marketing – Definitions – Its importance – characteristics of services – Growth of Services Marketing – Types of services – Comparative analysis between services and products.

UNIT II

Concept of services marketing – Societal concept – Buyer behaviour concept – Factors influencing buyer behaviour – Decision making process of buyer.

UNIT III

Services Marketing Mix – Product Strategy – Product Life Cycle concept – Strategic during the P.L.C. – Product Planning Strategy – Development of new products – its simplification – Diversification and elimination.

UNIT IV

Services Marketing – I : Bank Marketing – Insurance Marketing – Transport Marketing.

UNIT V

Services Marketing – II: Tourism and Hotel Marketing - Education Marketing – Communication Services Marketing.

TEXT BOOKS:

1. S.M.Jha,: "Services Marketing", Himalaya Publication House, Mumbai, 6th Edition, 2003.
2. Christopher love lock: "Services Marketing", Person Education Chennai, 6th Edition, 2010

REFERENCE BOOKS:
1. Philip Kotler: "Marketing Management", Person Education Chennai, 14th Edition, 2013
2. S.Sherlekar: "Marketing Management", Himalaya Publication House, Mumbai, 1st Edition, 1997.

EXTRA CREDIT COURSES: INVESTMENT MANAGEMENT

Subject Code: 17UCSECC03   **No of Credits: 2**

Objectives:
- To provide knowledge on Investment Analysis
- To enable the students to understand the various types of fundamental techniques
- To familiarize the students with the Portfolio Analysis and Management

UNIT I

Investment Analysis: Nature – Scope - Elements of Investment Risk and Return - Objectives Investment - Investment Approaches - Investment analysis. Securities - Types - Features.

UNIT II

Investment Alternatives and Strategies: Financial investment - Non financial investment - Inbound and outbound investments – Sources of Investment Information - Valuation of fixed income securities and variable income securities (excluding Derivatives).

UNIT III

Fundamental Analysis: Economic Analysis – Industry Analysis - Company Analysis – Sources of information for analysis.

UNIT IV

Technical Analysis – Types of Charts – Dow Theory - Elliott Wave Theory - Odd-lot Theory - Breadth of Market - Relative Strength Analysis – Moving Average Analysis - Efficient Market Hypothesis.

UNIT V

Portfolio Analysis and Management: Portfolio Risk and Return – Diversification - Markowitz Model – Sharpe Model: Single Index Model – CAPM –Arbitrage Pricing Theory.

TEXT BOOKS:

1. Preeti Singh: "Investment Management", Himalaya Publishing House, Mumbai, 1st Edition, 2005.
2. Bhalla and Tuteja: "Investment Management", S.Chand and Sons Publisher, New Delhi, 1st Edition, 1997.
3. V.A.Avadhani: "Investment Management", Himalaya Publishing House, Mumbai, 1st Edition, 1997.
4. Punithavathy Pandian: "Security Analysis and Portfolio Management", Vikas Publishing House Pvt Ltd, New Delhi, 1st Edition, 1997.

EXTRA CREDIT COURSES: CONSUMER MARKETING

Subject Code: 17UCSECC04   **No of credits: 2**

Objectives:
- To make the students to understand the concepts of consumer marketing and the motivation theories.
- To understand the customer value chain and their demography.
- To understand market segmentation and their uses.

UNIT I

Introduction- Definition of Consumer Marketing- Need and importance- Scope- Consumer Needs- Theories of Motivation and their application- Process Theories-– Content theories- Personality and Self Concept- Theries of Personality – Trait Theory

UNIT II

Building Customer Value and Satisfaction- Delivering Customer Value- Value Chain – Value Delivery Network- Attracting and Retaining Customer Retention- Relationship Marketing- Customer Demand- Demography- Market Segmentation- Benefits- Criteria for Market Segmentation.

UNIT III

Learning Theories and their application- Brand Loyality- Brand Extention- Conditioning Theories- Cognitive Learning Theory- Attitude and Attitribute theory- Cognitive Dissonance- Self Concept- Development of Self- Fashion – Cosmetics- and Conspicious Consumption

UNIT IV

Perception- Thershold of perception- Sublinieal of Perception- Perception- Perceptual Process- Dynamics- Positioning Methods- and Measurement- Perceptual Mapping- Multidimensional Scaling- Consumer Imaginaries

UNIT V

Advertising- Role in Marketing Process- Legal and Ethical Process- Social Aspects- Function and Types of Advertising- Integrated Marketing Communication- Brand Management- Brand Equity- Image in Brand Equity Buiding- Ethics in Advertisement

TEXT BOOKS:
1. Schiffman L.G and Kanuk L: Relationship Marketing - Tata MC Graw Hill 12th edition 2009
2. R.S.N Pillai and Bhavathi : Modern Marketing principles and practices – S.Chand & Co., Ltd., Newdelhi, Seventh Edition 2011
3. Paul green Berg : Customer relationship management Tata MC Graw Hill 7th Edition 2009

REFERENCE BOOKS:
1. Philip Kotler and Gray Armstrong: Principles of marketing- Pearson Educatio Pvt Ltd 7th Edition Reprinted 2011
2. Dr.Rajan Nair: Marketing Management- Sulthan Chand & Sons, 11th Edition NewDelhi

EXTRA CREDIT COURSES: INTERNATIONAL MARKETING

Subject Code: 17UCSECC05   **No. of Credits: 2**

Objectives:
- To enable the students understand the principles and concepts in International Marketing
- To provide knowledge about marketing management in the International Perspective
- To familiarise the students with marketing strategies for the dynamic International Markets.

UNIT I

The importance and scope of marketing - Evolution of marketing: From transaction-based to relationship marketing- Marketing research and Decision support systems - Market Segmentation - Targeting and Positioning.

UNIT II

Product Mix - Product Management Decisions, Product Life Cycle strategies - New Product Development - Pricing considerations and approaches - Pricing strategies.

UNIT III

Distribution channels and physical distribution.- Marketing Communication and Promotion mix Strategies - Nature of International Marketing: Meaning - Framework for International Marketing - Barriers for International Marketing

UNIT IV

International Marketing Decisions: Product Planning - Designing Development for International Markets - Pricing Decisions: Pricing Strategies and Price setting for International Markets.

UNIT V

Distribution: Channel Management and Physical Distribution - Management in International Marketing Promotion: International Advertising Programs - Sales Management and Sales Promotion for Foreign Markets.

TEXT BOOKS:

1. P. SubbaRao: "International Business", Himalaya Publication House, 2nd Edition 2010.
2. Saxena: "Marketing Management", Himalaya Publication, 13th Edition, 2010.

REFERENCE BOOKS:

1. Warren J Keegan: "Global Marketing", Pearson Education, 7th Edition, 2002.
2. Franis Cherunilan: "International trade and Export Management", Himalaya Publication house, 1st Edition, 2012.
3. Paras Ram: "International Business", Anupam publication, 21st Edition, 2012.

EXTRA CREDIT COURSES: PRODUCTION AND OPERATIONS MANAGEMENT

Subject Code: 17UCSECC06   **No. of Credits: 2**

Objective:
- On successful completion of the course, the students should have understood
- The key areas of production and layout
- The concept of Materials management and Supply Chain Management.
- The concept of Total quality management

UNIT I

Production Management - Functions - Scope - Plant location - Factors - Site location - Plant layout - Principles - Process - Product layout. Production planning and control - Principles - Meaning - Routing - Scheduling - Dispatching - Control.

UNIT II

Materials Handling - Importance - Principles - Criteria for selection of material handling equipments. Maintenance - Types - Breakdown - Preventive - Routine - Methods study - Time study - Motion study.

UNIT III

Organization of Materials Management - Fundamental Principles - Structure - Integrated materials management. Purchasing – procedure - principles - import substitution and import purchase procedure. Vendor rating - Vendor development.

UNIT-IV

Function of Inventory - Importance - Tools - ABC, VED, FSN Analysis - EOQ - Reorder point - Safety Stock - Lead time Analysis. Store keeping - Objectives - Functions - Store keeper - Duties – Responsibilities, Location of store - Stores Ledger - Bin card.

UNIT-V

Quality control - Types of Inspection - Centralised and Decentralised. TQM: Meaning - Objectives - elements – Benefits. Bench marking: Meaning - objectives – advantages. ISO: Features - Advantages - Procedure for obtaining ISO.

TEXT BOOK:
1. S.K.Sarangi, Production and Materials Management, Asian Books Publications - Edition 2012.

REFERENCE BOOKS:
1. Sudhir Kausik, Production and Materials Management, Anmol Publications , Edition 2014.
2. Stan C. Mc Donald, Materials Management – An executive supply chain, Wilsey publishers , Edition 2009
3. John W.Toomey, Inventory Management – Principles, concepts and Techniques, Springer Publications, I Edition 2012.
4. Neeti Gupta & Anuj Gupta, Production and Materials Management, Kalyani Publishers - Edition 2015

EXTRA CREDIT COURSES: ENTREPRENEURIAL DEVELOPMENT

Subject Code: 17UCSECC07   **No. of Credits: 2**

Objectives:
- To enable the students to learn the concept of entrepreneur.
- To enable the students to know the fundamentals of being a good entrepreneur
- To make the students to understand the concepts relating to incentives and subsidies.

UNIT I

Concept of Entrepreneurship: Definition, Nature and characteristics of entrepreneurship – functions and type of entrepreneurship, phases of EDP, Development of women entrepreneur & rural entrepreneur including self employm,ent of women council scheme

UNIT II

The start up process, project identification – selection of the product – project formulation- eveluation – feasibility analysis, project report

UNIT III

Institutional service to entrepreneur – DIC, SIDO, NSIC, SISI, SSIC, SIDCO – OTCOT, IIC, KUIC and commercial bank.

UNIT IV

Institutional finance to entrepreneur – IFCI, SFC, IDBI, ICICI ,TIIC, SIDCS, LIC and GIC, UTI, SIPCOT – SIDBI commercial bank venture capital

UNIT V

Incentives and subsidies – subsided services – subsidy for market, Transport – seed capital assistance – Taxaton benefits to SSI, Role of entrepreneur in export promotion and import substitution.

TEXT BOOKS:
1. Entrepreneurial Development – C.B.Gupta and N.P.Srinivasan - Sultan Chand & Sons - 5thEdition, 2008
2. Fundamentals of Entrepreneurship and small business – Renu Arora & S.KI.Sood – Kalyani Publishers - 1st Revised 2014 Rept. 2014

REFERENCE BOOKS:
1. Entrepreneurial Development – S.S.Khanka – S.Chand and Company Limited, New Delhi-, Edition2001
2. Entrepreneurial Development – P.Saravanavel – Ess Pee Kay Publishing House, Chennai, Edition 1997

EXTRA CREDIT COURSES: MANAGEMENT INFORMATION SYSTEM

Subject Code: 17UCSECC08   **No. of Credits: 2**

Objectives:
- To familiarise the students with Business Information through Computers.
- To enable the students aware of utilization of business information for decision making.
- To bestow knowledge about Database Management System

UNIT I

Management information system: meaning – features – requisites of effective MIS – MIS Model – components – subsystems of an MIS – role and importance – corporate planning for MIS – growth of MIS in an organization – centralization vs decentralization of MIS - Support – Limitations of MIS.

UNIT II

System concepts – elements of system – characteristics of a system – types of system – categories of information system – system development life cycle – system enhancement.

UNIT III

Information systems in business and management: Transaction processing system: Information repeating and executive information system.

UNIT IV

Database management systems – conceptual presentation – client server architectures networks.

UNIT V

Functional management information system: Financial – accounting – marketing – production – Human resource – business process outsourcing.

TEXT BOOKS:

1. Gorden B.Davis and Margrethe H.Olson: "Management Information System", Tata McGraw Hill Publication, New Delhi, 1st Edition, 2005.

2. Aman Jindal: "Management Information system", Kalyani Publishers, New Delhi, 1st Edition, 2004.

REFERENCE BOOKS:

1. Kenneth C. Laudon: "Management Information System", Pearson Education, New Delhi, 1st Edition, 2004.
2. Stephen Haag: "Management Information System", Tata McGraw Hill Publication, New Delhi, 1st Edition, 2008.

EXTRA CREDIT COURSES: EXECUTIVE BUSINESS COMMUNICATION

Subject Code: 17UCSECC09   **No. of Credits: 2**

Objectives:
- To develop the written and oral Communication skill.
- To nurture the communication skills relating to business.
- To enable the students to prepare a good business report.

UNIT - I

Business Communication: Meaning – Importance of Effective Business Communication-Modern Communication Methods – Business Letters : Need – Functions - Kinds - Essentials of Effective Business Letters - Layout.

UNIT - II

Trade Enquiries - Orders and their Execution - Credit and Status Enquiries – Complaints and Adjustments - Collection Letters – Sales Letters – Circular Letters.

UNIT – III

Banking Correspondence-Insurance Correspondence -Agency Correspondence.

UNIT – IV

Company Secretarial Correspondence (Includes Agenda, Minutes and Report Writing)

UNIT - V

Application Letters – Preparation of Resume - Interview: Meaning – Objectives and Techniques of various types of Interviews – Public Speech – Characteristics of a good speech – Business Report Presentations.

TEXT BOOKS:
1. Rajendra Pal and J.S.Korlahalli: "Essentials of Business Communication", Sultan Chand and Sons, New Delhi, 2014.
2. M.S.Ramesh and C. C Pattanshetti, "Business Communication", R.Chand and Co, New Delhi, 2003.

REFERENCE BOOKS:
1. C.B.Gupta: "Business Communication and Customer Relations, Sultan Chand and Co, 2000
2. M.V. Rodriquez: "Effective Business Communication Concept", Vikas Publishing Company, 2003.

EXTRA CREDIT COURSES: BRAND MANAGEMENT

Subject Code: 17UCSECC10   **No. of Credits: 2**
Objective:

- To understand the methods of managing brands and strategies for brand management.
- To successfully establish and sustain brands and lead to extensions .

UNIT I

Basics Understanding of Brands – Definitions - Branding Concepts – Functions of Brand - Significance of Brands – Different Types of Brands – Co branding – Store brands.

UNIT II

Strategic Brand Management process – Building a strong brand – Brand positioning – Establishing Brand values – Brand vision – Brand Elements – Branding for Global Markets – Competing with foreign brands.

UNIT III

Brand image Building – Brand Loyalty programmes – Brand Promotion Methods – Role of Brand ambassadors, celebrities – On line Brand Promotions.

UNIT IV

Brand Adoption Practices – Different type of brand extension – Factors influencing Decision for extension – Re-branding and re-launching.

UNIT V

Measuring Brand Performance – Brand Equity Management - Global Branding strategies - Brand Audit – Brand Equity Measurement – Brand Leverage -Role of Brand Managers– Branding challenges & opportunities.

TEXT BOOK:
1. Keller/ Parameswaran & Jacob, Strategic Brand Management: Building, Measuring, and Managing Brand Equity, Pearson Education India; 4 Edition 2015.

REFERENCE BOOKS:
1. Y.L.R. Moorthi, Brand Management, Vikas Publishing House, 1st Edition 2003.
2. Sagar Mahim, D. P. Agrawal, Brand Management, ANE Books Edition 2009.
3. Kirti Dutta, Brand Management: Principles and Practices, Oxford University Press, Edition 2012.
4. Ranjeet Verma, Brand Management, Laxmi Publications, 1st Edition 2009.

EXTRA CREDIT COURSES: STRESS MANAGEMENT

Subject Code: 17UCSECC11   **No. of Credits: 2**
Objective:
   • To provide a broad physical, social and psychological understanding of stress.
   • To understand the management of work related stress
   • To develop and implement effective strategies to prevent and manage stress at work.

UNIT I
   Meaning – Symptoms – Works Related Stress – Individual Stress – Reducing Stress – Burnout.

UNIT II
   Time Management – Techniques – Importance of planning the day – Time management schedule – Developing concentration – Organizing the Work Area – Prioritizing – Beginning at the start – Techniques for conquering procrastination – Sensible delegation – Taking the right breaks – Learning to say 'No'.

UNIT III
   Implications – People issues – Environmental issues –Psychological fall outs – Learning to keep calm – Preventing interruptions – Controlling crisis – Importance of good communication – Taking advantage of crisis – Pushing new ideas – Empowerment.

UNIT IV
   Developing a sense of Humour – Learning to laugh – Role of group cohesion and team spirit – Using humour at work – Reducing conflicts with humour.

UNIT V
   Improving Personality – Leading with Integrity – Enhancing Creativity – Effective decision Making – Sensible Communication – The Listening Game – Managing Self – Meditation for peace – Yoga for Life.

TEXT BOOK:
   1. D M Pestonjee, Stress and Work: Perspectives on Understanding and Managing Stress, SAGE Response, 1st edition 2013.
REFERENCE BOOKS:
   1. Kamlesh Jani, Ratish Kakkad, Stress Management, Pothi Publishers, Edition 2008.
   2. Aarti Gurav , Time Management , Buzzing stock Publishing House,1st Edition 2014.
   3. Sanjay Kumar, Pushp Lata, Communication Skills, Oxford University Press, 2nd Edition 2015.
   4. Barun Mitra, Personality Development and Soft Skills, Oxford University Press, 2nd Edition 2017.

EXTRA CREDIT COURSES: E-COMMERCE

Subject Code: 17UCSECC12   **No. of Credits: 2**

Objectives:
- To provide knowledge about Electronic Commerce.
- To enable the students understand the technology of e-Commerce for Business Application.
- To make the student aware of the Techniques in the Application of e-Commerce.

UNIT I

E-commerce – framework – classification of electronic commerce – Anatomy of E-Commerce Applications – components of the I way –network access equipment – internet terminology.

UNIT II

Electronic Data Interchange – Benefits – EDI Legal, Security & privacy issues – DEI software implementation – value added networks – internal information systems – work flow atomization and coordination – customization and internal commerce.

UNIT III

Network security and firewalls – client server network security – emerging client server security threats – firewalls and network security – data and message security – encrypted documents and electronic mail – hypertext publishing – technology behind the web – security and the web.

UNIT IV

Consumer oriented electronic commerce: consumer oriented applications – mercantile process models – mercantile models from the consumer's perspective – mercantile models from the merchant's perspective.

UNIT V

Electronic payment systems – types – digital token based electronic payment system – smart cards & credit card electronic payment systems – risk designing electronic payment.

TEXT BOOKS:
1. Ravi Kalakota and Andrew B.Whinston: "Frontiers of Electronic Commerce", Pearson Education, 1st Edition, 2006.
2. Elias M Awand: "Electronic Commerce", Phi Learning Pvt Ltd, 3rd Edition, 2007.

REFERENCE BOOKS:
- Daniel Minoli and Emma Minoli: "Web Commerce Technology Handbook", Tata McGraw Hill Publishing, New Delhi, 1st Edition, 2006.
- Efrain Turban and David King: "Electronic Commerce", Pearson Education, 1st Edition 2009.
- Pete Loshin: "Electronic Commerce", Firewall Media, 4th Edition, 2005.

EXTRA CREDIT COURSES: THEORY OF COMPUTATIONS

Subject Code: 17UCSECC13   **No. of Credits: 2**

Objectives:

- To learn about the basic of theory of computing
- To understand the concept of finite automata and push down automata
- To acquire knowledge in formal language , to enhance the concept of conversion of deterministic automata to non deterministic automata.

UNIT I

Introduction to theory of Computing – Why Study the theory of Computing- What is Computation- Set theory-Alphabets-Strings and Languages-Relations-Functions-Graphs and Trees.

UNIT II

Finite Automata: Introduction-Finite state Machines -Deterministics Finite Automata(DFA)-Finite Automata with and without Epsilon Transitions-Language of Deterministic Finite Automata-Acceptability of a String by a Deterministic Finite Automata-Processing of Strings by Deterministic Finite Automata;Non-Deterministic Finite Automata(NFA)- Language of Non- Deterministic Finite Automata-Equivalence between DFA and NFA-Non Deterministic Automata with or without Epsilon Transitions.

UNIT III

Formal Language: Introduction-Theory of Formal Language-Kleene and positive Closure-Definig Language-Recursive Definition of Language-Arithmetic Expression-Grammar-Classification of Grammar and Language-Language and their Relation-Operations On Language-Chomsky Hierrachy.

UNIT IV

Regular Language: Introduction-Regular Language and Expression-Operations of Regular Expression-Identity Rules-Algebraic Laws for Regular Expression-Finite Automata and Regular Expression- Kleene's Theorem-Problems-Context Free Grammar and Context Free Language: Introduction-Derivation Tree-Parse Tree-Right Most and Left most Derivation -Ambiguity-Problems

UNIT V

Push Down Automata: Description and Definition-Language of PDA-Graphical Notation of PDA-Acceptance by Final State and Empty Stock, From Empty Stock to Final State and Vice versa-Deterministic Pushdown Automata and Non deterministic Pushdown Automata-Language-Problems.

TEXT BOOK:

1. Theory of Computing-A Gentle Introduction, Efim Kinber, Carl Smith, published by Pearson Education.(UNIT 1)
2. Theory of Automata, Language & Computation, Rajendra Kumar, Tata McGraw Hill Education Private Limited, New Delhi. (UNIT 1to 5)

REFERENCE BOOK:

- A Textbook Automata Theory, S.F.B.Nasir, P.K.Srimani, Published by Cambridge University Press India Pvt, Ltd, New Delhi.