SYLLABUS

DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING

FULL TIME AND PART TIME

Course Code: 1040 / 3040

2011-2012

L - SCHEME

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY
(SEMESTER SYSTEM)
(Implemented from 2011- 2012)
L – SCHEME

R E G U L A T I O N S*

*   *Applicable to the Diploma Courses other than Diploma in Hotel Management & Catering Technology and the Diploma Courses offered through MGR Film Institute, Chennai.*

1. Description of the Course:

a. Full Time (3 years)

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

b. Sandwich (3½ years)

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

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

c. Part Time (4 years)

The course for the Part Time Diploma in Engineering shall extend over a period of 4 academic years containing of 8 semesters❖, the subjects of 3 year full time diploma courses being regrouped for academic convenience.

❖ Each Semester will have 16 weeks duration of study with 35 hrs. /Week for Regular Diploma Course and 18 hrs. / Week for Part-Time Diploma Course.

The Curriculum for all the 6 Semesters of Diploma courses (Engineering & Special Diploma Courses viz. Textile Technology, Leather Technology, Printing Technology, Chemical Technology etc.) have been revised and revised curriculum is applicable for the candidates admitted from 2011 – 2012 academic year onwards.

2. **Condition for Admission:**

Condition for admission to the Diploma courses shall be required to have passed in The S.S.L.C Examination of the Board of Secondary Education, Tamilnadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher Secondary Course in Tamilnadu

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

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

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

3. **Admission to Second year (Lateral Entry):**

A pass in HSC (Academic)# or (Vocational) courses mentioned in the Higher Secondary Schools in Tamilnadu affiliated to the Tamilnadu Higher Secondary Board with eligibility for university Courses of study or equivalent examination, & Should have studied the following subjects

Sl. No	Courses	H.Sc Academic	H.Sc Vocational	
		Subjects Studied	Subjects Studied	
			Related subjects	Vocational subjects
1.	All the Regular and Sandwich Diploma Courses	Maths, Physics & Chemistry	Maths / Physics / Chemistry	Related Vocational Subjects Theory & Practical
2.	Diploma Course in Modern Office Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing, Banking, Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretary ship.

Subject to the approval of the AICTE

- For the Diploma Courses related with Engineering/Technology, the related / equivalent subjects prescribed along with Practicals may also be taken for arriving the eligibility.

- Branch will be allotted according to merit through counseling by the respective Principal as per communal reservation.

- For admission to the Textile Technology, Leather Technology, Printing Technology, Chemical Technology and Modern Office Practice Diploma courses the candidates studied the related subjects will be given first preference.

- *Candidates who have studied Commerce Subjects are not eligible for Engineering Diploma Courses.*

4. Age Limit: No Age limit.

5. Eligibility for the Award of Diploma:

No candidate shall be eligible for the Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, Tamilnadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Courses are as given Below:

Diploma Course	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time(Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Part Time	4 Years	7 Years

6. Subjects of Study and Curriculum outline:

The subjects of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical subjects. The curriculum outline is given in Annexure **- I**

7. Examinations:

Board Examinations in all subjects of all the semesters under the scheme of examinations will be conducted at the end of each semester.
The internal assessment marks for all the subjects will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each subject 25 marks are allotted for internal assessment and 75 marks are allotted for Board Examination.

8. Continuous Internal Assessment:

A. For Theory Subjects:
The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i) Subject Attendance   **5 Marks**
(Award of marks for subject attendance to each subject Theory/Practical will be as per the range given below)

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

ii) Test #   **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Out of which the best one will be taken and the marks to be reduced to: 05 marks

The Test – III is to be the Model test covering all the five units and the marks so obtained will be reduced to :   05 marks

Total   10 marks

TEST	UNITS	WHEN TO CONDUCT	MARKS	DURATION
Test I	Unit – I & II	End of 6th week	50	2 Hrs
Test II	Unit – III & IV	End of 12th week	50	2 Hrs
Test III	**Model Examination** - **Compulsory** Covering all the 5 Units. (Board Examinations-question paper-pattern).	End of 16th week	75	3 Hrs

 # - From the Academic year 2011-2012 onwards.

Question Paper Pattern for the Periodical Test :(Test - I & Test- II)

        14 Questions X 1 mark   … …   14 marks

         6 Questions X 6 marks ⎫   … …   36 marks

(OR) 3 Questions X 12 marks ⎭   ----------

                    Total   50 marks
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iii) Assignment   **10 Marks**

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 10 marks

All Test Papers and Assignment notebooks after getting the signature with date from the students must be kept in the safe custody in the Department for verification and audit. It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

B. For Practical Subjects:

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

a)	Attendance	:	**5**	**Marks** (Award of marks same as theory subjects)
b)	Procedure/ observation and tabulation/ Other Practical related Work	:	**10**	**Marks**
c)	Record writing	:	**10**	**Marks**
	TOTAL	:	**25**	**Marks**

- *All the Experiments/Exercises indicated in the syllabus should be completed and the same to be given for final Board examinations.*
- The Record for every completed exercise should be submitted in the subsequent Practical classes and marks should be awarded for 20 for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)
- The students have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.
- *All the marks awarded for assignments, Tests and attendance should be entered in the Personal Log Book of the staff, who is handling the subject. This is applicable to both Theory and Practical subjects.*

9.   Communication and Life Skills Practical:

The Communication and Life Skills Practical with more emphasis is being introduced in IV Semester for Circuit Branches and in V Semester for other branches of Engineering. Much Stress is given on:
- ❖   Monodic Communication
- ❖   Dyadic Communication
- ❖   Professional Communication
- ❖   Pronunciation
- ❖   Writing Resumes
- ❖   Interview Techniques

Internal Assessment Mark   **…..   25 Marks**

10.   Project Work:

The students of all the Diploma Courses **(except Diploma in Modern Office Practice)** have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamilnadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester.**

a) Internal assessment mark for Project Work & Viva Voce:

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

Proper record to be maintained for the two Project Reviews, and It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Viva Voce in Board Examinations:

Viva Voce   …   **25 marks**

Demonstration/Presentation   …   **20 marks**

Total   …   **45 marks**

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c) Written Test Mark (from 3 topics for 1 hour duration): $^\$$

i) Entrepreneurship	5 questions X 2 marks	=	**10 marks**
ii)Environment Management	5 questions X 2 marks	=	**10 marks**
iii)Disaster Management	5 questions X 2 marks	=	**10 marks**

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                     30 marks

$^\$$ **-**   Selection of Questions should be from Question Bank, by the External Examiner. No choice need be given to the candidates.

Project Work & Viva Voce in Board Examination	--	**45 Marks**
Written Test Mark (from 3 topics for 1 hour duration)	--	**30 Marks**
TOTAL	--	**75 Marks**

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

11. Scheme of Examinations:

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

12. Criteria for Pass:

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

2. A candidate shall be declared to have passed the examination in a subject if he/she secures not less than *40% in theory subjects* and *50% in practical subjects* out of the total prescribed maximum marks including both the Internal Assessment and the Board Examinations marks put together, subject to the condition that he/she secures at least a minimum of *30 marks out of 75 marks in the Board Theory Examinations and a minimum of 35 marks out of 75 marks in the Board Practical Examinations.*

13. Classification of successful candidates:

Classification of candidates who passed out the final examinations from April 2014 onwards (Joined in first year in 2011-2012) will be done as specified below.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he/she secures not less than 75% of the aggregate marks in all semesters put together except I and II semesters and passes all the above semesters in the first appearance itself and completes all subjects including that of I & II semesters within the stipulated period of study 3/ 3½/ 4 years (Full Time/Sandwich/Part Time) without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he/she secures not less than 60% of the aggregate marks in all semesters put together except I & II semesters and completes all subjects including that of the I & II semesters within the stipulated period of study 3/ 3½ / 4 years (Full Time/Sandwich/Part Time) without any break in study.

Second Class:

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

The above mentioned classifications are also applicable for the Sandwich / Part-Time students who passed out Final Examination from October 2014 /April 2015 onwards (both joined in First Year in 2011-2012)

14. **Duration of a period in the Class Time Table:**

The duration of each period of instruction is1 hour and the total period of instruction hours excluding interval and Lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

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Chairperson
Thiru. Ramesh Chand Meena, I.A.S.,
Commissioner of Technical Education
Directorate of Technical Education
Chennai – 600 025.

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6	Dr. A.Sabanayagam, Principal in charge, Government Polytechnic College, Melur		

INTRODUCTION

There is a lot of development in Technology in the field of Electronics and Communication every day. DOTE is updating the curricula of Diploma courses frequently. The newly introduced L scheme is to be implemented from the academic year 2012-2013 for II year. Two new theory and two practicals have been added in the curriculum. The committee with Dr. K.Sundaramoorthy as Coordinator and me as convener has brought in the following items introduced in the Scheme

Regarding theory
1. "Analog and Digital Electronics" has been split up into two different subjects. This will make the students to understand the fundamentals of these two topics very well.
2. "Very Large Scale Integrated circuits" is an emerging area, it is brought as one of the additional subject
3. Theory subject "Electronic system design" has been introduced as one of the elective. The students studying the subjects will know the design of simple circuits using available components in the market with the knowledge of the technical specifications of the components used in design. In the present the Diploma students are supporting all core industries. So, the students studying this subject will be preferred in core industries.

Regarding practical
1. "Computer Application Practical" has been introduced as common subject to all branches in III semester. This will make the students aware of MS office, for maintenance of data bases using ms access and excel, as well as his presentation in ms word and power point in his carrier and personal life.

2. "Simulation practical" is introduced in VI semester which will make the student to use design of circuits using simulation software to get the desired simple functions. The students learning this subject will be very much suitable in design industries

SALIENT FEATURES INRESPECT OF THE SYLLABUS FOR ELECTRONICS & COMMUNICATION

- The syllabus for ECE has been formulated so as to enable students to have clear understanding in theoretical and practical aspects of Electronics &Communication besides providing broad background on modern developments in industries in the field of Electronics.

- In order to impart know how in semiconductor Electronic devices & circuits and Electronic Measuring instruments which are widely used at present, ,separate subjects namely "Electronic Devices & Circuits and "Electrical Circuits & Instrumentation" have been introduced in III semester .

- Power devices & circuits are widely used in modern industry and therefore knowledge in power conversion and control techniques, power conditioners such as UPS & SMPS, Numerical control of machines, Robotics is highly essential Accordingly "Industrial Electronics" subject is introduced in IV semester .

- The developments in IC technology have revolutionized the field of Electronics. To provide in depth understanding on Integrated circuits the subject "Analog & Digital Electronics "in IV semester is divided into two subjects viz."Digital electronics" & "Linear Integrated circuits".

- Due to rapid changes which take place in the field of Electronic communications, a clear understanding on different modes of communication is a must. The subject "Advanced communication systems" in VI semester will be helpful to the students to have exposure in the above field. "Microwaves" are widely used in devices like cellular phones and services like wireless broad band, the same has been added.

- Subjects on VLSI and Embedded systems are important inclusions in the syllabus as they are gaining rapid acceptance in various modern Electronic applications.

- Television has become an integral part of electronic media which is growing at an exponentially high rate all around the world and therefore "Television Engineering" has been added as one of the electives. HDTV and 3DTV which are modern devices and widely popular in the market are also added in this elective subject

- Taking in to account of the importance of digital technology, "Digital communication" subject is introduced as an elective subject in V semester.

- "PLC and ROBOTICS "are common in multi various industries and therefore "PLC" and "ROBOTICS" subjects are also included as electives in the syllabus.

- Keeping in mind the application of electronics in biomedical field,"Biomedical and telemedicine" is introduced as one of the elective subjects in VI semester.

- To get acquaintance with computers "computer application practical " is included in III semester as a common subject for all branches.

- To enable the students to have an exposure on simulation software, a new practical subject "Simulation Lab" is introduced in the final semester.

- Needless to state that the above modifications/changes made in the syllabus will go a long way in making the students fit and competent in their endeavor to have successful professional career.

D.NAGENDRAN M.E.
CONVENER

CURRICULAM OUTLINE
Diploma in Electronics and Communication Engineering (Full Time) (1040)

THIRD SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
24031	Electronic Devices and Circuits$	5			5
24032	Electrical Circuits and Instrumentation	5			5
25233	'C' Programming*	5			5
24034	Electronic Devices and Circuits Practical$			6	6
24035	Electrical Circuits & Instrumentation Practical			6	6
24036	" Programming in C" Practical			4	4
20001	Computer Application Practical%			4	4
TOTAL		15		20	35

$common to a) Electrical & Electronics engineering and
b) Instrumentation & Control branches
%Common for all branches
*Common for the Computer Engineering

FOURTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
24041	Industrial Electronics	5			5
24042	Communication Engineering	5			5
24043	Digital Electronics$	5			5
24044	Linear Integrated Circuits	4			4
24045	Industrial Electronics & Communication Engineering Practical			6	6
24046	Integrated Circuits Practical			6	6
20002	Communication and Life Skills Practical%			4	4
TOTAL		19		16	35

%Common for all braches
$Common for Electrical & Electronics Engineering branch

FIFTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
24051	Advanced Communication Systems	5			5
24052	Microcontroller$	5			5
24053	Very Large Scale Integration	5			5
24071 23072	Elective – I 1. Digital Communication 2. Programmable Logic Control$	5			5
24055	Advanced Communication Systems Practical			5	5
24056	Microcontroller Practical$			5	5
24057	Very Large Scale Integration Practical			5	5
TOTAL		20		15	35

$Common for Electrical & Electronics Engineering branch

SIXTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
24061	Embedded Systems	6			6
24682	Computer Hardware and Network*	5			5
24081 23082 24083	Elective - II 1.Television Engineering 2. Biomedical Instrumentation $ 3.Electronic System Design	5			5
24064	Embedded Systems Practical			5	5
24684	Computer Hardware and Network Practical			5	5
24066	Simulation Practical			5	5
24067	Project Work			4	4
TOTAL		16		19	35

*Common for Computer Engineering and Information Technology branches
$ Common for Electrical and Electronics Engineering branch

SCHEME OF THE EXAMINATION
Diploma in Electronics and Communication Engineering (Full Time) (1040)

THIRD SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam. Marks	Total Mark		
24031	Electronic Devices and Circuits$	25	75	100	40	3
24032	Electrical Circuits and Instrumentation	25	75	100	40	3
25233	'C' Programming*	25	75	100	40	3
24034	Electronic Devices and Circuits Practical$	25	75	100	50	3
24035	Electrical Circuits & Instrumentation Practical	25	75	100	50	3
24036	"Programming in C " Practical	25	75	100	50	3
20001	Computer Application Practical%	25	75	100	50	3
TOTAL		175	525	700		

$common to a) Electrical & Electronics and
b) Instrumentation & control Engineering
*Common for Computer Engineering branches
%Common for all branches

FOURTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assess-ment Marks	Board Exam Marks	Total Mark		
24041	Industrial Electronics	25	75	100	40	3
24042	Communication Engineering	25	75	100	40	3
24043	Digital Electronics$	25	75	100	40	3
24044	Linear Integrated Circuits	25	75	100	40	3
24045	Industrial Electronics & Communication Engineering Practical	25	75	100	50	3
24046	Integrated Circuits Practical	25	75	100	50	3
20002	Communication and Life Skill Practical%	25	75	100	50	3
TOTAL		175	525	700		

$Common for Electrical & Electronics Engineering branch
%Common for all braches

FIFTH SEMESTER

| Subject Code | SUBJECT | Examination Marks | | | Minimum for pass | Duration of Exam Hours |
		Internal assess-ment Marks	Board Exam. Marks	Total Mark		
24051	Advanced Communication Systems	25	75	100	40	3
24052	Microcontroller$	25	75	100	40	3
24053	Very Large Scale Integration	25	75	100	40	3
24071 23072	Elective – I 1. Digital Communication 2. Programmable Logic Control$	25	75	100	40	3
24055	Advanced Communication Systems Practical	25	75	100	50	3
24056	Microcontroller Practical$	25	75	100	50	3
24057	Very Large Scale Integration Practical	25	75	100	50	3
TOTAL		175	525	700		

$Common for Electrical & Electronics Engineering branch

SIXTH SEMESTER

| Subject Code | SUBJECT | Examination Marks | | | Minimum for pass | Duration of Exam Hours |
		Internal assess-ment Marks	Board Exam Marks	Total Mark		
24061	Embedded Systems	25	75	100	40	3
24682	Computer Hardware and Network*	25	75	100	40	3
24081 23082 24083	Elective - II 1. Television Engineering 2. Biomedical Instrumentation $ 3.Electronic System Design	25	75	100	40	3
24064	Embedded Systems Practical	25	75	100	50	3
24684	Computer Hardware and Network Practical*	25	75	100	50	3
24066	Simulation Practical	25	75	100	50	3
24067	Project Work	25	75	100	50	3
TOTAL		175	525	700		

*Common for the Computer Engineering
$Common for Electrical $ Electronics Engineering branch

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SCHEME OF THE EXAMINATION
Diploma in Electronics and Communication Engineering (Part Time) (3040)

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Total Curriculum Hours: 16 weeks / Semester   Total Working Hours: 18 Hours / Week

III Semester

Sl. No.	Subject Code	Subject Name	Examinations Marks					
			Hrs Per week	Duration of Exam Hours	IA	BE*	Tot	Min.* Marks For Pass
1	24031	Electronic Devices and Circuits	4	3	25	75	100	40
2	24032	Electrical Circuits and Instrumentation	4	3	25	75	100	40
3	20016	Engineering Graphics - I	4	3	25	75	100	40
4	24034	Electronic Devices and Circuits practical	3	3	25	75	100	50
5	24035	Electrical Circuits and Instrumentation practical	3	3	25	75	100	50

Total Curriculum Hours: 16 weeks / Semester   Total Working Hours: 18 Hours / Week

IV Semester

Sl. No.	Subject Code	Subject Name	Examinations Marks					
			Hrs Per week	Duration of Exam Hours	IA	BE*	Tot	Min.* Marks For Pass
1	25233	'C' Programming	4	3	25	75	100	40
2	24043	Digital Electronics	4	3	25	75	100	40
3	20026	Engineering Graphics - II	4	3	25	75	100	40
4	24036	" Programming in C" Practical	3	3	25	75	100	50
5	20001	Computer application practical	3	3	25	75	100	50

Total Curriculum Hours: 16 weeks / Semester   Total Working Hours: 18 Hours / Week

V Semester

Sl. No.	Subject Code	Subject Name	Hrs Per week	Duration of Exam Hours	IA	BE*	Tot	Min.* Marks For Pass
			Examinations Marks					
1	24041	Industrial Electronics	4	3	25	75	100	40
2	24042	Communication Engineering	4	3	25	75	100	40
3	24044	Linear Integrated Circuits	4	3	25	75	100	40
4	24045	Industrial Electronics & Communication Engineering practical	3	3	25	75	100	50
5	24046	Integrated Circuits practical	3	3	25	75	100	50

Total Curriculum Hours: 16 weeks / Semester   Total Working Hours: 18 Hours / Week

VI Semester

Sl. No.	Subject Code	Subject Name	Hrs Per week	Duration of Exam Hours	IA	BE*	Tot	Min.* Marks For Pass
			Examinations Marks					
1	24051	Advanced Communication System	4	3	25	75	100	40
2	24052	Microcontroller	4	3	25	75	100	40
5	24055	Advanced communication system Practical	4	3	25	75	100	50
4	24056	Microcontroller practical	3	3	25	75	100	50
5	20002	Communication and Life skills Practical	3	3	25	75	100	50

Total Curriculum Hours: 16 weeks / Semester   Total Working Hours: 18 Hours / Week

VII Semester

| Sl. No | Subject Code | Subject Name | Examinations Marks | | | | | |
			Hrs Per week	Duration of Exam Hours	IA	BE*	Tot	Min.* Marks For Pass
1	24053	Very Large Scale Integration	4	3	25	75	100	40
2	24071 23072	**Elective – I** 1.Digital Communication 2. Programmable Logic Controller	4	3	25	75	100	40
3	24061	Embedded Systems	4	3	25	75	100	40
4	24057	Very Large Scale Integration Practical	3	3	25	75	100	50
5	24064	Embedded Systems Laboratory	3	3	25	75	100	50

Total Curriculum Hours: 16 weeks / Semester   Total Working Hours: 18 Hours / Week

VIII Semester

| Sl. No | Subject Code | Subject Name | Examinations Marks | | | | | |
			Hrs Per week	Duration of Exam Hours	IA	BE*	Tot	Min.* Marks For Pass
1	24682	Computer Hardware & Network	4	3	25	75	100	40
2	24081 23082 24083	**Elective – II** 1.Television Engineering 2. Biomedical Instrumentation 3.Electronic System Design	4	3	25	75	100	40
3	24684	Computer Hardware and Network practical	4	3	25	75	100	50
4	24066	Simulation practical	3	3	25	75	100	50
5	24067	Project Work	3	3	25	75	100	50

III SEMESTER

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

ELECTRONIC DEVICES AND CIRCUITS

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name: Electronics and Communication Engineering
Subject Code : **24031**
Semester   : III Semester
Subject title   : **ELECTRONIC DEVICES & CIRCUITS**

TEACHING AND SCHEME OFEXAMINATION:

Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks			Duration	
			Internal Assessment	Board Examination	Total		
Electric Devices and Circuits	5	80	25	75	100	3Hrs	

Topics and allocation of hours

UNIT	TOPIC	TIME(HRS)
I	Semiconductor and Diodes	14
II	Bipolar Junction Transistor	14
III	Transistor oscillators and FET and UJT	15
IV	SCR,DIAC,TRIAC,MOSFET and IGBT	13
V	Opto Electronic Devices and Wave shaping Circuits	14
	Revision and test	10
	Total	80

RATIONALE:

Every Electronics Engineer should have sound knowledge about the components used in Electronics Industry. This is vital in R&D Department for chip level troubleshooting. To meet the industrial needs, diploma holders must be taught about the most fundamental subject, Electronic devices and Circuits. By studying this subject, they will be skilled in handling all types of electronic devices and able to apply the skill in electronics system

OBJECTIVES:

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

Study the working principle of PN junction diode and transistor

Understand the working principle of different types of rectifiers

Understand the different transistor configurations

Differentiate various types of amplifiers

Study the performance of special devices like UJT, FET

Study the performance of different transistor oscillators

Study the performance of SCR, DIAC, and TRIAC

Study the performance of MOSFET and IGBT

Know the construction and working principle of optoelectronic devices

Study the performance of solar cell

Explain the concept of wave shaping circuits

Study the working principle of clippers and clampers

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24031 ELECTRONIC DEVICES AND CIRCUITS
DETAILED SYLLABUS

Unit	Name of the topic	Hrs.
1	**Semiconductor and Diodes:** **Semiconductor** – Definition, Classification, Intrinsic and Extrinsic N type & P type -Drift current & Diffusion current Diodes-PN junction diode-Forward and Reverse bias characteristics-Specification-Zener diode-Construction & working principle-Characteristics- Zener break down-Avalanche break down-Zener diode as a voltage regulator - Applications-Specifications **Rectifier**-Introduction-Classification of Rectifiers-Half wave rectifier- Fullwave rectifier (Center tapped, Bridge) – Efficiency – Ripple factor – comparison - Applications – Filters – C, LC, and PI Filters	9 5
2	**Bipolar Junction Transistor:** **Transistor** – NPN and PNP transistor – operation- Transistor as an amplifier – Transistor biasing – Fixed bias, Collector base bias, Self bias – CB, CE, CC Configurations – Characteristics – Comparison between three configurations in terms of input impedance, Output impedance, Current gain, Voltage gain – (simple problems using α & β) RC coupled amplifier – Load characteristic analysis – Emitter follower and its application – Negative feedback – Basic concept, effect of negative feedback, Types of Negative feedback connections – Transistor as a switch.	9 4
3	**Transistor Oscillators and FET and UJT:** **15 Hrs** **Transistor oscillator** – Classifications – Condition for oscillations (Barkhausen criterion) – General form of LC oscillator – Hartley Oscillator – Colpitts Oscillator – RC Phase shift oscillator, Crystal oscillator. **Field Effect Transistor** – Construction – Working principle of FET – Difference between FET and BJT – Characteristics of FET – Applications – FET amplifier(Common source amplifier). **Uni Junction Transistor** – Construction – Equivalent circuit – Operation – Characteristics – UJT as a relaxation oscillator.	9 4 2
4	**SCR, TRIAC, DIAC, MOSFET:** **SCR** – Introduction – Working – Two transistor analogy of SCR – VI Characteristics – SCR as a switch, Controlled rectifier – Specifications. TRIAC – Basic working principle – Characteristics – Speed control of fan using DIAC and TRIAC. DIAC – Construction – working – characteristics – DIAC as bi-directional switch. MOSFET – Construction – characteristics – MOSFET as a switch.	9 4
5	**Opto Electronics Devices and wave shaping circuits:** **14 Hrs** LDR, LED, 7 Segment LED, LCD, Opto coupler, Opto interrupter – Infrared transmitter and receiver - Laser diode(Simple treatment) – Solar cell – Avalanche Photo diode - Photo transistor. Clipper, Clamper – Voltage doubler, Astable multivibrator, Monostable and Bistable Multivibrators using Transistor – Schmitt Trigger.	8 6

Revision and test: **10 Hrs**

Text Books:
1. Eelctronic Devices and Circuits by Boylstead, Tata McGraw Publication
2. Principle of Electronics by V.K.Mehta, S.Chand & Company ltd.
3. Electronics Devices & Circuits by Sallaivahanan, N.Suresh Kumar, A.Vallavaraj

                       Tata McGraw Publication

Reference Books:
1. Electronics principles by Malvino, Tata McGraw Publication
2. Electronics Devices & Circuits by Allen Mottershed Tata McGraw – Hill Publication
3. Electronics Devices & Circuits by Jacob Millman and Halkias Tata McGraw – Hill publication
4. Optical Fiber Communication by Gerd Keise

24031 ELECTRONIC DEVICES AND CIRCUITS

MODEL QUESTION PAPER – I

Time : 3 Hrs. **Max Marks : 75**

PART A (15 x 1 = 15)
Answer any FIFTEEN questions. All question carry equal marks

1. Give an example for donor impurity.
2. What is the cut in voltage for silicon diode?
3. What is the peak inverse voltage of full wave rectifier?
4. Name a component used for filtering.
5. Draw the symbol of NPN transistor.
6. What is the formula for current gain in common emitter configuration?
7. Which bias is normally used in applications?
8. What is the need for negative feedback?
9. What is the condition for oscillation?
10. What is the output frequency of Heartley oscillator?
11. Mention the relationship between the parameters of JFET.
12. State any two applications of UJT
13. Give an example for unidirectional switch.
14. Draw the symbol of TRIAC.
15. Name the terminals of DIAC.
16. Expand MOSFET.
17. In which bias, LED emits light?
18. Expand LASER.
19. What is the other name for Astable Multivibrator?
20. Draw the output waveform of negative clipper.

PART B (5 x 12 = 60 Marks)
Answer all Questions

21 A) Explain the operation of Zener diode and draw its characteristics. (12)

(or)

B) Explain the operation of full wave rectifier and draw its output waveforms. List out its applications. (12)

22 A) i) Explain the operation of NPN transistor. (6)
ii) Compare three different configurations of transistors. (6)

(or)

B) Explain the operation of RC coupled amplifier and draw its frequency response. (12)

23 A) i) Explain the operation of Hartley oscillator. (8)
ii) Differentiate FET with BJT (4)

(or)

B) Explain the construction and operation of UJT. (12)

24 A) i) Explain SCR as a controlled rectifier. (8)
ii) Discuss about the specifications of SCR. (4)

(or)

B) Explain the operation of DE-MOSFET with neat diagram. (12)

25 A) Explain the operation of Solar cell and Photo Transistor. (12)

(or)

B) Explain the operation of Schmitt Trigger and draw its output waveform. (12)

24031 ELECTRONIC DEVICES AND CIRCUITS

MODEL QUESTION PAPER – II

Time : 3 Hrs.   Max Marks: 75
PART A   (15 x 1 = 15)

Answer any FIFTEEN questions

1. Give an example for intrinsic semiconductor.
2. Draw the symbol of Zener diode
3. What is the efficiency of half-wave rectifier?
4. How many filtering components are used in pi filter?
5. In which region transistor has to be operated for faithful amplification?
6. What is the output impedance of common base configuration?
7. What is Q-point?
8. Name the types of feedback
9. What are the components used in tank circuit?
10. State the advantages of crystal oscillator.
11. Give an example for voltage controlled device.
12. What is the formula for intrinsic standoff ratio?
13. What is the family name of SCR?
14. How many terminals are present in TRIAC?
15. Expand DIAC.
16. What are the types of MOSFET?
17. Draw the symbol of LDR.
18. What is solar cell?
19. Draw the output waveform of negative clamper.
20. How many stable states are present in Astable Multivibrator?

PART B   (5 x 12 = 60 Marks)
Answer all Questions

21 A) Explain the operation and characteristics of PN junction diode with suitable diagram. (12)
(or)
B) Explain the operation of C and pi filter and draw its waveform.   (12)

22 A) i) Explain the operation of transistor as an amplifier.   (8)
      ii) Write short notes on fixed bias.   (4)
(or)
B) i) Explain the operation of emitter follower.   (8)
   ii) Explain how transistor is used as a switch   (4)

23 A) i) Discuss about the conditions for oscillation.   (6)
      ii) Explain the operation of RC phase shift oscillator.   (6)
(or)
B) Explain the working principle of JFET and draw its characteristics.   (12)

24 A) With neat diagram explain the working principle of SCR and draw the transistor
      analogy of SCR.   (12)
(or)
B) i) Explain the operation of DIAC with its characteristics.   (6)
   ii) Explain the construction details of MOSFET.   (6)

25 A) Explain the operation of i)Opto interrupter ii)avalanche photo diode.   (12)
(or)
B) Explain the operation of positive and negative clamper.   (12)

DIPLOMA IN ELECTRONICS AND COMMUNICAOTN ENGINEERING

L - SCHEME

2011 - 2012

ELECTRICAL CIRCUITS AND INSTRUMENTATION

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24032**
Semester   : III Semester
Subject title   : **ELECTRICAL CIRCUITS AND INSTRUMENTATION**

TEACHING AND SCHEME OFEXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Electrical Circuits & Instrumentation	5	80	25	75	100		3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs.)
I	DC Circuits and Theorems	14
II	AC Circuits and Resonance	14
III	Transformers and Machines	14
IV	Measuring Instruments and CRO	13
V	Recorders, Transducers & Test Instruments	13
	Revision - Test	12
	TOTAL	**80**

RATIONALE:
      This subject enables the students with concepts of DC, AC circuits and fundamentals of Electrical machines .The subject also deals with concepts, principles and working of analog and digital electronic measuring instruments. The introduction of this subject will enable the students to be well exposed to a wide area of various electronic measuring instruments and a thorough knowledge of the fundamentals of electrical circuits.

OBJECTIVES:

To Study ohm's law and Kirchoff"s laws.

To Study the circuit theorems

To learn about series and parallel Circuits.

To learn various terms related to AC circuits.

To understand concept of AC circuits

To learn about series and parallel resonance circuits.

To Study about transformer and its working.

To understand the working of DC machine.

To know about Induction motors and stepper motor.

To understand the basic measuring instruments.

To learn about bridge circuits.

To discuss about CRO and its types.

To study about recorders and its types.

To learn about various types transducers.

To know about testing instruments.

24032 ELECTRICAL CIRCUITS AND INSTRUMENTATION
DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
1	**D.C. CIRCUITS AND THEOREMS** **Definition and unit** for voltage, current, power, resistance, conductance, resistivity – ohm's law – only simple problems in ohm's law- Kirchoff's current law and voltage law.	7
	Series circuits –parallel circuits – series parallel circuits – Thevenin's, Norton's, super position and maximum power transfer theorem – Statement and explanation (simple problems – two sources with four resistors)	7
2	**A.C. CIRCUITS AND RESONANCE** **A.C. CIRCUITS** AC through single pure resistance, pure inductance, pure capacitance - voltage and current relationship - and (to mention only) the equation for power and power factor in each case(only simple problems). Definition for impedance, reactance, admittance, conductance, phase angle, power factor and power.	10
	AC circuits – Derivation only for impedance, power and power factor in Series R-L, R-C, R-L-C circuits. – Analysis of Parallel R-L circuit, R-C circuit, R-L-C circuit (qualitative treatment only) **RESONANCE** Resonance - series resonance – parallel resonance - condition for resonance – resonant frequency- Q factor - resonance curve - bandwidth (only simple problems).	4
3	**TRANSFORMERS AND MACHINES** **TRANSFORMERS** Transformer – Ideal transformer – construction - working principle – EMF equation -Losses in transformer- core loss, copper loss- Efficiency- Regulation- OC, SC test on transformer –List of applications (qualitative treatment only)	7
	MACHINES D.C Machines - DC–Generator –Working principle - Types- Applications - DC motor- working principle -types- applications (qualitative treatment only) Single phase Induction motor-Types- construction & principle of operation of capacitor start induction motor- Applications- stepper motor-working principle-uses (qualitative treatment only).	7

4	**MEASURING INSTRUMENTS AND CRO** **MEASURING INSTRUMENTS** Indicating instruments – Basic forces for indicating instruments-construction and operation of permanent magnet moving coil Instrument-Advantages –Disadvantages of PMMC -Shunts and Multipliers–- DC ammeter-DC volt meter-volt meter sensitivity. Bridges- Types - Wheat stone bridge - applications -Universal impedance bridge arrangements to measure R,L,C	**6**
	CRO CRO - Block diagram and principle of operation of CRO- operation of CRT -Electrostatic focusing- Electrostatic deflection (no derivation) - Block diagram of vertical deflection system- Applications of CRO- Types of CRO- Block diagram and operation of dual trace CRO- dual beam CRO –comparison between dual trace and dual beam CRO – Digital storage oscilloscope –Block diagram- advantages.	**7**
5	**RECORDERS, TRANSDUCERS & TEST INSTRUMENTS** **RECORDERS** Recorders – Types- X-Y recorder –Strip chart recorder – list of applications - comparison between X-Y recorder and strip chart recorder.	**3**
	TRANSDUCERS Transducers –classification of transducer-Strain gauge - Types-uses. Construction, operation and applications of photo electric transducer, LVDT and Load cell. Principle of working of thermocouple--Temperature measurement using thermocouple – list of applications- Principle of working of Thermistor –Temperature measurement using thermistors – Types (NTC, PTC) – List of applications .	**6**
	TEST INSTRUMENTS Digital voltmeter –Types (to list only) - Basic block diagram of DVM– Block diagram of Digital multi meter- Advantages over analog instruments-Block diagram of Digital frequency counter-– Simple PC based Data Acquisition system – Block diagram.	**4**

REFERENCE BOOKS

1. A text book of Electrical Technology by B.L. Theraja, Publication Division of Nirja constructions and development co. (P) Ltd., - 1994.
2. Electric circuit theory by Dr. M. Arumugam, N. Premkumaran.
3. Modern Electronic Instrumentation and Measurement Techniques by Albert D.Hel frick and Willam David cooper- Prentice Hall of India Pvt. Ltd., 1996.
4. Electrical and Electronic- Measurements and Instrumentation by A.K.Sawheney-Dhanpatrai and Sons -1993.
5. Measurement systems- Application and Design – by Ernest o. Doebelin-McGraw hill -2004

24032 ELECTRICAL CIRCUITS AND INSTRUMENTATION
MODEL QUESTION PAPER - I

TIME : 3 HOURS   **MAX.MARKS : 75**
PART – A

ANSWER ANY   15 QUESTIONS   **15x1 =15 MARKS**
1. Define resistance
2. Define Ohm's law
3. State Kirchoff's voltage law
4. What is the equivalent resistance of three resistors R1, R2, R3 connected in parallel?
5. Define impedance
6. What is meant by Resonance?
7. Define admittance
8. Define quality factor
9. State the losses in a Transformer
10. Define efficiency of a transformer
11. State any 2 applications of a DC shunt generator
12. What are the types of single phase induction motor?
13. List out the types of damping
14. Define voltmeter sensitivity
15. State any 2 uses of Maxwell's bridge
16. What is CRO?
17. What is a recorder?
18. What is meant by LVDT?
19. What is a transducer?
20. What are the types of DVM?

PART   - B   **5X12=60 MARKS**
Answer all Questions

21 A) State and explain Thevenin's theorem   (12)

(or)

B) State and explain the maximum power transfer theorem   (12)

22 A) Derive an expression for impedance of an RLC series circuit   (12)

(or)

B) Derive the relation between voltage and current in a pure resistor, pure inductor
   and pure capacitor.   (12)

23 A) Explain the working of a transformer. State its applications   (12)

(or)

B) Explain the principle of operation of a capacitor start induction motor.
   Mention its applications.   (12)

24 A) Explain the construction and working of a PMMC instrument. State its advantages
   and disadvantages   (12)

(or)

B) Explain Wheat stone bridge circuit. Give its applications   (12)

25 A) Explain the construction and operation of LVDT   (12)

(or)

B) Explain the working of a digital frequency counter with a neat block diagram   (12)

24032 ELECTRICAL CIRCUITS AND INSTRUMENTATION

MODEL QUESTION PAPER   - II

TIME: 3 HOURS   **MAX MARKS: 75**

PART – A

ANSWER ANY   15 QUESTIONS   **15X1=15 MARKS**

1. Define power
2. What is the unit for current?
3. State Kirchoff's current law
4. What is the equivalent resistance of three resistors R1, R2, R3 connected in series?
5. Define susceptance
6. What is bandwidth?
7. Define conductance
8. What is the condition for resonance?
9. What is an ideal Transformer?
10. Define turns ratio of a transformer
11. State any 2 applications of a DC series motor
12. What is a DC Generator?
13. List out the basic forces in indicating instruments
14. What are shunts and multipliers?
15. State any 2 differences between Dual trace & Dual Beam CRO
16. What are the types of CRO?
17. What is a Strain gauge?
18. Give one difference between XY Recorder& Strip chart recorder
19. Give one application of load cell
20. What is meant by Data acquisition system?

PART - B   **5X12=60 MARKS**
Answer all Questions

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21 A) State and explain Norton's theorem   (12)

   (or)

   B) State and explain the Superposition theorem   (12)

22 A) Derive an expression for resonant frequency & Q factor of a series resonant circuit (12)

   (or)

   B) Derive an expression for the power and power factor of a RLC circuit in series.   (12)

23 A) Explain the OC, SC test of a transformer. Derive the expression for efficiency of
      a transformer   (12)

   (or)

   B) Explain the principle of operation of a stepper motor. Mention its applications   (12)

24 A) Explain the working of a CRO with a neat block diagram   (12)

   (or)

   B) Explain Universal bridge arrangements to measure R, L, and C   (12)

25 A) Explain the operation of XY recorder with a neat diagram   (12)

   (or)

   B) Explain the digital mutimeter with a block diagram .State the advantages of
      digital instruments over analog instruments.   (12)

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

'C' PROGRAMMING

**DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU**

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN COMPUTER ENGINEERING SYLLABUS
L – SCHEME
(Implements from the academic year 2012 - 2013 onwards)

Course Name : **Diploma in Computer Engineering.**
Subject Code : **25233**
Semester : **III semester**
Subject Title : **C-Programming**

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
'C' PROGRAMMING	5	80	25	75	100	3 Hrs

TOPICS AND ALLOCATION OF HOURS

Unit No	Topic	No of Hours
I	PROGRAM DEVELOPMENT AND INTRODUCTION TO C	16
II	DECISION MAKING, ARRAYS & STRINGS	13
III	FUNCTIONS, STRUCTURES AND UNIONS	13
IV	POINTERS	13
V	FILE MANAGEMENT & PREPROCESSORS	15
TEST AND REVISIONS		10
TOTAL		80

RATIONALE

' C' is the most widely used computer language, which is being taught as a core course. C is general-purpose structural language that is powerful, efficient and compact, which combines features of high-level language and low-level language. It is closer to both Man and Machine. Due to this inherent flexibility and tolerance it is suitable for different development environments. Due to these powerful features, C has not lost its importance and popularity in recently developed and advanced software industry. C can also be used for system level programming, C is still considered as first priority programming language.

This course covers the basic concepts of C. This course will act as "programming concept developer" for students. It will also act as "Backbone" for subjects like OOPS, Visual Basic, Windows Programming, JAVA etc.

OBJECTIVES

At the end of the Course, the students will be able to
- Define Program
- List down and explain various program development steps
- Define algorithm and flow chart
- Describe the concepts of constants, variables, data types and operators.
- Develop programs using input and output operations.
- Write programs using different looping and branching statements.
- Write programs based on arrays and strings handling functions.
- Write programs using user-defined functions, structures and union.
- Write programs using the concept of Pointers.
- Write programs using command line arguments.
- Write programs using file handling functions.
- Write programs using compiler controlled directives.

DETAILED SYLLABUS

UNIT – I Program Development & Introduction to C ………. 16 Hours		
1.1	**Program:** Program Definition - Program development cycle - Programming Languages – Low Level language – High Level Language – Features of a good programming languages	3 Hrs
1.2.	**Algorithm and Flow chart:** Algorithm – Definition – Properties of an Algorithm – Classification of Algorithms – Algorithm logic - Flow Chart – Importance of Flowchart, Flow chart symbols, Advantages of flow chart – Limitation of flow charts, Algorithm and flow chart for the following problems: Examples on Algorithms: Area & circumference of circle, to find the product of first n natural numbers , Largest of 3 numbers, Number odd or even, factorial of a given number	3 Hrs
1.3.	**Introduction to C:** History of C - Features of C Language - Structure of a C program– Execution of C Program : - Compiling, Link and Run a program - Diagrammatic representation of program execution process	2 Hrs
1.4	**Variables and Constants:** C character set - tokens- constants- keywords – identifiers and variables- - data types and storage – data type Qualifiers - Declaration of variables – Assigning values to variables – Escape sequences - defining symbolic constants	2 Hrs
1.5	**C operators:** Arithmetic, Logical, assignment, relational, increment and decrement, conditional, bit wise, special - operator precedence- C expressions – Arithmetic expressions – evaluation of expressions – type conversions in expressions – type cast operator - operator precedence and associativity	4 Hrs
1.6	I/O statements : Formatted input, formatted output, Unformatted I/O statements	2 Hrs

UNIT – II Decision Making, Arrays and Strings ……….. 13 Hours		
2.1	**Decision making and branching:** Introduction – simple if statement - if-else - else-if ladder, nested if-else - switch statement - the go to statement - Simple programs	4 Hrs
2.2.	**Looping Statements:** while, do-while statements, for loop, break & continue statement –- simple programs	3 Hrs
2.3.	**Arrays:** Declaration and initialization of one dimensional, two dimensional and character arrays, accessing array elements. – Programs using arrays	3 Hrs
2.4	**Strings:** Declaration and initialization of string variables, reading string, writing strings, - string handling functions from standard library (strlen(), strcpy(), strcat(), strcmp()).- String manipulation programs	3 Hrs

UNIT – III Functions , STRUCTURES AND UNIONS ……….. 13 Hours		
3.1	**Built-in functions:** Math functions - console I/O functions - Standard I/O functions - Character Oriented functions - graphical functions – Simple programs	3 Hrs
3.2.	**User defined Functions:** Need of user defined functions, scope and life time of variables, defining functions, function call (call by value, call by reference), return values, storage classes. category of function(No argument No return value, No argument with return value, argument with return value), - Recursion	7 Hrs
3.3.	**Structures and Unions:** Structure - definition, Initialization, Comparison of structure variables, Arrays of Structures, Arrays within structures, Structures within structures, Structures and functions – Unions – structure of Union- Difference between Union and structure.	3 Hrs

UNIT – IV Pointers ……….. 13 Hours		
4.1.	**Pointers:** Introduction – Advantages of pointers - Accessing the address of a variable, Declaring and initializing pointers, Accessing a variable through its pointer - Pointers expressions, Increments and scale factor - Array of pointers - Relation between Pointers and Arrays - string manipulation using pointers – Limitation of array of pointers to strings - Pointers and functions, Pointers and structures –Function returning pointer and passing addresses to functions - Pointers to pointers	10 Hrs
4.3.	**Dynamic memory Management:** Introduction - functions - Memory allocation process – Allocating a block of memory : MALLOC – Allocation of multiple blocks of memory : CALLOC – Releasing the used space: FREE – Altering the size of the block: REALLOC	3 Hrs

UNIT – V File management & Preprocessors ……….. 15 Hours		
5.1	**File Management:** Introduction – Defining and Opening a file - Closing a file - Input/output operations on files – Error handling during I/O Operations - Random access to files – Programs using files	8 Hrs
5.2.	**Command line arguments:** Introduction – argv and argc arguments - Programs using Command Line Arguments	2 Hrs
5.3	**The Preprocessor:** Introduction - Macro substitution, File inclusion, Compiler control directives	5 Hrs

TEXT BOOKS

S.No	Title	Author	Publisher	Year of Publishing / Edition
1.	Programming in ANSI C	E.Balagurusany	Tata Mc-Graw Hill, New Delhi	

REFERNCE BOOKS

S.No	Title	Author	Publisher	Year of Publishing / Edition
1.	Programming and Problem solving using C	ISRD Group , Lucknow	Tata Mc-Graw Hill, New Delhi	2010
2.	Let us C	Yeswanth Kanetkar	BPB Pulications	

25233 – C PROGRAMMING
MODEL QUESTION PAPER - I

Time : 3 Hrs   **Max. Marks: 75**

PART – A   (15 x 1 = 15 Marks)

Answer any Fifteen Questions. Each question carries 1 mark.

1. Define Algorithm.
2. What is an identifier?
3. What is an operator?
4. Write down the syntax of scanf() function.
5. What is the use of goto statement?
6. When the statement continues is used?
7. Write down the syntax of if else statement.
8. Define two dimensional arrays.
9. What are predefined functions?
10. What do you mean by call by reference?
11. What is union?
12. What is the use of struct keyword?
13. Define pointer.
14. When is a null pointer used?
15. What are the functions to allocate memory at runtime in C?
16. Define static memory allocation.
17. What is meant by preprocessor?
18. What role is played by the #undef directive?
19. Define a file.
20. What is the use of argv()?

PART – B   (5 x 12 = 60 Marks)

Answer all questions

21	A	i.	Explain in detail about the structure of a C program with an example.	[6]
		ii.	Explain the various operators in C with one example for each operator.	[6]

[OR]

	B	i.	Discuss the Program development cycle in detail.	[6]
		ii.	Explain about the formatted and unformatted I/O statements in C.	[6]

22	A.	i.	Explain for statement with syntax and an example.	[6]
		ii.	How does switch statement differ from if statement. Give examples	[6]

[OR]

	B	i.	Discuss the different types of if statements with example.	[6]
		ii.	Write a program to read a list of n elements and find the minimum number using array.	[6]

23	A.	i.	Explain structure with syntax and example.	[4]
		ii.	Explain call by reference with an example.	[8]

[OR]

	B	i.	Explain about array within structure with example.	[6]
		ii.	How does the function work? Explain how arguments are passed and results are returned.	[6]

24	A.	i.	What are the advantages of using pointers? How are pointers declared & initialized.	[6]
		ii.	Write a program to demonstrate malloc() and free() functions.	[6]

[OR]

	B	i.	How the value of variable is accessed using pointers? Give examples.	[6]
		ii.	Differentiate the static and dynamic memory allocation.	[6]

25	A.	i.	Explain the 3 major categories of the C preprocessor directive.	[4]
		ii.	A file VOCUBULARY contains 1000 words. Write a program to write in another file WORDS the words beginning with the character S or s from the 1000 words.	[8]

[OR]

	B	i.	Explain about error handling in files.	[6]
		ii.	Define macro and explain its various types with example.	[6]

25233 – C PROGRAMMING
MODEL QUESTION PAPER - II

Time : 3 Hrs   Max. Marks: 75

PART – A   **(15 x 1 = 15 Marks)**

Answer any Fifteen Questions. Each question carries 1 mark.

1.   What is a flow chart?
2.   What are keywords?
3.   Differentiate constant and variables.
4.   What do you mean by High level language?
5.   What is the use of switch statement?
6.   Differentiate while & do.. while statement.
7.   Define the term "Array".
8..   What is NULL character? Why is it important?
9.   List any two library functions.
10.   Is it possible to call library functions recursively?
11.   What is the feature of Structure?
12.   How is data stored in Union?
13.   How would you free memory in C?
14.   Define Dynamic memory allocation.
15.   State any one advantage of Pointers?
16.   What are the operators associated with Pointers?
17.   What is conditional compilation?
18.   What are the different modes of files?
19.   What is command line argument?
20.   Write a feature of preprocessor.

PART – B   **(5 x 12 = 60 Marks)**

Answer all questions

21	A.	i.	Draw a flowchart to find the product of first N natural numbers.	[6]
		ii.	Briefly Explain about the various data types in C language.	[6]
			[OR]	
	B	i.	Write in detail about Constants and its classification.	[6]
		ii.	Write a C program to find the biggest number between given three numbers using a single statement by using conditional operator.	[6]

22	A.	i.	Write a program to print the Fibonacci series upto 100.	[6]
		ii.	Write in detail about the difference between break and continue statements with example.	[6]
			[OR]	
	B	i.	What is String handling functions? State the use of each function with examples.	[6]
		ii.	Write a C program to find whether the given word is palindrome or not.	[6]

| 23 | A. | i. | Explain about user defined function with an example. | [6] |
| | | ii. | Write a program to print your date of birth using a structure. | [6] |

<div align="center">[OR]</div>

| | B | i. | Explain about parameter passing methods with example. | [6] |
| | | ii. | Define a structure tag "Population" with fields Men and Women. Create structure within structure using state and population structure. Read and display data. | [6] |

| 24 | A. | i. | Differentiate between array of Pointers and Pointers to array with example. | [6] |
| | | ii. | Explain the various Dynamic memory allocation functions with simple example. | [6] |

<div align="center">[OR]</div>

| | B | i. | Using pointers, reverse the given integer array of N elements. | [6] |
| | | ii. | Write a program to demonstrate realloc() function. | [6] |

| 25 | A. | i. | Explain about Command line argument with an example. | [6] |
| | | ii. | How to open and close a file? Explain different modes of files. | [6] |

<div align="center">[OR]</div>

| | B | i. | Write a short note on C Preprocessors | [6] |
| | | ii. | Given a text file, write a program to create another text file deleting the words "a", "an", "the" and replacing each one of them with a blank space. | [6] |

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

ELECTRONIC DEVICES AND CIRCUITS PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24034**
Semester   : III Semester
Subject title : **ELECTRONIC DEVICES & CIRCUITS PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination			
	Hrs. Week	Hrs Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Electronic Devices and Circuits practical	6	96	25	75	100	3Hrs

ALLOCATION OF MARKS

CIRCUIT DIAGRAM   :   20
CONNECTION   :   25
 EXECUTION & HANDLING OF EQUIPMENT   :   15
OUTPUT / RESULT   :   10
VIVA – VOCE   :   05
_____
TOTAL   :   75

EQUIPMENT REQUIRED:

S.NO	Name of the Equipments	Range	Required Nos.
1.	DC Regulated power supply	0-30V, 1A	10
2.	High Voltage Power Supply	0-250V, 1A	2
3.	Signal Generator	1MHz	4
4.	Dual trace CRO	20 MHz / 30MHz	5
5.	Digital Multi meter	-	10
6.	DC Voltmeter (Analog)	Different Range	15
7.	DC Ammeter (Analog)	Different Range	15

24034 ELECTRONIC DEVICES AND CIRCUITS PRACTICAL

List of experiments to be conducted

Note: **1. All students may possess his own multimeter and soldering iron**
2. At least 10 experiments should be constructed using breadboard/soldering
3. Different value of components should be given for each batch of students

1. Identify and check the working condition of passive & active components and switches.
2. Construct and plot the VI characteristics of PN junction diode and find the cut-in voltage.
3. Construct and plot the VI characteristics of Zener diode and find the break down voltage.
4. Construct and plot the regulation characteristics (by varying either load or line voltage) of Half wave and Full wave rectifier with and without filters
5. Construct and plot the regulation characteristics (by varying either load or line voltage) of Bridge rectifier with and without filters.
6. Construct and draw the Input and output characteristics of CE Transistor configuration and find its input & output resistance.
7. Construct and draw the frequency response of RC coupled amplifier and determine the 3-db bandwidth.
8. Construct and plot RC phase shift oscillator and find its frequency of oscillation by varying either R or C.
9. Construct and plot the drain characteristics of JFET and find its pinch off voltage.
10. Construct and plot the frequency response of Common source amplifier and determine the 3-db bandwidth.
11. Construct and plot UJT characteristics and find its Ip and Vv.
12. Construct and draw SCR characteristics and find its break over voltage.
13. Construct and plot the DIAC and TRIAC characteristics.
14. Construct a positive and biased diode clipper and draw the output waveforms.
15. Construct diode clampers and draw the output waveforms
16. Construct and draw LDR characteristics.
17. Construct and plot the VI characteristics of Photo transistor.
18. Construct Astable multivibrator using transistors and draw the output waveform and also find its frequency.

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

ELECTRICAL CIRCUITS AND INSTRUMENTAION PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24035**
Semester   : III Semester
Subject title   : **ELECTRICAL CIRCUITS & INSTRUMENTATION PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Electrical Circuits and Instrumentation practical	6	96	25	75	100		3Hrs

ALLOCATION OF MARKS

```
CIRCUIT DIAGRAM                              :        20
CONNECTION                                   :        25
 EXECUTION & HANDLING OF EQUIPMENT   :        15
OUTPUT / RESULT                              :        10
VIVA – VOCE                                  :        05
_____
TOTAL                                        :        75
```

MAJOR EQUIPMENTS REQUIRED

SL.NO.	Name of the Equipment	Range	Required Nos.
1.	Regulated power supply	0-30V, 1A	8
2.	Dual trace CRO	20MHz	4
3.	Signal Generator	1MHz	3
4.	Voltmeter	0 – 15 volts	8
5.	Ammeter	0 – 15 mA	6
6.	Digital Multi meter	-	4
7.	Ammeter	0 – 100 mA	8
8	Galvanometer	-	1
9	Decade resistance box	-	1

24035 ELECTRICAL CIRCUITS & INSTRUMENTATION PRACTICAL

LIST OF EXPERIMENTS

Note

1. **All students must have his own soldering iron and multimeter**
2. **At least 10 experiments should be constructed using breadboard / soldering**
3. **Different component value should be given for EACH batch of students.**

1. Construct a circuit to verify ohm's law
2. Construct a circuit to verify kirchoff's voltage and current law
3. Construct a circuit to verify super position theorem
4. Construct a circuit to verify Thevenin's Theorem
5. Construct a circuit to verify Norton's Theorem
6. Construct a circuit to verify maximum power transfer Theorem
7. Construct and test the performance of series resonant circuit and parallel resonant circuit
8. Calibrate the given ammeter and voltmeter
9. Extend the range of given voltmeter and ammeter
10. Construct and test the performance of Wheatstone bridge
11. Measure the amplitude and frequency of signals using dual trace CRO
12. Measure the frequency and phase angle using CRO by Lissajous figure
13. Measure voltage and current using CRO
14. Test the performance of LVDT
15. Measure strain using strain gauge.
16. Determine the characteristics of a thermistor
17. Test the performance of a load cell
18. Construct and test the performance of a photo electric transducer

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

" PROGRAMMING IN C " PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
L – SCHEME
(Implements from the academic year 2011 - 2012 onwards)

Course Name   :   Diploma in Computer Engineering
Subject Code   :   **24036**
Semester   :   III Semester
Subject Title   :   " Programming in C " Practical

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
"PROGRAMMING IN C " PRACTICAL	4	64	25	75	100	3 Hrs

OBJECTIVES

- At the end of the Course, the students will be able to
- Analyze the given problem.
- Think the logic to solve the given problem.
- Describe the concepts of constants, variables, data types and operators.
- Develop programs using input and output operations.
- Write programs using different looping and branching statements.
- Write programs based on arrays.
- Write Programs using string handling functions.
- Write programs using user-defined functions, Structures and Union.
- Write programs using the concept of Pointers.
- Write programs using command line arguments.
- Create a file.
- Write programs using file handling functions.
- Write programs using compiler control directives.

LAB EXERCISES

PART - A

1. Write a C Program to calculate Simple and Compound interest
2. Write a C Program to swap two variables using (i) third variable and (ii) without using a third variable.
3. Write a C Program to find the largest number between given three numbers.
4. Program to check whether the given string is palindrome or not.
5. Read a string, which consists of both lower case characters and upper case characters. Convert the lowercase character into upper case and vice versa. Display the new string.
6. Program to prepare the total marks for N students by reading the Regno,, Name, Mark1 to Mark6 by using array of structures. .
7. Write a function to calculate the sum and average of given three numbers. Write a main function to call the above function
8. Using pointers, find the length of the given string.
9. Write a program to print the address of a variable and increase the content by 5 and print the new value.

PART – B

1. Read an integer number. Find the number of digits and sum of all individual digits and also print the above number in reverse order.
2. Using Switch… Case Statement, print the given number into equivalent Word. (For example if the input is 3, then the output should be THREE)
3. Write a program to find the factorial of a given number (i) Without recursion   (ii) With recursion
4. Write a program to arrange the given N names in alphabetical order.
5. Write a program to read a string S1 from the terminal. Again read a string S2 from the terminal and check the given string S2 in the string S1. If it does, remove string S2 from the string S1 and print the updated string S1. (For example S1 = Concatenate and S2 = cat , then the final result should be "Conenate"
6. Program to read ten values to an array variable. Use pointers to locate and display each value.
7. Reverse the following using pointers (i) String (ii) N integer numbers stored in any array.
8. Write a C program to print the abbreviation of an Organization Name. (For example if the input is "BHARAT HEAVY ELECTRONICS LIMITED" , then the output should be "BHEL".)
9. Program to copy contents of one file to another file. Also find the number of characters, lines and words in the above file.

SCHEME OF VALUATION	
Writing any one program from PART – A	10 Marks
Writing any one program from PART – B	15 Marks
Executing program (PART – A)	15 Marks
Executing program (PART – B)	20 Marks
Result with printout (PART – A)	5 Marks
Result with printout (PART – B)	5 Marks
VIVA – VOCE	5 Marks
TOTAL	75 Marks

Note : Student : Computer ratio in lab should be strictly 1:1

HARDWARE REQUIREMENT
- Desktop Computers – 36 Nos
- Laser Printer – 4 Nos

SOFTWARE REQUIREMNT
- C – Compiler with Editor

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

COMPUTER APPLICATION PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

L-SCHEME
(Implements from the Academic year 2011-2012 onwards)

Course Name   :   COMMON TO ALL BRANCHES

Subject Code   :   20001

Semester   :   III Semester

Subject Title   :   COMPUTER APPLICATIONS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination				
	Hours /Week	Hours /Semester	Marks				Duration
COMPUTER APPLICATIONS PRACTICAL	4 Hrs	64 Hrs	Internal Assessment	Board Examination	Total		
			25	75	100		3 Hrs

RATIONALE:

The application of Computer knowledge is essential to the students of all disciplines of Engineering in addition to their respective branch of study. The Computer Application Practical course facilitates the necessary knowledge and skills regarding creating, working and maintaining the documents, analyzing the data with charts manipulation of databases and presentation of documents with audio visual effects in a computer.

The learning of internet provides students with unprecedented opportunities to obtain information engage in discussion and liaise with individuals, organizations and groups world-wide. It provides the latest tools and technologies in helping the students to fetch better employment.

OBJECTIVES:

On completion of the following exercises, the students must be able to
- Understand the Windows operating systems
- Familiarize and customize the desktop
- Use the different facilities available in the word processor
- Analyze the data sheet
- Create and manipulate the database
- Prepare PowerPoint presentation
- Understand Internet concepts and usage of e-mail

GUIDELINES:

- All the eighteen experiments given in the list of experiments should be completed and all the experiments should included for the end semester practical examination.
- The end semester practical examination question paper contains two questions- the first question from section-I and the second question from section-II. Each question carries 35 marks and viva voce carries 5 marks.
- The computer systems should be 1:2 ratio for practical classes

ALLOCATION OF MARKS

1. Internal Assessment – 25 Marks

DESCRIPTION	MARKS ALLOTTED
Record with Printout	10
Assignment	5
Attendance	5
Model Examination	5
Total	**25 MARKS**

2. Board Examinations – 75 Marks

Content	Max. Marks	
	Section I	**Section II**
Writing steps	15	15
Execution of exercise	15	15
Result with Printout	5	5
Viva voce	5	
Total	**75 Marks**	

LAB EXERCISES

SECTION – I

WINDOWS

Introduction- History of Windows- screen saver and monitor resolution – Wallpaper setting-
Folder manipulation – properties of a folder – Recycle bin – Short cuts – Sorting Folder –
Switching between Application – Copying in CD/DVD settings – Recording Audio files.

Exercises

1. a. Installing screen saver and change the monitor resolution by 1280X960

    b. Setting wall papers

    c. Creating, moving, deleting and renaming a folder

    d. Copy, paste and cut a folder/file

    e. Displaying the properties for a file or folder

2. a. Restoring files and folders from Recycle bin

    b. Creating short cuts for folder/file

    c. Finding a file or folder by name

    d. Selecting and moving two or more files/folders using mouse

    e. Sorting folders/files.

3. a. Copying files into CD/DVD

    b. Switching between applications

    c. Making the taskbar wider and hiding the taskbar

    d. Recording and saving an audio file

    e. Set/Change the date and time.

WORD PROCESSING

Introduction – Menus – Tool bar – Create – Edit – Save – Alignment – Font Size – Formatting – Tables – Fill Colors – Mail Merge – Page Setup - Preview – Water marking – Header – Footer – Clip art.

Exercises

4. Create the following table and perform the operations given below

ABC PVT. LTD.

Chennai

Production Summary of various Units in every Quarter

Uunit	Product - ID	Jan-Mar	Apr-june	July-Sept.	Oct-Dec.
Unit - I	56	234.	50	74	125
Unit - II	142	236	126	175	251
Unit - III	213	541	216	60	43
Unit - IV	125	243	127	250	136
Unit - V	143	152	138	80	45

- Arrange Unit name as left align and other columns as right align.
- Use doubled Border to the Summary Title and fill with 15% gray colour.
- Implement merging and splitting two or more cells
- Give alternative fore colour for columns.
- Print the above table.

5. Create a standard covering letter and use mail merge to generate the customized letters for applying to a job in various organizations. Also, create a database and generate labels for the applying organizations.

6. Create a news letter of three pages with two columns text. The first page contains some formatting bullets and numbers. Set the document background colour and add 'confidential' as the watermark. Give the document a title which should be displayed in the header. The header/ footer of the first page should be different from other two pages. Also, add author name and date/ time in the header. The footer should have the page number.

SPREADSHEET

Introduction – Menus – Tool bar – Create – Edit – Save – Formatting cells – Chart wizard – Fill Colors – Creating and using formulas – Sorting – Filtering.

Exercises

7. Create a result sheet containing Candidate's Register No., Name, Marks for six subjects. Calculate the total and result. The result must be calculated as below and failed candidates should be turned to red.

> Result is Distinction if Total >= 70 %
>
> First Class if Total > = 60 % and < 70 %
>
> Second Class if Total >= 50 % and < 60 %
>
> Pass if Total >= 35 % and < 50 %
>
> Fail otherwise
>
> Create a separate table based on class by using auto filter feature.

8. Create a table of records with columns as Name and Donation Amount. Donation amount should be formatted with two decimal places. There should be at least twenty records in the table. Create a conditional format to highlight the highest donation with blue colour and lowest donation with red colour. The table should have a heading.

9. Prepare line, bar and pie chart to illustrate the subject wise performance of the class for any one semester.

<p align="center">SECTION – II</p>

DATABASE

Introduction – Menus – Tool bar – Create – Edit – Save – Data types – Insert – Delete – Update – View – Sorting and filtering – Queries – Report – Page setup – Print.

Exercises

10. Create Database to maintain at least 10 addresses of your class mates with the following constraints

- Roll no. should be the primary key.
- Name should be not null

11. Prepare a payroll for employee database of an organization with the following details:

> Employee Id, Employee name, Date of Birth, Department and
>
> Designation, Date of appointment, Basic pay, Dearness Allowance,
>
> House Rent Allowance and other deductions if any.

Perform simple queries for different categories.

12. Design a pay slip for a particular employee from the above database.

PRESENTATION

Introduction – Menus – Tool bar – Create – Edit – Save – Slide transition – Insert image – Hyper link – Slide numbers – View slide show with sound – Photo album – Clip art.

Exercises

13. Make a marketing presentation of any consumer product with at least 10 slides. Use different customized animation effects on pictures and clip art on any four of the ten slides.
14. Create a Presentation on "Communication Skills" with three different slide transitions with sound effect.
15. Create a photo album in PowerPoint.

INTERNET

Introduction – Browsers – Open a website – Email: Send, receive and delete – Email with Attachments Google docs – Search Engines – Searching topics

Exercises

16. Create an e-mail id and perform the following

- Write an e-mail inviting your friends to your Birthday Party.
- Make your own signature and add it to the e-mail message.
- Add a word attachment of the venue route
- Send the e-mail to at least 5 of your friends.

17. Create a presentation on Google docs. Ask your friend to review it and comment on it. Use "Discussion" option for your discussions on the presentation.

18. Find out the direction and distance about road travel from Delhi to Agra using the Internet search. Also   make a report of the Map and other details like place to stay and visit at Agra.

MODEL QUESTION PAPER

Year / Sem: **II / III**   Subject: **COMPUTER APPLICATIONS PRACTICAL**   Code: **20001**
Answer all the questions   **Max.Marks:75**

1	**<u>Section - I</u>** Prepare line, bar and pie chart to illustrate the subject wise performance of the class for any one semester.

2	**<u>Section - II</u>**
	
	Create an e-mail id and perform the following
	
	      • Write an e-mail inviting your friends to your Birthday Party.
	      • Make your own signature and add it to the e-mail message.
	      • Add a word attachment of the venue route
	      • Send the e-mail to at least 5 of your friends.

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

SOFTWARE REQUIREMENTS

Operating System	Windows XP or Windows Vista or Windows 7 / Linux
Office Package	Microsoft office 2000 or Office 2003 or Office 2007/Open Office

HARDWARE REQUIREMENTS

Desktop Computer System with latest configuration	30 Nos
Power Backup (UPS)	10 KVA
Laser Printer	3 Nos

SAFETY PRECAUTIONS TO BE FOLLOWED BY STUDENTS

- Do not touch, connect or disconnect any plug or cable without teacher's permission

- Don't attempt to touch any live wires

- Systems should be shutdown properly after completion of work

REFERENCES

TITLE	AUTHOR	PUBLISHER	Year of Publication
Computer Applications Practical Manual	Dr.V.Karthikeyan Mr.D.Arulselvan	Learning Resource Centre, Thiagarajar Polytechnic College, Salem- 636 005	2012
Windows 7 in easy steps	Harshad kotecha	Tata McGrawHill	2011
A First Course in Computer 2003	Sanjay Sasena	Vikas Publications	2009
MS Office – 2003	Ramesh Bangia	Kanna Book Publication	2005
Introduction to Computers with MS-Office 2000	Alexis Leon & Mathews Leon	Tata McGraw-Hill	2002
Mastering Microsoft Office 2000	Gini Courter & Annette Marquis	BPB Publications	1999

IV SEMESTER

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

INDUSTRIAL ELECTRONICS

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24041**
Semester   : IV Semester
Subject title   : **INDUSTRIAL ELECTRONICS**

<u>**TEACHING AND SCHEME OFEXAMINATION:**</u>

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination			
	Hrs. Week	Hrs Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Industrial Electronics	5	80	25	75	100	3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs.)
I	Power devices and Trigger circuits	14
II	Converters and choppers	14
III	Inverters and applications	14
IV	Programmable logic controller	13
V	CNC and Introduction to Robotics	13
	Revision - Test	12
	TOTAL	**80**

- **RATIONALE**

The rationale behind in introducing this subject is to give clear explanation of power devices and circuits that are in wide use today in modern industry for the control and conversion of electric power. It also gives exposure to PLC & ROBOTICS which can perform various control functions in industrial environments.

OBJECTIVES:
- To Study working principle of power devices.

- To Study the methods of triggering

- To know about use of pulse transformer & opto isolator.

- To learn about converters and its types.

- To understand commutation concepts in SCR

- To learn about choppers.

- To Study about inverters and types.

- To understand the concept of HVDC.

- To know about SMPS.

- To understand about UPS and its types.

- To learn about PLC.

- To discuss about ladder diagrams.

- To study about basics of numerical control of machines.

- To learn about CNC systems.

- To know about the basics of Robotics

24041 INDUSTRIAL ELECTRONICS

<u>DETAILED SYLLABUS</u>

UNIT	NAME OF THE TOPIC	HOURS
1	<u>POWER DEVICES AND TRIGGER CIRCUITS</u> **POWER DEVICES** Thyristor family –Working principle, VI characteristics and applications of SCR – Definitions for holding current, latching current, dv/dt rating, di/dt rating. Insulated gate bipolar transistor (IGBT), MOSFET and GTO - Symbol, principle of working, VI characteristics and applications.	**7**
	TRIGGER CIRCUITS Triggering of SCR - Gate triggering –Types –Concepts of DC triggering, AC triggering, Pulse gate triggering – Pulse transformer in trigger circuit – Electrical isolation by opto isolator - Resistance capacitor firing circuit and waveform, Synchronized UJT triggering (ramp triggering) circuit and waveform.	**7**
2	<u>CONVERTERS AND CHOPPERS</u> (Qualitative treatment only) **CONVERTERS** Converters – Definition – Single phase Half controlled bridge converter with R load and RL load - importance of flywheel diode – Single phase fully controlled bridge converter with resistive load – voltage and current waveforms – Single phase fully controlled bridge converter with RL load – voltage and current waveforms. Commutation- Natural commutation – Forced commutation – Types of forced commutation (mention the types only).	**9**
	CHOPPERS Chopper – Definition –principle of DC chopper operation – Typical chopper circuit (Jones chopper) –Applications of DC chopper – Principle of working of single phase AC chopper - Chopper using MOSFET.	**5**
3	<u>INVERTERS & APPLICATIONS</u> **INVERTERS** Inverter - Definition -Requirement of an inverter –Single phase inverter with resistive load – Single phase inverter with RL load – Methods to obtain sine wave output from an inverter- Output voltage control in inverters - McMurray inverter – advantages - Parallel inverter using IGBT.	**8**
	APPLICATIONS HVDC Transmission- principle – advantages – drawbacks SMPS - Block diagram of SMPS – advantages and disadvantages. UPS-Type (ON Line, OFF Line), Comparison.	**6**
4	<u>PROGRAMMABLE LOGIC CONTROLLER</u> Introduction to PLC – Relays- Block diagram of PLC – Basics of Input and output module (digital input and output module) - Logic functions - AND logic, OR logic, NAND logic, EX-OR logic -symbols used in ladder logic diagram. Ladder programming – Ladder diagram for simple systems –Star delta starter, Conveyer control and Lift control.	**13**

5	**NUMERICAL CONTROL SYSTEMS AND ROBOTICS** **NUMERICAL CONTROL SYSTEMS** Basic concepts of numerical control - Block diagram of numerical control system– Advantages, disadvantages, applications of numerical control system –Programming systems (mention the names only) – Data processing unit –Data reading – Part programming – steps - Post processor	**11**
	Introduction to CNC – Basic concepts of CNC – Comparison between NC & CNC – Typical CNC system – Block diagram, Advantages. **ROBOTICS** Introduction to Robots – Advantages of Robots.	**2**

REFERENCE BOOKS

1. Industrial & Power Electronics By Harish C.Rai, Umesh Publication, 5th Edition 1994
2. Power Electronics by Dr.P.S.Bimbhra, Khanna publishers -2nd Edition-1998
3. Power Electronics by M.H.Rashid-PHI Publication-3rd Edition-2005
4. Programmable Logic Controller –Pradeep Kumar& Srivashtava-BPB Publications
5. Numerical control of Machines – Yoram Korean &Joseph Ben
6. Industrial Electronics and control by Biswanath Paul –PHI publications-2nd Edition -2010

24041 INDUSTRIAL ELECTRONICS

MODEL QUESTION PAPER - I

TIME : 3 HOURS   MAX MARKS :75

PART – A

ANSWER ANY   15 QUESTIONS   15X1 =15 MARKS
   1. What is SCR?
   2. What is IGBT?
   3. What is Triggering of SCR?
   4. What is opto coupler?
   5. What is a converter?
   6. What is commutation?
   7. What is a Chopper?
   8. Give one application of DC chopper.
   9. What is an inverter?
   10. Give one application of inverter.
   11. What is UPS?
   12. Give one difference between online & offline UPS
   13. What is PLC?
   14. What is a relay?
   15. What is input module/
   16. Mention one input switching device used in PLC.
   17. Define CNC.
   18. Mention two applications of Numerical control machines.
   19. What is part programming.
   20. What is a Robot?

PART – B   5X12 =60 MARKS
Answer all Questions

21 A) Explain the working of SCR. Mention its application   [12]
                          (or)
   B) Explain the Resistance capacitance firing circuit with waveforms   [12]

22 A) Explain the working of Single phase converter with RL load   [12]
                          (or)
   B) Explain the working of a DC chopper circuit .Give its applications.   [12]

23 A) Explain parallel inverter using IGBT with a neat diagram   [12]
                          (or)
   B) With a neat block diagram explain the operation of UPS.   [12]

24 A) Draw the block diagram of PLC and explain each block   [12]
                          (or)
   B) Draw the ladder diagram of a conveyer system and explain.   [12]

25 A) Explain the typical CNC with a neat block diagram   [12]
                          (or)
   B) Write notes on Robotics. Give its advantages.   [12]

24041 INDUSTRIAL ELECTRONICS
MODEL QUESTION PAPER -- II

TIME: 3 HOURS   **MAX MARKS: 75**

PART – A

ANSWER ANY 15 QUESTIONS   **15X1 =15 MARKS**

1. Draw the symbol of SCR
2. What is GTO?
3. Mention types of triggering
4. What is a pulse transformer?
5. What is Controlled converter?
6. What is Natural Commutation?
7. What is forced commutation?
8. What is an AC chopper?
9. Mention one method to obtain sine wave output from an inverter
10. What is SMPS?
11. Mention one advantage of DC transmission.
12. Mention the methods to control output voltage in inverters
13. What are the parts of PLC?
14. State any two advantages of PLC
15. State AND logic function
16. Give the symbols used in Ladder diagram
17. Give one advantage of numerical control system
18. Mention the driving devices used in Numerical control system
19. What is stepper motor?
20. Mention advantages of Robots.

PART – B

ANSWER ALL QUESTIONS   5X12 =60 MARKS

21 A) Explain with a neat diagram and waveforms the UJT triggering circuit   [12]

(or)

B) With diagram explain opto coupler   [12]

22 A) Explain single phase fully controlled bridge converter with RL load   [12]

(or)

B) Explain Jones chopper circuit   [12]

23 A) Explain McMurray inverter circuit with a neat diagram.   [12]

(or)

B) Explain DC transmission system. Give its advantages.   [12]

24 A) Explain the various logic functions used in PLC   [12]

(or)

B) Explain the ladder diagram of a star delta starter and explain.   [12]

25 A) Explain the block diagram of Numerical control system. State its advantages. [12]

(or)

B) Explain part programming and post processor in NC system.   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

COMMUNICATON ENGINEERING

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24042**
Semester   : IV Semester
Subject title   : **COMMUNICATION ENGINEERING**

TEACHING AND SCHEME OFEXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Communication engineering	5	80	25	75	100		3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs.)
I	Networks, Antenna and Propagation	14
II	Amplitude Modulation	14
III	Angle and Pulse Modulation	14
IV	Audio Systems	13
V	Video system	13
	Revision - Test	12
	TOTAL	**80**

RATIONALE:

        Today communication engineering has developed to a great extent that there is always the need for study of various communication concepts. This subject fulfills the need for students to have a thorough knowledge of various types of networks, modulation, audio systems and video systems.

Objectives

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

- understand the basic principles of Symmetrical and asymmetrical networks, Equaliser, Attenuator, Filters
- understand the principle of working of antenna
- understand the theory of Propagation
- understand the concept of modulation
- study amplitude modulation process
- learn about different types of AM Transmitter and Receiver:
- study the Frequency modulation process
- learn about different types of FM Transmitter and Receiver:
- understand the concept of Phase modulation
- understand the concept of Pulse modulation
- learn different types of microphones
- learn different types of loud speakers
- understand different methods of audio recording and reproduction
- understand principles of Monochrome Television
- understand principles of color TV and related topics

24042 COMMUNICATION ENGINEERING

DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
1	**Networks, Antenna and Propagation** **Networks (qualitative treatment only):** Symmetrical and asymmetrical networks - characteristic impedance and propagation constant.	2
	Equaliser: types, applications: constant resistance equalizer. **Attenuator**: types - symmetrical T and Pi attenuators –application and simple problems **Filters:** types and definitions – circuit elements and cutoff frequencies of LPF, HPF and BPF (only simple problems). **Antennas** Basic antenna principle, polarization, directive gain, directivity, radiation pattern, folded dipole, parasitic array, broad-side and end-fire array, Yagi antenna, parabolic antenna.	7
	Propagation (short theory only) Ground wave propagation, sky wave, space wave propagation, ionospheric layers	5
2	**Amplitude Modulation** **Modulation**: Frequency spectrum. Relationship between wavelength and frequency, Need for modulation, types of modulation.	7
	Amplitude modulation: Expression, AM spectrum and sidebands, types of AM balanced modulator. SSB generation – phase shift and filter methods, advantages and disadvantages of SSB. AM VSB system. Diode detector. **AM Transmitter:** Types of transmitters - high level AM transmitter and low level AM transmitter. SSB transmitter.	7
	AM Receiver: TRF receiver, super heterodyne radio receiver- Selection of IF- Image frequency - AGC types, SSB receiver.	7

3	**Angle and Pulse Modulation** **Frequency modulation:** Expression - waveforms - frequency spectrum, effects of noise in FM, comparison of AM and FM, varactor diode modulator. FM detectors – slope detector, phase discriminator, ratio detector (qualitative treatment only) **FM Transmitter & Receiver** Direct and Indirect methods- stereophonic FM transmitter. FM receiver: Block diagram – AFC- stereophonic FM receiver.		8
	Phase modulation Principles, phase modulator circuit, comparison between FM and PM Pulse modulation Types, sampling theorem. Generation and detection of PAM, PWM, PPM. PCM, DPCM, Delta modulation– quantizing noise-companding.		6
4	**Audio systems** **Microphones**: (Qualitative treatment only) Construction and performance of the following microphones: carbon, condenser, piezo-electric, moving coil and velocity ribbon.		4
	Loud speakers: Constructional details of dynamic cone type, Horn type and electro-static loud speakers, woofer, midrange and tweeter, cross-over network. Surround-sound systems		4
	Audio recording and reproduction: Compact disc system- MP3 system - DVD system - stereophonic system - Hi-Fi system principles- Dolby -DTS		5
5	**Video systems** Monochrome Television: Scanning principles - synchronization - aspect ratio- composite video signal- TV broadcasting standards. TV transmitter- TV receiver.		5
	Color TV : Principles of color transmission and reception- color CCD camera. PAL color TV receiver (IC details not required) LCD, LED display unit – plasma display - Principles of Handy cam, CCTV and cable TV.		8

Reference books
1. Networks lines and fields – John D.Ryder, PHI
2. Electronic communication Systems – Kennedy – TMH
3. Electronic Communication – Dennis Roddy and John colen – PHI
4. Fundamentals of Acoustics – Kingsler & frey – Wiley Eastern ltd.
5. TV and Video engineering – Arvind M.Dhake – TMH.
6. Communication Electronics – Principles and application – Louis E Frenzel, Third Edition, Tata McGrawhill publication
7. Audio and Video system – Principles, maintenance and Troubleshooting by R.Gupta Second Edition McGrawHill Education (P) Ltd.

24042 COMMUNICATION ENGINEERING

MODEL QUESTION PAPER - I

TIME: 3 HOURS   **MAX MARKS: 75**

PART – A

ANSWER ANY 15 QUESTIONS   **15X1 =15 MARKS**

1. What is equalizer?
2. What is an attenuator?
3. Define symmetrical network.
4. What is a filter?
5. Mention the types of modulation.
6. What is the difference between high level &low level modulation?
7. Define AGC
8. What is the advantage of SSB?
9. Define frequency modulation
10. Mention two types of FM detectors.
11. What is AFC?
12. What is the advantage of FM over AM?
13. Define microphone
14. What is the advantage of velocity ribbon microphone?
15. Give two differences between woofer and tweeter.
16. Mention any two types of loud speaker.
17. What is scanning?
18. What is flicker?
19. What is interlaced scanning?
20. Define aspect ratio.

PART – B   5X12 =60 MARKS
Answer all Questions

21 A) with a neat diagram explain working of parabolic reflector antenna Mention its
   advantage.   [12]

(or)

   B) Write notes on different types of propagation.   [12]

22 A) What is the need for modulation? Derive expression for AM signal.   [12]

(or)

   B) Explain.SSB receiver with block diagram.   [12]

23 A i) Explain the working of a Ratio detector.   [8]
   ii) Compare AM & FM.   [4]

(or)

   B) Explain generation and demodulation of PWM.   [12]

24 A) Explain the working of carbon microphone with neat constructional detail [12]

(or)

   B) Explain the construction and working of cone type loud speaker.   [12]

25 A) Explain the monochrome TV receiver with block diagram.   [12]

(or)

   B) Write short notes on i) Cable TV ii) CCTV.   [12]

24042 COMMUNICATION ENGINEERING

MODEL QUESTION PAPER - II

TIME: 3 HOURS   **MAX MARKS: 75**

PART – A

ANSWER ANY 15 QUESTIONS   **15X1 =15 MARKS**

1. Define transmission line.
2. What is an antenna?
3. Mention types of propagation.
4. What is a wave guide?
5. Define modulation
6. What is amplitude modulation?
7. Define SSB system.
8. Mention types of AGC.
9. Define phase modulation.
10. What is pulse modulation?
11. Mention two types of FM transmitter
12. What are the types of pulse modulation?
13. What is a crossover network?
14. What is DVD?
15. Define loud speaker.
16. Give two types of microphone.
17. List the types of TV standards.
18. What is handy cam?
19. Define the terms audio and video.
20. Mention advantages of plasma display

PART – B   **5X12 =60 MARKS**

Answer all Questions

21 A) Explain with a neat diagram Broadside array & end fire array antennas [12]

(or)

B) Explain about (1) Filters (2) Attenuators. [12]

22 A) Explain the high level AM transmitter with block diagram. [12]

(or)

B) Explain the super heterodyne receiver with block diagram. [12]

23 A) Explain indirect method of FM transmission.2.Compare FM&PM [12]

(or)

B) Explain (1) Visual exciter (2) Aural exciter. [12]

24 A) Explain construction and working of velocity ribbon microphone [12]

(or)

B) Explain in detail about CD recording and reproduction. [12]

25 A) Explain the PAL color TV receiver with block diagram. [12]

(or)

B) Give brief notes on 1.Plasma display 2.Handycam [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

DIGITAL ELECTRONICS

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24043**
Semester   : IV Semester
Subject title : **DIGTAL ELECTRONICS**

TEACHING AND SCHEME OFEXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Digital Electronics	5	80	25	75	100		3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs.)
I	Number System, Boolean Algebra, Logic Gates and Digital Logic Families	14
II	Combinational Logic	14
III	Sequential Logic	14
IV	Memory Devices	13
V	Microprocessor – 8085	13
	Revision - Test	12
	TOTAL	**80**

RATIONALE

The purpose of introducing this subject is to acquaint the students with the basic principles involved in the analysis and design of digital systems .It provides in depth knowledge of digital systems from electronic gates to memory elements.

OBJECTIVES:

- To understand various Number System.

- To understand basic Boolean postulates and laws.

- To understand the De-Morgan's theorem.

- To understand the concept of Karnaugh Map.

- To Learn about logic Gates.

- To Study about Boolean techniques.

- To learn the different digital logic families

- To learn arithmetic circuits-adder/subtractor, BCD adder.

- To understand the encoder/decoder & MUX / DEMUX

- To understand the concept of parity Generator, and checkers

- To understand various types of flip-flops.

- To understand various types of counters.

- To understand various modes of shift registers.

- To understand the concept of RAM & ROM and its types.

- To understand the history and need of Microprocessor.

- To understand the internal architecture details of 8085 Microprocessor.

- To know the instruction set of 8085.

- To draw the timing diagrams for typical instructions

- To understand Interrupt Structure of 8085

24043 DIGITAL ELECTRONICS

UNIT	NAME OF THE TOPIC	HOURS
1	**NUMBER SYSTEM AND BOOLEAN ALGEBRA:-** Binary, Octal, Decimal, Hexadecimal - Conversion from one to another. Binary codes – BCD code, Gray code, Excess 3code.Boolean Algebra – Boolean postulates and laws. De-Morgan's theorem, Simplification of Boolean expressions using Karnaugh map(up to 4-variables-pairs,quad,octets)- Don't care conditions and constructing the logic circuits for the Boolean expressions	7
	LOGIC GATES AND DIGITAL LOGIC FAMILIES:- GATES – AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR. Implementation of logic functions using gates, Realization of gates using universal gates. Simplification of expression using Boolean techniques, Boolean expression for outputs. Digital logic families – TTL, CMOS, Logics and their characteristics, Tristate gate	7
2	**COMBINATIONAL CIRCUITS** Arithmetic circuits. Binary – Addition, subtraction, 1's and 2's complement. Signed binary numbers. Half Adder and Full Adder/ half Subtractor and Full Subtractor. Encoder, Decoder- 3 to 8 decoder, BCD to seven segment decoder. Multiplexer/Demultiplexer.BCD adder, parity checker and generator	14
3	**SEQUENITAL CIRCUITS** FLIP-FLOPS – SR, JK, T, D, JK- MS FF, Triggering of FF – edge & level. COUNTERS – Asynchronous/ripple counter, Synchronous counter, modulo – N – counter, Up – Down counter, Johnson counter, Ring counter, Single digit BCD counter. REGISTERS - 4-bit shift register- Serial IN Serial OUT, Serial IN parallel OUT, Parallel IN Serial OUT, Parallel IN Parallel OUT	14
4	**MEMORY DEVICES** Classification of memories, RAM organization, Read/write operations, Static RAM- Bipolar RAM cell, Dynamic RAM, SD RAM, DDR RAM. Read only memory – ROM organization, Expanding memory, PROM, EPROM, and EEPROM.Flash memory, Anti fuse technology	13
5	**MICROPROCESSOR – 8085** Evolution of microprocessor,8085 – Architecture, Addressing modes, Instruction sets, memory mapped I/O and I/O mapped I/O and its Comparison, Machine cycle – Opcode fetch, memory read, memory write, I/O read, I/O write. Timing diagram for LDA, MOV r1, r2, Interrupts.	13

REFERENCE BOOKS:
1. Digital principles & Applications – Albert Paul Malvino & Donald P.Leach – TMH.
2. Digital Electronics – William H.Gothmann – prentice Hall of India.
3. Modern Digital Electronics – R.P. Jain – TMH.
4. Roger L. Tokheim Macmillan – Digital Electronics – McGraw – Hill – 1994.
5. Microprocessor architecture, programming and application – Ramesh S. Gaonkar – Wiley eastern limited.
6. Introduction to Microprocessor – ADITYA P MATHUR-Tata McGraw-Hill publishing Company Limited

24043 DIGITAL ELECTRONICS
MODEL QUESTION PAPER - I
PART – A   15 X 1 = 15

Answer ANY FIFTEEN questions - ALL questions carry EQUAL marks

1. Convert $(28)_{10}$ in to binary.
2. Construct the logic circuits $A\bar{B} + \bar{A}B$.
3. Define fan IN and fan OUT.
4. Simplify the expression by using Boolean techniques $AB + \bar{A}B + AB\bar{} + A\bar{B}\bar{}$
5. Define arithmetic circuits.
6. State MUX & DE- MUX.
7. Draw pattern of seven segment LED display.
8. Calculate the 1's complement of 01101110.
9. Define Flip Flop.
10. State level triggering.
11. Difference between Synchronous & Asynchronous
12. What are modes available in shift register?
13. Mention the types of memory.
14. Differentiate ROM & PROM
15. Expand DDR RAM.
16. How many 8K memory is needed for creating 16K memory?
17. Define microprocessor.
18. What is a POP instruction?
19. State machine cycle.
20. Define Interrupt

PART – B   (05 X 12 = 60)
Answer all Questions

21 A i) Realization of all gates using NAND gates   [8]
    ii) Convert $(88)_8$ in to hexadecimal   [4]
<div align="center">OR</div>

  B i) State the De-Morgan's theorem   [4]
    ii) Simplify the following function using K-maps $\sum$ 0, 2,4,6,8,10,12,14   [8]

22 A i) Explain the operation of Half Subtractor   [6]
    ii) Explain 3 to 8 decoder   [6]
<div align="center">OR</div>

  B i) State and explain parity checker and generator   [8]
    ii) Write short notes on signed binary numbers.   [4]

23 A i) Explain Asynchronous counter   [8]
    ii) Explain RS-FF   [4]
<div align="center">OR</div>

  B i) Explain JK-MSFF   [6]
    ii) Draw & explain 4-bit shift register PISO   [6]

24 A i) Explain bipolar RAM cell   [8]
    ii) Explain anti fuse technology   [4]
<div align="center">OR</div>

  B) Explain ROM organization   [12]

25 A) Explain the architecture of 8085 with neat diagram   [12]
<div align="center">OR</div>

  B) Draw and explain timing diagram for LDA address instruction   [12]

24043 DIGITAL ELECTRONICS
MODEL QUESTION PAPER - II
PART – A   **15 X 1 = 15**
ANSWER ANY FIFTEEN QUESTIONS- ALL question carry EQUAL marks

1. Convert $(175)_8$ in to decimal.
2. State De- Morgan's theorem.
3. Define Tristate gate
4. Draw the logic diagram for NOR gate.
5. Specify the 2's complement of 11100111 of binary number.
6. How many address lines are in 1 to 16 de multiplexer
7. Define Propagation delay.
8. What is the basic gate of CMOS logic
9. Define the term Toggling condition
10. What is Mod-N counter?
11. Define Ring counter
12. Define combinational circuit
13. What is volatile memory
14. What important component is used for fabricating bipolar RAM Cell.
15. Define dynamic Ram
16. Expand EPROM.
17. What is program counter?
18. State PSW register
19. write any four addressing modes
20. write control & status signals

PART – B   **(05 X 12 = 60)**
Answer all Questions

21 A i) Convert the decimal number 75.82 to its equivalent octal, hexadecimal &
   Binary numbers   [8]
   ii) Constructing the logic diagram for this Boolean expression is
            $\overline{A}B\overline{C}$ + $A\overline{B}\overline{C}$+$\overline{A}\overline{B}C$+$\overline{A}\overline{B}\overline{C}$+ABC   [4]
                          OR
   B i) Simplify the given logic function by using Karnaugh simulate its
       output F= ∑ (0,1,2,3,4,5,8,9,10,11,12)   [8]
   ii) Explain don't care condition   [4]

22 A i) With the logic diagram explain Full Adder   [4]
   ii) With the diagram explain TTL NAND gate and its merits & De-merits   [8]
                          OR
   B i) Explain the working operation of multiplexer with logic diagram   [6]
   ii) With the diagram explain CMOS basic gates   [6]

23 A i) Draw the logic diagram of RS-FF and explain its operation   [6]
   ii) With the logic diagram explain the operation of down counter   [6]
                          OR
   c) Explain the Johnson Counter   [8]
   d) Explain parallel IN parallel OUT shift registers   [4]

24 A i) Explain the working operation of Read/write operation   [8]
   ii) Explain flash memory   [4]
                          OR
   B i) Explain ROM organization   [8]
   ii) Difference between Static & dynamic RAM   [4]

25 A i) Classification of instruction set based on their function with example   [6]

    ii) Explain Interrupt and it's various types   [6]

<div align="center">OR</div>

  B i) Draw the Timing diagram of MOV r1,r2   [8]

    ii) Difference between memory mapped I/O and I/O mapped I/O   [4]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

LINEAR INTEGRATED CIRCUITS

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24044**
Semester : IV Semester
Subject title : **Linear Integrated Circuits**

TEACHING AND SCHEME OFEXAMINATION:

 Number of Weeks/ Semester : 16 weeks

Subject	Instruction		Examination			
	Hrs. Week	Hrs Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Linear Integrated Circuits	4	64	25	75	100	3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs)
I	**Introduction to operational amplifiers**	**10**
II	**Opamp applications**	**11**
III	**PLL & Waveform generators**	**10**
IV	**D/A and A/D Converters**	**11**
V	**Special Function ICS**	**10**
	Revision ,Test	**12**
	Total	**64**

RATIONALE:
The subject of Linear Integrated Circuits holds applications in all branches of engineering. The monolithic operational amplifier has become an important building block of linear integrated circuits and applications .This subject will impart in depth knowledge of operational amplifiers, their applications and also about various special function ICs like timer IC and regulator IC.

OBJECTIVES

To discuss above ICS and their advantages

To study basic opamp and its characteristics

To understand linear circuits using opamp

To teach linear applications of opamp

To know about PLL & its applications

To teach the theory of DAC and its types

To teach the theory of ADC and its types

To introduce special function IC – 555 timer

To study about applications of IC 555

To learn about fixed IC voltage regulators

To discuss about general purpose regulator using IC

24044 LINEAR INTEGRATED CIRCUITS

DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
1	**INTRODUCTION TO OPERATIONAL AMPLIFIERS** **Integrated circuit** - Classification of IC - Advantages of IC over discrete components –Types of IC Packages - Operational amplifier IC 741 – Schematic symbol for opamp – pin diagram of IC 741 – Block diagram of an opamp – Characteristics of an Ideal opamp - Simple Equivalent circuit of an opamp – virtual ground – opamp parameters – CMRR –Slewrate **Basic linear circuits**- Inverting Amplifier, Non Inverting amplifier – Differential Amplifier – sign changer – scale changer (simple problems)	8 2
2	**OPAMP APPLICATIONS** **Summing amplifier** - Multiplier – Divider – Voltage follower – comparator – zero crossing detector - Integrator – Differentiator – Voltage to current converter – current to voltage converter – Instrumentation amplifier **Waveform generators** – square wave, triangular wave, sine wave, saw tooth wave generators. (Qualitative treatment only)	8 3
3	**PLL & APPLICATIONS** (Qualitative treatment only) PLL – Basic principles of PLL – Basic Block schematic of PLL – Lock range – capture range - -Basic components of PLL – Phase detector, LPF –VCO Monolithic VCO 566- Pin diagram –Basic Block diagram of VCO 566. Monolithic PLL 565-Pin diagram - Functional Block diagram of PLL IC 565 Applications of PLL – frequency translation – frequency multiplication	10
4	**D/A AND A/D CONVERTERS** **D/A CONVERTERS** Digital to analog converter – Basics of D/A conversion – weighted Resistor D/A Converter – R-2R Ladder D/A Converter – Specifications of DAC-Accuracy, Resolution, Monotonocity, Settling time. **A/D CONVERTERS** Analog to digital converter – Basics of A/D conversion – sampling – Sample and hold circuit – quantization – Types of A/D converter – Block diagram of Flash, Successive approximation, Ramp, Dual Slope ADC – Specifications of ADC – Accuracy, Resolution, conversion time – Functional Block diagram of IC ADC 0808.	4 7

5	**SPECIAL FUNCTION ICs:** (qualitative treatment only) **IC 555 Timer** – pin diagram of IC 555 – Functional Block diagram of IC555 – Applications – Astable multivibrator – monostable multivibrator – Schmitt trigger (simple problems)		**5**
	IC voltage regulators – linear fixed voltage regulator - Positive voltage regulator using IC 78xx, negative voltage regulator using IC 79xx General purpose regulator using LM 723-Pin diagram of LM 723- Low voltage and High voltage regulator using LM 723.		**5**

Text Books:
1. Linear Integrated circuits – D.Roy choudhury &   Shail.B. Jain – New age International Publishers – II Edition – 2004.
2. "Integrated circuits" – K.R. Botkar – Khanna Pulbisher's – 1996

REFERENCE BOOKS:
1. Introduction to system design using IC "-B.S. Sonde – Wiley Eastern Limited – II Edition – 1992
2. "Operational Amplifiers and Linear Integrated circuits"- Ramakant .A Gayakwad – Prentice Hall – 2000.
3. Digital Integrated Electronics –Taub & Schlling – Mcgraw Hill – 1997
4. Operational amplifiers and Linear Integrated circuits by Robert F.Coughlin and Frederick F.Driscoll –PHI –publications –sixth Edition-2009.
5. Linear Integrated Circuits by Salivahanan &V.S.Kanchana Baskaran-TMH-2008

24044 LINEAR INTEGRATED CIRCUITS

MODEL QUESTION PAPER – I

TIME: 3 HOURS   MAX MARKS: 75

PART – A

ANSWER ANY 15 QUESTIONS   **15X1 =15 MARKS**

1. What is opamp?
2. Define input offset voltage
3. Define CMRR
4. What is virtual ground?
5. What is a voltage follower?
6. What is a comparator?
7. What is Instrumentation amplifier?
8. What is a summing amplifier?
9. What is PLL?
10. Define Capture range in PLL
11. State any 2 applications of PLL
12. What is IC565?
13. Define accuracy in ADC
14. What is sampling?
15. Mention types of DAC
16. How many comparators are required for a 4 bit simultaneous type ADC
17. What is a regulator?
18. Give one application of 555 IC
19. What is a Schmitt trigger?
20. What is IC 723?

PART - B   **5X12=60 MARKS**

Answer all Questions.

21A) i) Draw the block diagram of an opamp and explain.   [6]
   ii) Mention the characteristics of ideal opamp   [6]
                              (or)
   B) Explain inverting amplifier & non inverting amplifier using opamp   [12]

22 A) Explain opamp as 1) summer 2) Integrator   [12]
                              (or)
   B) With a neat diagram explain sine wave generator using opamp   [12]

23 A) With block diagram explain the operation of PLL   [12]
                              (or)
   B) Explain frequency translation & frequency multiplication using PLL   [12]

24 A) Explain the working of a dual slope ADC with a neat diagram   [12]
                              (or)
   B) Explain 4 bit weighted resistor DAC with a neat diagram   [12]

25 A) Explain Monostable multivibrator using 555 IC   [12]
                              (or)
   B) Explain positive voltage regulator & negative voltage regulator using
      IC 78xx and 79xx   [12]

24044 LINEAR INTEGRATED CIRCUITS

MODEL QUESTION PAPER – II

TIME : 3 HOURS   MAX MARKS :75

PART – A

ANSWER ANY 15 QUESTIONS   15X1=15 MARKS

1. Draw the symbol of opamp
2. Define input bias current
3. Define slew rate
4. What is a sign changer?
5. What is a zero crossing detector?
6. Give one application of comparator
7. What is an Integrator?
8. Draw the circuit of multiplier using opamp
9. What is VCO?
10. Define lock range in PLL
11. What is the advantage of monolithic PLL over discrete PLL?
12. What are the basic building blocks of PLL?
13. Define monotonocity in DAC
14. What is quantization?
15. Mention any 2 types of ADC
16. Give one advantage of ramp type ADC
17. Draw pin diagram of IC 555
18. What is 555IC?
19. What is 78XX IC?
20. Which IC is used as general purpose voltage regulator?

PART – B   5X12=60 MARKS
Answer all Questions

21 A) Explain CMRR of an opamp.   [12]

(or)

B) i) Explain differential amplifier using opamp   [6]
   ii) Explain virtual ground   [6]

22 A) Explain opamp as 1) comparator 2) zero crossing detector   [12]

(or)

B) With a neat diagram explain saw tooth wave generator using opamp   [12]

23 A) With block diagram explain the operation of VCO   [12]

(or)

B) Explain basic components of a PLL .Define lock range and capture range.   [12]

24 A) Explain the working of a successive approximation type ADC   [12]

(or)

B) Explain R – 2R ladder type DAC with a neat diagram   [12]

25 A) Explain Astable multivibrator using 555 IC   [12]

(or)

B) Explain low voltage and high voltage regulator using IC 723   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

INDUSTRIAL ELECTRONICS AND COMMUNICAITON ENGINEERING PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24045**
Semester   : IV Semester
Subject title : **INDUSTRIAL ELECTRONICS & COMMUNICATION ENGINEERING PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Industrial electronics and Communication engineering practical	6	96	25	75	100		3Hrs

MAJOR EQUIPMENTS REQUIRED

SL.NO.	Name of the Equipment	Range	Required Nos.
1.	**Regulated power supply**	**0-30V**	**5**
2.	**Dual trace CRO**	**-**	**2**
3.	**Signal Generator**	**-**	**2**
4	**PAM Kit**	**-**	**1**
5.	**PWM Kit**	**-**	**1**
6.	**PPM Kit**	**-**	**1**
7.	**PCM Kit**	**-**	**1**
8.	**PLC**	**-**	**2**

ALLOCATION OF MARKS

CIRCUIT DIAGRAM   :   20
CONNECTION   :   25
EXECUTION & HANDLING OF EQUIPMENT :   15
OUTPUT / RESULT   :   10
VIVA – VOCE   :   05

_____

TOTAL   :   75

24045 INDUSTRIAL ELECTRONICS & COMMUNICATION ENGINEERING PRACTICAL

LIST OF EXPERIMENTS:
Note

At least 10 experiments should be constructed using breadboard / soldering

INDUSTRIAL ELECTRONICS PRACITCAL

1. Phase control characteristics of SCR
2. Construct and test commutation circuits of SCR.
3. Construct a Lamp dimmer using TRIAC (in Bread Board Only)
4. Construct and test a MOSFET based PWM chopper circuit
5. Construct and test an IC based buck converter using PWM
6. Write and implement a simple ladder logic program using digital inputs and outputs for PLC
7. Write and implement a simple ladder logic program for interfacing a lift control with PLC.
8. Write and implement a simple ladder logic program for interfacing a conveyer control with PLC
9. Write and implement a simple ladder logic program using timer and counter with branching and subroutines with PLC.

COMMUNICATION ENGINEERING PRACTICAL

1. Construct & test symmetrical T & Pi attenuators
2. Construct and test constant k passive low pass filter & high pass filter
3. Construct an AM modulator and Detector circuit and trace the output waveform
4. Construct a FM modulator circuit and trace the output waveform
5. Construct and test PAM generation circuit and detection circuit.
6. Construct and test PWM generation circuit and detection circuit
7. Construct and test PPM generation circuit and detection circuit
8. Construct and test PCM transmitter and receiver circuit

Construct and test a three way crossover network.

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

INTEGRATED CIRCUITS PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

Course Name : Electronics and Communication Engineering
Subject code : **24046**
Semester   : IV Semester
Subject title : **INTEGRATED CIRCUITS PRATICAL**

TEACHING AND SCHEME OF EXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Integrated Circuits Practical	6	96	25	75	100		3Hrs

ALLOCATION OF MARKS

CIRCUIT DIAGRAM   :   20

CONNECTION   :   25

 EXECUTION & HANDLING OF EQUIPMENT   :   15

OUTPUT / RESULT   :   10

VIVA – VOCE   :   05
_____
TOTAL   :   75

24046 INTEGRATED CIRCUITS PRATICAL

List of experiments

Note
1. **At least 10 experiments should be constructed using breadboard / soldering**
2. **Different parameters should be given for EACH batch of students.**

1. Verification of truth table of OR, AND, NOT, NOR, NAND, EX-OR gates.
2. Realization of basic gates using NAND & NOR gates.
3. Realization of logic circuit for a given Boolean expression.
4. Half adder, Full adder using IC's.
5. Half subtractor, full subtractor using IC's.
6. Construction and verification of truth table for Decoder/Encoder.
7. Multiplexer/De-multiplexer using multiplexer IC's.
8. Parity generator and checker using parity checker/ generator IC's.
9. Construction and verification of truth table for RS, D, T, JK, flip-flop.
10. 4- bit ripple counter using FF
11. Construct a Single digit Decade Counter with 7 segment display.
12. Construct and test shift registers in SIPO mode using IC 74164.
13. Inverting Amplifier and Non inverting Amplifier with AC signal using OPAMP.
14. Integrator and Differentiator using Opamp
15. Summing amplifier & Differential amplifier using Opamp.
16. Astable multivibrator using IC 555.
17. Construction of simple power supply using IC 78XX.
18. DAC using R-2R network.

Sl.No	Name of the equipments	Quantity
1	IC trainer Kits	10
2	Function Generator	2
3	0-30V power supply	2
4	20MHz CRO	2

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

COMMUNICATION AND LIFE SKILLS PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)
Course Name :   DIPLOMA IN ELECTRONICS AND COMMUNICATON ENGINEERING
Subject Code :   **20002**
Semester   : **IV SEMESTER**
Subject Title   : **COMMUNICATION AND LIFE SKILLS PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No. of Weeks per Semester: 16 Weeks

Subject Title	Instructions		Examination				
	Hours/ Week	Hours/ Semester	Marks				Duration
			Internal assessment	Board Examination	Total		
COMMUNICATION AND LIFE SKILLS PRACTICAL	4 Hours	64 Hours	25	75	100		3 Hours

Topics and Allocation of Hours:

SI. No.	Section	No. of Hours
1	**Part-A:Monodic Communication**	**16**
2	**Part-B:Dyadic Communication**	**16**
3	**Part-C:Professional Communication**	**16**
4	**Part-D:Life Skills**	**16**
Total		**64**

RATIONALE

Nowadays, effective and errorfree communication is a basic need. Communication through English is the order of the day for entry and survival in any corporate. Training in Monodic communication (one man communication) Dyadic communication (a pair communication) and Professional communication (may be Monodic, Dyadic or Group communication) is attempted through these practical modules. One can improve one's communication skills by enriching one's vocabulary, particularly active vocabulary and standard everyday expressions and using them in various contexts. Practice alone, both on the campus and outside the campus, can help a learner to grow proficient in the art of Communication.

Language is the most commonly used and effective medium of self-expression in all spheres of human life - personal, social and professional. A student must have a fair knowledge of English language use and various communicative functions. He/she must be able to pursue the present course of study and handle the future jobs in industry. The objective of the course is to assist the diploma holders to acquire proficiency in monodic, dyadic and professional communication skills and selective but most important life skills. At the end of the course, the student will be able to communicate his ideas fear free and error free, in social and professional spheres of life and imbibe life skills.

SPECIFIC INSTRUCTIONAL OBJECTIVES

Communication is crucial as it influences every aspect of one's personal development. Having a sound grounding in reading and writing techniques allows a student to progress on to higher level literacy skills. Many students struggle because their basic decoding is so inaccurate that advanced comprehension is difficult for them. Because of their poor exposure and poor use of English language in various spheres of life they suffer proper communication. They also tend to be 'afraid' of words and in turn they are not able to develop their personal vocabulary. In other words, without solid literacy skills, the student's prospects and life chances are limited. It is a fact that Communication skills and Life Skills shapes one's personality.

MONODIC COMMUNICATION

The student is able to:

1. Practice using departmental words and terminology in sentences.
2. Prepare and perform oral presentations.
3. Introduce one and others.
4. Deliver welcome address and vote of thanks.
5. Compere a program.
6. Describe the visuals.
7. Take notes, answer very short questions.
8. Comprehend an auditory/oral passage.

DYADIC COMMUNICATION

The student is able to:

1. Adopt various communicative functions.
2. Prepare and perform a dialogue.
3. Adopt the basics of telephone etiquette.

PROFESSIONAL COMMUNICAITON

The student is able to:

1. Prepare a resume.
2. Take part in a group discussion.
3. Communicate through body language.
4. Adopt the interview skills with professional presence.
5. Perform mock interview.

LIFE SKILLS

The student is able to:

1. Prepare for and deal with change.
2. Adopt motivation, goal-setting and self-esteem.
3. Adopt Teamwork skills.
4. Adopt Time management.
5. Adopt Emotional intelligence skills.
6. Assert Positively.
7. Adopt Interview etiquette.
8. Plan career.
9. Understand Strength, weakness (long term, short term).

LEARNING STRUCTURE

To enable the students to practise monodic communication, dyadic communication professional communication and imbibe life skills through various modes of practical learning and assignments.

PROCEDURE	MONODIC COMMUNICATION	DYADIC COMMUNICATION	PROFESSIONAL COMMUNICATION	LIFE SKILLS
PRINCIPLES	Identifying various platforms	Exposure to dialogue situations, exposure to telephone etiquette.	Exposure to resume writing, group discussion, interviews.	Exposure to selective life skills/problem solving skills.
CONCEPTS	Sharing opinions, feeling, with or without audience.	Understanding the basic communicative functions. Conversing with a neighbour	Writing resume, performing group discussion, facing interviews.	Imbibe and practise the selective life skills.
FACTS	Oral presentation, art of introduction, enhancing the list of active vocabulary, listening skills, note taking skills, describing skills.	Audio tapes, compact disk, mikes, various contexts.	FAQ, Resume models, Audio tapes, compact disk, mikes.	Stories, anecdotes, incidences, case studies and assignments.

COMMUNICATION AND LIFE SKILLS PRACTICAL

SYLLABUS

PART A: MONODIC COMMUNICATION (16 hours/ periods)

a) **Vocabulary enrichment**: recording important words and terminology alphabetically connected to the concerned department – playing antakshari.
b) **Introducing oneself**: using greeting phrases – opening and closing with courteous notes – supplying personal information.
c) **Introducing others**: using greeting phrases – opening and closing with courteous notes – with information.
d) **Welcome address, vote of thanks and compering a program:** keeping notes – and personal information of the dignitaries – concerned.
e) **Making an Oral Presentation**: Preparing the presentation - Talking about people, animals and places – Keywords technique and the rehearsal – Presentation outline – Performing the presentation – answering the questions.
f) **Oral description**: a picture from an English magazine – a visual ad – a natural scene.
g) **Auditory/Oral comprehension** – small passage – small dialogue -very short story – note - taking skill.
h) **News Caption**: giving caption for a news item from English daily.

PART B: DYADIC COMMUNICATION: COMMUNICATIVE FUNCTIONS (16 hours/ periods)

a) **Dialogue**: preparing and performing - Meeting people, exchanging greetings and taking leave – Giving instructions and seeking clarifications – Thanking someone and responding to thanks - minimum seven exchanges including the courteous openings and closings – ten common contexts.
b) **Telephonic dialogue**: telephonic etiquette - Answering the telephone and asking for someone – Dealing with a wrong number – Taking and leaving messages – Making enquiries on the phone-ordering for supply-bookings and arrangements-handling the complaints – calling for appointment.

PART C: PROFESSIONAL COMMUNICATION (16 hours/ periods)

a) Group Discussion - Taking part in a Group Discussion – focus on team spirit.
b) Interview - Frequently asked questions in an interview – Mock interview - Body language.
c) Resume Writing – components.

PART D: LIFE SKILLS (16 hours/ periods)

a) Preparing for and dealing with change.
b) Motivation, goal-setting and self-esteem.
c) Teamwork skills.
d) Time management
e) Emotional intelligence skills
f) Career planning.
g) Assertive Skills.
h) Interview skills.

References :-

1) Malcolm Goodale, Professional Presentations with VCD, Cambridge University Press
2) B.Jean Naterop and Rod Revell, Telephoning in English with 2 Audio CDs Cambridge University Press
3) Priyadarshi Patnaik, Group Discussion and Interview Skills with VCD, Cambridge University Press
4) Kamalesh Sadanand and Susheela Punitha, Spoken English: A Foundation Course for Speakers of Tamil, Orient BlackSwan.
5) S. P. Dhanavel, English and Soft Skills, Orient BlackSwan
6) Robert Sherfield and et al, Developing Soft Skills, Pearson Education.
7) Poly Skills: A course in communication skills and Life skills, Cambridge University Press.
8) English and Communication Skills for Students of science and Engineering by S.P.Dhanavel , Orient BlackSwan.
9) Speak Well, edited by Kandula Nirupa Rani, Jayashree and Indira,OrientBlackSwan.
10) Fifty ways to improve your telephoning and teleconferencing Skills by Ken Taylor -

COMMUNICATION AND LIFE SKILLS PRACTICAL

Model Question Paper - I

Time: 3 hrs   Max Marks: 75

PART –A (35 Marks)

Monodic Communication:

1. Introduce one self   (5)
2. Use the mentioned words orally in sentence   (2x2 ½ =5)
3. Prepare and present a welcome address for your college annual day programme. (5)
4. Listen to the passage read out from the English daily of the week of the examination.

   Please note: No prerecorded passage   (10)
5. Write a news caption for the passage given from the English daily.   (5)
6. a) Describe orally the visual or the picture found in the English daily of the week of the examination.   (5)

   (Or)

   b) Make an oral presentation about an animal.

PART – B (15 Marks)

Dyadic Communication:

1. Play antakshari of five pairs of departmental words with your partner.   (5)
2. Prepare and perform a dialogue with your partner on the given situation   (10)

   (minimum seven exchanges)

   Or

   Prepare and perform a telephonic dialogue on a flight booking.
   (minimum seven exchanges)

PART-C (25 Marks)

Professional Communication:

1. Form a group of six members and perform a discussion on the given theme.   (10)

   2.Imagine you are V.Gokulraj ,a diploma holder. Prepare a resume for the post of supervisor in Oberoi computers Ltd.Chennai.
   (10)

   Professional appearance: Interview etiquette-dress code- Body language   (5)

COMMUNICATION AND LIFE SKILLS PRACTICAL

Model Question Paper - II

Time: 3 hrs   Max Marks: 75

PART –A (35 Marks)

Monodic Communication:

1. Introduce your friend S.Mohan an a excutive engineer to a group of audience.   (5)

2. Use the mentioned words in sentence orally.   (2x2 ½ =5)

3. Prepare and present a Vote of thanks in your college sports day programme.   (5)

4. Listen to the passage read out from the English daily of the week of the examination.

    Please note: No prerecorded passage   (10)

5. Write a news caption for the passage given from the English daily.   (5)

6. a) Describe the visual or the picture found in the English daily of the week of the conduct
   of the examination.   (5)

(Or)

   b) Make an oral presentation about your polytechnic college.

PART – B (15 Marks)

Dyadic Communication:

1. Play antakshari of five pairs of your departmental words with your partner.   (5)

2. Prepare and perform a dialogue with your partner on the given situation   (10)

(minimum seven exchanges)

(Or)

Prepare and perform a telephonic dialogue on ordering the supply of a computer

(minimum seven exchanges)

PART-C (25 Marks)

Professional Communication:

1. Form a group of six members and perform a discussion on the given theme.   (10)

2. Imagine you are M.Kishore a diploma holder. Prepare a resume for the post of operating

   engineer in REC Electricals Ltd.Madurai.   (10)

   Professional appearance: Interview etiquette-dress code- Body language   (5)

NOTES OF GUIDANCE

Role of the media:

To equip a learner with vocabulary, particularly active vocabulary and standard everyday expressions, using English dailies and watching selective English T.V. channels both in the classroom and outside the classroom is focused. Such a provision is recommended for the students to establish familiarity with the English dailies and selective English T.V. channels.

Minimum two copies of two English dailies in the laboratory room (students can bring their own copies also).Minimum two systems with net connection for information collection in the laboratory itself.

Synopsis of the news item:

During every lab work day, students must choose a news item from the English daily or weekly or monthly, and write a synopsis of the chosen news item, in not more than five lines. The news item should be pasted on the left page and synopsis on the right page (the chosen news item should not be politically, socially or communally controversial). Students should exercise care in choosing the news items. Teachers have to advise them on this aspect. This can be done outside the class hours also but every record exercise should begin with the synopsis of news item of the date of the lab session.

For example, first lab exercise namely departmental vocabulary and antakshari is performed on 15/12/2011. The student should choose a news item from any English daily of 15/10/2011 and record the synopsis on the **right** page (in not more than 5 lines) under the caption **Synopsis of the news item of the day/date 15/10/2011.**There is no harm in repeating or copying the lines form the passage. The essence of the passage should be there. The cutout news item for presenting the synopsis should be pasted on the left page of the record notebook.

This is to be done with interest for developing one's personality. This work **does not carry any marks** but without which the record exercise should not be valued. This is the precondition for valuing the record exercise. Each record exercise follows the synopsis of the chosen news item.

At the bottom of the synopsis, the student should record the **dictionary meaning** of atleast **one strange word** found in the chosen news item. At the end of every month, a minimum of 10 Headlines of 10 different days i.e. one Headline a day from anyone English daily should be pasted on the right or left page of the Record Note Book. (This work does not carry marks but this is the precondition for marking the record exercises)

External examiner**,** before signing the record notebook, should verify whether the Newspaper works were recorded/ pasted in the record notebook.

Verbal communication in any language begins with sounds in isolation, union and word formation. Learning everyday words and expressions is the primary factor. Grammar comes next. One can enrich one's every day vocabulary by reading English magazines and listening to

or watching an English channel on television. So an English laboratory should be equipped with a minimum of two copies of two English dailies and English weeklies or monthlies.

Watching English channels helps the students improve their vocabulary and expressions. If there is a provision, students may be permitted to watch selective, mind corruption free English channels (sports, education, news, animal channels and so on) for at least 15 min. during the English lab sessions. This will serve as motivation for the students and help them shed their inhibition.

What is antakshari? (Polar word game)

This game can be played on the stage by two or three students using the departmental words. Suppose Mr. A belongs to Dept.of Electrical and Electronics and he says his departmental word ' **ampere** 'Mr. B has to supply a word beginning with the ending letter of Mr. A's word. The word **ampere** ends with the letter ' **e**' so Mr. B says ' **electrical** '.Mr. A has to continue with the letter ' **l** '. Like that five pairs of words are to be spoken.(**Letter ending only, not sound ending.)** Suppose departmental words are not available in some English letters like

' x ' ' y ' ' z ' the students may be permitted to use common words.

ANTAKASHARI (Five Exchanges)

(Dept. of Mechanical Engineering.)

EXAMPLE:

Mr. A	Mr. B
1. Governo**r**	**R**eservoi**r**
2. **R**ac**k**	**K**elvi**n**
3. Nu**t**	**T**oo**l**
4. **L**athe	**E**missio**n**
5. Naphth**a**	**A**nvil

Introducing oneself:

One is not expected to introduce one's family. One or two sentences on his family will do. Care must be taken to include general proficiency, titles and merits, awards possessing or secured in academic activities like paper presentation, participation in inter polytechnic or intra polytechnic competitions, sports activity, forums like NCC,NSS, hobby, ambition, strengths and weaknesses.

Introducing others – merits – credentials—one or two points on his family.

Vote of thanks / Welcome address.No doubt it should be all-covering but Focus should be on the important persons/invitees/chief guest and the message of the speaker.

Description (pictures from English weekly/daily) Pictures may be displayed through projector or Magazine cuttings may be used. Just five lines on the picture will do.

Auditory/oral comprehension: A Passage from any English daily of the week of the examination is to be read out for two to three minutes in the end examination. Display of recorded passages can be used as an addition in the class room. The use of pre-recorded passage discouraged in the end examination.

Oral presentation: Students must be encouraged to use English magazines and internet for collecting information on the topic, noting keywords and use them in their presentation in his own language. One must be able to talk extempore for 2 min on any topic, given a time of two minutes for organizing his/her thoughts. The topics can be kept simple and general (current events of interest like sporting event for headline of the day). It must be totally an oral activity without the aid of any other media.

News Caption: A news item, without heading, of not more than ten lines from an English daily of the week of the conduct of Examination is to be given. The caption may be a passive construction or a catchy phrase on the given news item.

Face to face dialogue: Selective nine situations / topics are to be performed in the class room. (Minimum seven exchanges with courteous openings and closings).

Telephonic dialogue: Selective seven situations to be given. (Minimum seven exchanges).

Resume writing: cover letter—the components of a resume like sender's address, recipient's address, career objective to be explained.

Group Discussion: Topics of common interest, avoiding controversial ones, are to be given for discussion. A group may consist of six members.

Students should be exposed to 44 phonemes (sounds) in English language and their symbols.

There shall be no question on this end examination.

COMMUNICATION SKILLS EXERCISES:-

1. Departmental Vocabulary alphabetically (using it in sentence, antakshari).Using the words orally in sentences
2. Introducing oneself and others
3. Vote of thanks / Welcome address
4. Description (pictures from English weekly/daily)
5. Auditory/oral comprehension
6. Oral presentation
7. Face to face dialogue
8. Telephonic dialogue
9. Resume writing
10. Group Discussion

Communication Skills:

Ten Marks for each exercise leading to a maximum of hundred marks in total.

The total marks to be reduced to an average of ten marks.

Texts of the performed activities to be recorded in the Record Note book. Synopsis of the news item of the day/date is mandatory at the beginning of every record exercise.

Life Skills:

i) Preparing for and dealing with change.
j) Motivation, goal-setting and self-esteem.
k) Teamwork skills.
l) Time management
m) Emotional intelligence skills
n) Career planning.
o) Assertive Skills.
p) Interview skills.

Life skills are to be intensely inculcated through lectures, quotes, anecdotes and case studies. An excellent awareness of the eight essential life skills is to be created through continuous internal assessment. Five assignments in these topics are to be recorded in the record note book.

➢ A minimum of five assignments on five different topics.
➢ Each assignment to be assessed for twenty marks.
➢ The total marks to be reduced to an average of ten marks.
➢ All the topics to be covered in the lab.

TIME MANAGEMENT IN THE END EXAM.

For written part 30 min

- Written part of the examination should be the first / beginning of the examination, monadic oral exam to start during the written exam.
  Written Part exercises:

- auditory / oral comprehension.
- Resume writing.
- Giving news caption for the passage.
- During the written examination time of 30 minutes, monodic communication examination may also take place simultaneously.

MONODIC COMMUNICATION (ONE MAN COMMUNICATION)

Oral part – 75 min.

Both internal and external examiners (simultaneously) are to examine the students.

Five minutes for each student. 15 students for external & 15 students for internal and within 75 minutes both internal and external examiners complete the monadic communication exam.

DYADIC COMMUNICATION (ONE PAIR COMMUNICATION)

- 5 min for each pair.
- 15 pairs in total. 8 pairs for external and 7 pairs for internal examiner. (8x5=40 min) within **40 min** both internal and external examiners completes the dyadic communication exam.
- The students examined by the external for monadic exam are to be examined by the internal for dyadic and vice versa.

PROFESSIONAL COMMUNICATION

- 30 min for group discussion.
- 6 members in each group.
- 5 min for discussion for each group.
- Both internal and external examiners to supervise / examine simultaneously one group each.
- Within fifteen minutes all the six groups to be examined.

LABORATORY REQUIREMENT

1. An echo-free room for housing a minimum of sixty students.
2. Necessary furniture and comfortable chairs
3. Public Address System.
4. A minimum of two Computers with internet access, with Audio for Listening Skill and related software packages.
5. A minimum of Two different English dailies.
6. A minimum of one standard Tamil daily.
7. Headphone units – 30 Nos. with one control unit with a facility to play and record in Computer.
8. A minimum of Three Mikes with and without cords.
9. Colour Television (minimum size – 29").
10. DVD/VCD Player with Home Theatre speakers.
11. Clip Chart, white board, smart board.
12. Projector.
13. Video camera.
14. Printer, Xerox, scanner machines **desirable.**
15. English Weeklies/monthlies/journals like ELTOI **desirable.**
16. Frozen thoughts –monthly journal for Life skills by Mr.Rangarajan / www.frozenthoughts.com

Mark Pattern

End Examination –   **75 Marks**

Monodic Communication –   35 Marks

Dyadic Communication –   15 Marks

Profession Communication – 20 Marks

Professional Appearance –   5 Marks

Internal Assessment   **25 Marks**

Communication skills Record Notebook   10 Marks

Life skills assignments   10 Marks

Attendance   5 Marks

COMMUNICATION AND LIFE SKILLS PRACTICAL

Allocation & Statement of Marks

Duration: 3Hrs.

Name of the Candidate   Reg. No.

A. Monodic communication : 35 Marks

Introduction (5 mks)	Use in sentence (5 mks)	Vote of thanks / welcome address (5 mks)	Auditory/Oral comprehension (10 mks)	Description/ Oral presentation (5 mks)	News caption (5 mks)	Total (35 mks)

B. Dyadic communication: 15 Marks

Antakshari (5 mks)	Dialogue (10 mks)	Total (15 mks)

C. Professional communication: 20 Marks

Group Discussion (10 mks)	Resume (10 mks)	Total (20 mks)

D. Internal Assessment: 25 Marks

Record Notebook Commn.skills (10 mks)	Assignments Life Skills (10 mks)	Attendance (5 mks)	Total (25 mks)

E. Professional Appearance: /5 Marks

Total :   **/100 Marks**

Internal examiner   **External examiner**

FACE TO FACE DIALOGUE TOPICS

1. Between Friends (On any acceptable topic).

2. Between a conductor and a passenger.

3. Between a doctor and a patient.

4. Between a Shopkeeper and a Buyer.

5. Between a Teacher and a Student.

6. Between a tourist and a guide.

7. In a Bank.

8 At a railway enquiry counter.

9. Lodging a complaint.

Note: A resourceful teacher may add a few more topics of common interest.

TELEPHONIC DIALOGUE TOPICS

1. Placing an order.

2. Making Enquiries.

3. Fixing appointments

4. Making a hotel reservation.

5. Dealing with a wrong number.

6. Travel arrangements.

7. Handling complaints.

MECHANICAL DEPARTMENTAL VOCABULARY FOR ANTAKASHARI AND USING IN SENTENCES

EXAMPLE:

A:

1. Anvil – made of cast Iron used in foundry shop.
2. Axle – A metal rod that connects two wheels.
3. Alloy – alloy is a mixture of two or more metals.
4. Addendum – distance between top of gear teeth and pitch circle.
5. Annealing – It is a heat treatment process for softening the metals.

B:

1. Bearing – it is which supports the shaft.
2. Bolt – it is a type of fastener. Combined with screw.
3. Brake – it is used to halt an auto mobile vehicle.
4. Beed – steel wiring used in tyres to withstand stress.
5. Baffles – it is used to reduce noise, filter dust particles in auto mobile.

C:

1. Cam – it is a lobe like structure, which actuates the valve.
2. Crown – the slope like structure in the piston.
3. Calipers' – they are measuring instruments.
4. Clutch – it is used to disengage and engage the fly wheel and main shaft.
5. Chamber – it is the distance between vertical line and tyre center line.

D:

1. Damper – it is a type of shock absorber, reduces the vibration.
2. Differential – it controls the speed of rotating wheel in the rear axis.
3. Diaphram – it is used to separate two layers.
4. Detonation – it is the continuous knocking with serious effect on cylinder head.

E:

1. Evaporator – it absorbs heat to vapourise liquid into air
2. Engine-the place where fuel is burnt and heat energy is converted. mechanical energy
3. Electrolyte-it is a liquid substance which is used to transfer current or any metal particle.
4. Emission-the release of burnt gas from automobile.
5. Elongation-the increase of dimension due to application of load.

F:

1. Filter-which is used to remove dust particles.
2. Friction-the resistance on wear occur due to rubbing of two metals.
3. Fly wheel-the wheel like structure used to balance the uneven weight in engine.
4. Fuel – it is a substance that burns with oxygen in the air.
5. Factor of safety - it is the safety limit after which the material will break down.

G:

1. Governor – it is used to control the flow of fuel according to load.
2. Gear – it is used to transmit power from one place to another.
3. Generator – it is used to generate power.
4. Gasket – it prevents the leakage and to provide sealing effect.
5. Goggle – the protective device used to guard the eyes.

H:

1. Hub – it is the center part of wheel.
2. Hammer – it is used to beat sheet metals.
3. Hydraulics – it deals with fluid for various function.
4. Hatching – it is used to highlight the parts in drawings.
5. Head stock – it is the main function unit of lathe.

I:

1. Ignition – it is the function by which fuel is burnt.
2. Injection – it is the process of spraying fuel into engine block.
3. Impeller – it is which converts kinetic energy into pressure energy.
4. Inventory – it is the place where raw materials are stored.
5. Idling – it is the condition at which the automobile engine at stationary state.

J:

1. Jig – it guides the tool and hold the job.
2. Jaw – it is teeth like structure used to hold work pieces.
3. Jog mode – Jog mode is used to give manual feed for each axis continuously.
4. Junk – it is known as waste material in industry.
5. Journal – It is a type of bearing.

K:

1. Keyway – it is a specific path made in shaft to joint parts.
2. Knocking – the sound produced due to Burning of uncompleted burnt fuel.
3. Kelvin – it is the degree of hotness.
4. Knurling – it is the process of lathe done to work piece to improve the gripness.
5. Knuckle joint – It is a type of joint used to connect two work pieces.

L:

1. Lubrication – process of reducing heat by applying cooling substances.
2. Layering – it is used to draw parts of a machine separately and combine together.
3. Lever – it is a supported arm used to engage gears.
4. Lathe – it is the father of machines used in turning operations.
5. Lead screw - it is the screw through which the carriage travels.

M:

1. Manometer – it is used to measure the pressure of fluids.
2. Milling – process of removing metal from work piece by rotating cutting tool.
3. Manifold – it is a passage made for flow of fuel in automobile.
4. Moulding – it is the process of passing hot liquid metal into mould made through sand.
5. Module – it is a metric standard used to identify or specify pitch.

N:

1. Nozzle – it is used to reduce the pressure and increases the velocity.
2. Nut – it is a type of fastener used to couple with screw.
3. Nomenclature – Dimensional property of specific part on component is notified by nomenclature.
4. Neck – Distance between drills body and shank.
5. Naphtha – kind of inflammable oil.

O:

1. Orthography – it is the three dimensional view of an object.
2. Ovality – Elliptical shape of piston.
3. Over haul – it is the complete checking and servicing of a machine or vehicle.
4. Optimum temperature – suitable temperature condition for certain process on working.
5. Offset – it is by which the axis of certain job is defined.

P:

1. Pinion – a small gear is called pinion.
2. Pulley – A cylindrical object used to connect belt for transmitting power.
3. Pump – it is which transfers fluid from one place to another.
4. Piston – it is which transfer power from combustion chamber to connecting rod.
5. Port – it is the opening in two stroke engine for movement of fuel and exhaust.

Q:

1. Quilt – it is used to give automatic feed in machines.
2. Quality control – it is an inspection processl.

R:

1. Reaming – it is the operation used to finish inner surface of a hole.
2. Reservoir – it is used to store fuel or any liquid.
3. Rack – it is a spur gear with infinite radius.
4. Retainer – it is used to bring back to the original position.
5. Radiator – it is the part used in automobile for cooling water.

S:

1. Shackle – it is a rod connected to leaf spring.
2. Spring – it is a circular rod which compresses on load and retracts when released.
3. Strainer – it is used to remove micro particles.
4. Shock absorber - it is used to reduce vibration and give cushioning effect.
5. Suspension- it is used to absorb shocks and give cushioning effect.

T:

1. Tail stock – it is used in lathe to support the job.
2. Tool – it is a metal.removal device.
3. Torque – it is the twisting load given on a work piece.
4. Trimming – it s the process of removing excess metal .
5. Turning – it is a metal cutting process used to reduce diameter.

U:

1. Universal joint-it is used to connect propeller shaft and differential unit.
2. Universal divider head- it is used to index various components.

V:

1. Valve – valve is the part used in automobile for flow of fuel and exhaust to cylinder head.
2. Vent hole – it is the hole made in casting for ventilation purpose.
3. Vulcanizing – it is the process of adding carbon to rubber.
4. Vibration – it is caused due to the movement in an uneven surface.
5. Velocity-rate of change of displacement.

W:

1. Wheel-it is a circular object which rotates and moves the vehicle.
2. Wiper-it is used in wind shield to remove water droplets.
3. Work piece-it is the material in which various processes are done to make a component.
4. Wage-it is the amount paid to a worker for his work.
5. Washer-washer is a component used in fasteners to reduce gap.

Y:

1. Yawing-the turning of wind mill towards direction of air is called yawing.
2. Yoke-it is which holds the other end of spindle in milling machine.
3. Yield stress-It is the stress above which it will attain the breaking stress.
4. Young's modulus-it is the ratio between stress and strain.

Pl.note: Suppose departmental words are not available in some English letters like

' x ' ' y ' ' z ' the students may be permitted to use common words. This is only an example. Another student of Mechanical Engineering can have different sets of words under each letter of the English alphabet.Like that there may be variety of sets. The most important point is that One is not supposed to murmur but speak the words intelligibly in an audible manner. Swallowing the words will deprive a student of winning a selection in an interview. In the same way, students of other Departments can have different sets of words of their departments under each letter of the English alphabet.

TELEPHONE LANGUAGE AND PHRASES IN ENGLISH

Answering the phone

" Good morning/afternoon/evening, Madras Enterprises, Premila speaking.”

" Who's calling, please?”

Introducing yourself

" This is Raghavan speaking.”

" Hello, this is Raghavan from Speak International.”

Asking for someone

" Could I speak to Mr. Raman, please?”

" I'd like to speak to Mr Raman, please.”

" Could you put me through to Mr Raman, please?”

" Could I speak to someone who …”

Explaining

" I'm afraid Mr. Raman isn't in at the moment”.

" I'm sorry, he's in a meeting at the moment.”

" I'm afraid he's on another line at the moment.”

" Putting someone on hold”

" Just a moment, please.”

" Could you hold the line, please?”

" Hold the line, please.”

Problems

" I'm sorry, I don't understand. Could you repeat that, please?”

" I'm sorry, I can't hear you very well. Could you speak up a little, please?”

" I'm afraid you've got the wrong number.”

" I've tried to get through several times but it's always engaged.”

" Could you spell that, please?”

Putting someone through

" One moment, please. I'll see if Mr Raman is available.”

" I'll put you through.”

" I'll connect you."

" I'm connecting you now".

Taking a message

" Can I take a message?"

" Would you like to leave a message?"

" Can I give him/her a message?"

" I'll tell Mr. Raman that you called"

" I'll ask him/her to call you as soon as possible."

" Could you please leave your number? I shall ask him to get back to you."

Pl.note: The above ones are samples only. A resourceful teacher may add more.

DAY-TO-DAY EXPRESSIONS (For dialogues)

COMMON PARLANCE
How are you?
Fine. Thank you.
How are you?
Me too.
How do you do?
How do you do?
It's good to see you again.
Glad to meet you.
Thank you.
Thanks very much.
Welcome.

Hello! How is everything?
Just fine. Thanks. What's new?
Nothing much.

I'm pleased to meet you.
The pleasure is mine.
I've heard Paul speak about you often.
Only good things! I hope.

Look who's here!

Are you surprised to see me?
Sure. I thought you were in Chennai.
I was, but I got back yesterday.

Sorry, May I help you?
So kind of you.
That's so nice of you.
Nice talking to you.
Nice meeting you.
It's getting late, and I've to go now.
Certainly. Come back soon.
In that case, I'll be seeing you.
Fine.
Thank you.
Welcome
So long. See you later.
Take care. Bye.
Good-bye.

Could you tell me the time, please?
Certainly. It is 5.35 p.m.
My watch says 5.40 p.m.
Then your watch is five minutes fast.

Excuse me. Can you tell me the way to …?
May I come in?
How is the weather today?
It is pleasant. / sunny / rainy / warm /windy.

I am sorry, Can you repeat what you have said.
I am sorry, I can't hear you properly.
It is not audible. Can you please repeat it?
Beg your pardon; I don't get your words clearly.
How do you feel now?
Are you ok?
I am fine. And how about you?
I am fine. Thank you.

GROUP DISCUSSION

Let me begin with introducing this concept,
Well, this is to convey that
At the outset, I am here to convey
At this juncture, I would like to
May I intervene?

May I add?
Kindly permit me to say
If you could allow me to say
Let me add a few words
Let me first answer your question
Can you please allow me to convey
Excuse me; I would like to add further

On behalf of my colleagues,
On their behalf
Firstly/ secondly/ thirdly.
Finally/ conclusively/ at the end / Summing up
Eventually/ in the event of
In spite of / otherwise/ although/ though

Please Note:

- The above ones are samples only.
- A resourceful teacher may add more.
- A potential student may exhibit variety.

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

ADAVANCED COMMUNICATION SYSTEMS

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name: Electronics and Communication Engineering
Subject code : **24051**
Semester   : V Semester
Subject title   : Advanced Communication Systems

TEACHING AND SCHEME OFEXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination			
	Hrs. Week	Hrs Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Advanced communication Systems	5	80	25	75	100	3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs)
I	Radar, Navigational Aids, Telephony and fax	14
II	Digital Communication	13
III	Optical Communication	14
IV	Satellite & Microwave Communication	14
V	Mobile Communication	13
	Revision, Test	12
	Total	80

RATIONALE

   The introduction of this subject will enable the students to learn about the advancement in communication systems .It will give exposure to the various modes of communication viz .RADAR, Telephony, Fax, Digital communication, Fiber optics communication, Satellite communication, Microwave communication and Mobile communication.

Objectives

- To understand principles of Radar
- To understand principles of navigational aids
- To study Electronic Exchange and principles of facsimile communication
- To study basic digital communication system and discuss the characteristics of data transmission circuits.
- To learn Error detection and correction codes and various digital modulation techniques.
- To understand optical communication system and discuss about fiber modes, configurations, losses.
- To learn optical sources, optical detectors.
- To discuss the applications of fiber optic communication
- To Study satellite system, orbits, Antennas
- To study about satellite services
- To understand fundamentals of Microwave communication
- To study fundamental cellular concepts such as frequency reuse, handoff
- To learn multiple access techniques.
- To learn digital cellular system - GSM

24051 ADVANCED COMMUNICATION SYSTEMS
DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
I	**RADAR and Navigational aids:** Basic Radar System– Applications – Radar range equation (qualitative treatment only) – factors influencing maximum range – Basic Pulsed Radar System – Block Diagram – Display Methods- A -Scope, PPI Display - Automatic target detection. Radio aids to navigation – Direction finding using Radio compass – Instrument landing system – Ground controlled approach system.	6
	Telephony and fax: Telephone system – Public Switched Telephone Network (PSTN) - Electronic Switching System - Block diagram – ISDN – Architecture, Features - Video phone – Block diagram	4
	Facsimile communication system – facsimile sender-cylindrical scanning – Facsimile receiver- synchronization – phasing - Index of cooperation (IOC) - Direct recording.	4
II	**Digital communication:** Basic Elements of digital communication system - block diagram - characteristics of data transmission circuits -Bandwidth requirement – speed - Baud rate- Noise- crosstalk- Distortion – Equalizers – Echo compressors	5
	Digital codes – ASCII Code – EBCDIC Code - Error detection codes – Parity check codes – Redundant codes - Error correction codes – Retransmission- forward error correcting code – Hamming code. Digital modulation techniques – ASK, FSK, PSK, QPSK modulation/demodulation techniques (only block diagram and operation).	8
III	**Optical communication:** Optical communication system – Block diagram – advantages of optical fiber Communication systems – principles of light transmission in a fiber using Ray Theory – Single mode fibers, multimode fibers – step index fibers, graded index fibers (basic concepts only) – Attenuation in optical fibers – Absorption losses, scattering losses, bending losses, core and cladding losses Optical sources – LED - semiconductor LASER – Principles – optical detectors – PIN and APD diodes - Connectors - Splices – Couplers – optical transmitter – Block diagram – optical receiver - Block diagram - Application of optical fibers – Networking, Industry and Military applications	14

IV	**Satellite Communication & Microwave communication:** Satellite system – Kepler's I,II,II laws – orbits – types- Geostationary synchronous satellites- Advantages – Apogee -Perigee- Active and passive satellite—Earth eclipse of satellite - Parabolic reflector antenna – cassegrain antenna Space segment- power supply- Attitude control- station keeping – Transponders – TT and C subsystem – Thermal control – Antenna subsystem Earth segment—Block diagram of Transmit receive earth station. Satellite mobile services - Basics of GPS	10	
	Microwave communication – microwave frequency ranges - microwave devices – Parametric amplifiers –Travelling wave tubes – simple block diagram of microwave transmitter, receiver and microwave link repeater	4	
V	**Mobile Communication**: (Qualitative Treatment only) **Cellular telephone**– fundamental concepts – Simplified Cellular telephone system - frequency reuse – Interference – Co - Channel Interference – Adjacent Channel Interference – Improving coverage and capacity in cellular systems - cell splitting – sectoring - Roaming and Handoff.	9	
	Satellite multiple access techniques – TDMA, FDMA, CDMA. Digital cellular system – Global system for mobile communications (GSM) –GSM services - GSM System Architecture – Basics of GPRS.	4	

Reference Books

1. Electronic communication systems - Kennedy - Davis -Fourth Edition - Tata McGraw Hill - 1999.

2. Electronics communication - Dennis Roddy and John coolen - Third Edition - PHI - 1988

3. Optical fiber communication - Gerd Keiser - Third Edition - McGraw Hill - 2000

4. Satellite communication - Dr. D.C. Agarwal - Third Edition - Khanna publishers - 1995

5 Electronic Communications systems - Fundamentals through Advanced - Wayne Tomasi - Fifth Edition - Pearson Education – 2005

24051 ADVANCED COMMUNICATION SYSTEMS
MODEL QUESTION PAPER - I

TIME : 3 HOURS   MAX MARKS :75
PART – A
ANSWER ANY   15 QUESTIONS   **15X1 =15 MARKS**

1. What is RADAR?
2. What is ILS?
3. What is ISDN?
4. Define IOC
5. What is Baud rate?
6. What is FSK?
7 What is cross talk?
8. What is ASCII Code?
9. What is a fiber?
10. Give example for optical source
11. State any 2 losses in fiber
12. Mention one advantage of optical fiber
13. Name different types of orbit
14. What is GPS?
15. Give example for a microwave device
16. What is TWT?
17. What is interference in mobile communication?
18. What is roaming?
19. What is TDMA?
20. What is GSM?

PART - B
ANSWER ALL QUESTIONS   **5X12=60 MARKS**

21 A) Explain briefly ISDN architecture   [12]
(or)
B) Explain cylindrical scanning method in facsimile communication   [12]

22 A) Draw the fundamental block diagram of digital communication system and
explain. State the advantages of digital communication   [12]
(or)
B) With a neat diagram explain FSK modulation & demodulation   [12]

23 A) Explain the various losses in optical fiber   [12]
(or)
B) Explain optical transmitter with a neat diagram   [12]

24 A) Explain transmit receive earth station   [12]
(or)
B) Explain microwave link repeater with block diagram.   [12]

25 A) Explain briefly simplified cellular telephone system   [12]
(or)
B) Explain CDMA   [12]

24051 ADVANCED COMMUNICATION SYSTEMS
MODEL QUESTION PAPER - II

TIME: 3 HOURS   **MAX MARKS: 75**

PART – A

ANSWER ANY 15 QUESTIONS   **15X1=15 MARKS**

1. What is pulsed RADAR?
2. What is a radio compass?
3. What is GCA?
4. What is video phone?
5. Expand EBCDIC
6. What is FSK?
7. Define parity
8. What is distortion?
9. Expand LASER
10. Mention different types of fiber
11. Give one application of optical fiber
12. Give an example for optical detector.
13. What is a passive satellite?
14. State Kepler's I law
15. What is apogee & perigee?
16. What is a parametric amplifier?
17. What is CDMA?
18. What is frequency reuse?
19. What is handoff?
20. Mention one service of GSM

PART -- B

ANSWER ALL QUESTIONS   **5X12=60 MARKS**

21 A) Explain the block diagram of a pulsed radar system   [12]
                                   .(or)
   B) Explain video phone with a neat block diagram   [12]

22 A) Explain the characteristics of data communication circuits   [12]
                                    (or)
   B) Explain PSK modulation & demodulation with block diagram   [12]

23 A) Explain ray theory in optical fibers   [12]
                                    (or)
   B) Explain with block diagram the working of optical receiver   [12]

24 A) Write notes on 1) station keeping 2) Earth eclipse of satellite   [12]
                                    (or)
   B) Explain with block diagram the working of microwave transmitter.   [12]

25 A) Explain briefly cell splitting and sectoring   [12]
                                    (or)
   B) Explain GSM system architecture   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

MICROCONTROLLER

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24052**
Semester   : V Semester
Subject title   : MICROCONTROLLER

TEACHING AND SCHEME OFEXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Microcontroller	5	80	25	75	100		3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs.)
I	Architecture & Instruction set of 8051	16
II	Programming Examples	12
III	I/O and Timer	14
IV	Interrupt and Serial Communication	14
V	Interfacing Techniques.	16
	Revision - Test	8
	TOTAL	80

RATIONALE:

The exponential growth of Engineering and Technology has benefited the mankind with extreme sophistication and comfort. To sustain this development, continuous research and development should take place not only in Engineering and Technology but also in Basic Science such as Physics.

The various divisions of Physics like Optics, Acoustics, Dynamics, Semiconductor Physics, Surface Physics, Nuclear Physics, Energy Studies, Materials Science, etc provide the Foundation by enlightening the **Fundamental facts, Principles, Laws and Correct sequence of events** to develop the Engineering and Technology field for the prosperity of human beings.

OBJECTIVES:

- On completion of the following units of syllabus contents, the students must be able to
- Explain Architecture of 8051 Microcontroller.
- Explain the functions of various registers.
- Understand interrupt structure of 8051.
- Understand serial data communication concepts.
- Understand the programming techniques.
- Explain various addressing modes.
- Write simple programs using 8051.
- Understand the block diagram and control word formats for peripheral devices.
- Understand how to interface with RS232C.
- Understand how to interface with 8255.
- Understand various application of 8051 Microcontroller

24052 MICROCONTROLLER
DETAILED SYLLABUS

Unit	Name of the Topic	Hours
I	**ARCHITECTURE & INSTRUCTION SET OF 8051** **1.1 ARCHITECTURE OF 8051** Comparison of Microprocessor and Microcontroller - Block diagram of Microcontroller –Functions of each block - Pin details of 8051 – ALU –ROM – RAM – Memory Organization of 8051 - Special function registers – Program Counter – PSW register –Stack - I/O Ports – Timer – Interrupt – Serial Port – Oscillator and Clock - Clock Cycle – State - Machine Cycle – Instruction cycle – Reset – Power on Reset – Overview of 8051 family	11 Hrs
	1.2 INSTRUCTION SET OF 8051 Instruction set of 8051 – Classification of 8051 Instructions - Data transfer instructions – Arithmetic Instructions – Logical instructions –Branching instructions – Bit Manipulation Instructions	5 Hrs
II	**PROGRAMMING EXAMPLES** **2.1 ASSEMBLER AND ADDRESSING MODES** Assembling and running an 8051 program –Structure of Assembly Language –Assembler directives - Different addressing modes of 8051	4 Hrs
	2.2 PROGRAMMES Multibyte Addition – 8 Bit Multiplication and Division – Biggest Number / Smallest Number – Ascending order / Descending order – BCD to HEX Conversion – HEX to BCD Conversion – BCD to ASCII Conversion – ASCII to Binary Conversion – Odd Parity Generator – Even Parity Generator - Time delay routines	8 Hrs

Unit	Name of the Topic	Hours
III	**I/O AND TIMER** **3.1 I/O** Bit addresses for I/O and RAM – I/O programming – I/O bit manipulation programming.	4 Hrs
	3.2 TIMER Programming 8051 Timers – Timer 0 and Timer 1 registers – Different modes of Timer – Mode 0 Programming – Mode 1 Programming - Mode 2 Programming - Mode 3 Programming - Counter programming – Different modes of Counter – Mode 0 Programming – Mode 1 Programming - Mode 2 Programming - Mode 3 Programming (simple programs)	10 Hrs

IV	**INTERRUPT AND SERIAL COMMUNICATION** **4.1 SERIAL COMMUNICATION** Basics of Serial programming – RS 232 Standards - 8051 connection to RS 232 – 8051 Serial Communication Programming – Programming 8051 to transmit data serially - Programming 8051 to Receive data serially.	**7 Hrs**
	4.2 INTERRUPT 8051 Interrupt s – Programming Timer Interrupts – Programming external hardware interrupts – Programming the serial communication interrupt – Interrupt priority in 8051 (simple programs).	**7 Hrs**
V	**INTERFACING TECHNIQUES** **5.1. IC 8255** IC 8255 – Block Diagram – Modes of 8255.	**4 Hrs**
	5.2. INTERFACING TECHNIQUES Interfacing external memory to 8051– 8051 interfacing with the 8255 – ASM Programming – Relays – Sensor interfacing – ADC interfacing – DAC interfacing - Keyboard interfacing – Seven segment LED Display Interfacing - Stepper Motor interfacing – DC motor interfacing using PWM.	**12 Hrs**

TEXT BOOKS:

1.   Microcontrollers, Principles and Applications – Ajit pal – PHI Ltd., - 2011.

REFERENCE BOOKS:

1. 8051 Microcontroller and Embedded Systems using Assembly and C by Mazidi, Mazidi and D.MacKinlay, 2006 Pearson Education Low Price Edition.

2. Microprocessor and Microcontroller by R.Theagarajan, Sci Tech Publication, Chennai

3. 8051 Microcontroller by Kenneth J.Ayala.

24052 - MICROCONTROLLER
Model question paper – I

Time: 3 Hrs.   **Max. Marks: 75**

Part – A   15x1=15

Note : Answer any 15 Questions. – All Questions carry equal marks

1. What is Microcontroller?
2. Mention the number of bytes in internal RAM and internal ROM of 8051?
3. State any two differences between microprocessor and microcontroller.
4. When 8051 is reset, all interrupts are disabled. How to enable these interrupts?
5. What are the instructions used to access external RAM.
6. List the Addressing modes in 8051?
7. What is meant by assembler directives?
8. List any four assembler directives.
9. Calculate the reload value of timer 1 for achieving a baud rate of 4800 in 8051 for a crystal frequency of 11.0592 MHz.
10. Mention the timers of 8051.
11. Mention the operating modes of 8051 timers
12. Mention the control registers related to timer/counters of 8051
13. How will you double the baud rate in 8051?
14. List the interrupts available in 8051?
15. What is meant by interrupt priority in 8051?
16. What is the function of SMOD bit in PCON register?
17. Write the BSR control words to set PC0 and to reset PC4 in 8255.
18. What is the instruction used to transfer a data byte between microcontroller and 8255.
19. Define a stepper motor.
20. Give the normal 4 step sequence.

Part – B   5x12 = 60
Answer all Questions

21 A) Draw and explain the block Diagram of 8051 microcontroller   [12]
(Or)
   B) i) List the special function registers with their addresses and explain anyone of them   [4]
     ii) Draw and explain the Structure of Internal RAM of 8051   [8]

22 A) Write an assembly language program to arrange the given set of 'n' numbers in
    ascending order   [12]
(Or)
   B) Explain the various addressing modes in 8051 with examples.   [12]

23 A) Explain in details about the programming of 8051 timer   [12]

(Or)
   B) Write a program to generate square wave of 50 Hz frequency on pin P1.2 using timer 0
     interrupt. Assume crystal = 11.0592 MHz   [12]
24 A) Explain about the programming of 8051 serial port   [12]
(Or)
   B) Explain the functions of each bit of Serial Control Register (SCON) and
    Power Control Register (PCON) in detail.   [12]
25 A) Explain about 8051 interfacing with 8255   [12]

(Or)
   B) Explain about stepper motor interfacing with 8051   [12]

24052 - MICROCONTROLLER
Model question paper – II

Time: 3 Hrs.   Max. Marks: 75

Part – A   15x1=15

Note: Answer any 15 Questions. – All Questions carry equal marks

1. Give the PSW setting for masking register bank 2 as default register bank in 8051 Microcontroller?
2. Define the clock cycle of 8051.
3. Define the machine cycle of 8051.
4. Define the instruction cycle of 8051.
5. How can you perform multiplication using 8051 Microcontroller?
6. What is the operation carried out when 8051 executes the instruction MOVC A, @A + DPTR?
7. Write a delay routine for 1 millisecond using timer 0 of 8051 for 12 MHz crystal frequency.
8. List the addressing modes of 8051.
9. What is the function of C/T bit of TMOD register?
10. Find the timer's clock frequency for the crystal frequency of 11.0592 MHz
11. What is the function of C/T bit of TMOD register?
12. State the function of timer flag TF in TCON register.
13. List the serial modes. ?
14. What is the function of REN bit in SCON register?
15. What is the function of SMOD bit in PCON register?
16. State the two methods of serial data communication.
17. Define a transducer.
18. Define step angle.
19. What is meant by signal conditioning?
20. Define DAC.

Part – B   5x12 = 60
Answer all Questions

21 A) Explain with neat sketch memory organisation of 8051   [12]
                                    (Or)
   B) Draw the pin diagram of 8051 and explain the function of each pin.   [12]

22 A) Write an assembly language program (ALP) for multi-byte addition   [12]
                                    (Or)
    B) Write an ALP for finding maximum number in an array.   [12]

23 A) Explain the TMOD register and TCON register   [12]
                                    (Or)
   B) Explain the steps to program the timer in mode 1 and mode 2.   [12]

24 A) Write the steps involved in programming 8051 to transfer and receive data serially. [12]
                                    (Or)
   B) Explain the interrupt priority in 8051.   [12]

25 A) Explain ADC interfacing with 8051.   [12]

                                    (Or)
   B) Explain seven segment LED display interfacing with 8051.   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

VERY LARGE SCALE INTEGRATION

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

L-SCHEME
(Implements from the Academic year 2011-2012 onwards)

Course Name   : ELECTRONICS AND COMMUNICATION ENGINEERING
Course Code   : **24053**
Semester   : V Semester
Subject Title   : **VERY LARGE SCALE INTEGRATION**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours /Week	**Hours /Semester**	**Marks**			**Duration**
Very Large Scale Integration	**5**	**80**	**Internal Assessment**	**Board Examination**	**Total**	
			25	**75**	**100**	**3 Hrs**

Topics and Allocation of Hours:

Sl.No.	Topic	Time(Hrs)
1.	**Combinational Logic Circuits**	14
2.	**VHDL for combinational logic circuit**	13
3.	**Sequential Logic circuits**	14
4.	**VHDL for sequential Logic circuits**	14
5.	**PLDS and FPGA circuits**	13
Test and revision		12
Total		80

RATIONALE:

Very Large Scale integration technology, when especially used for digital integrated circuit design, is that it is mandatory the behaviour of the required system to be described (modelled) and verified (simulated) before synthesis tools translate the design into real hardware fabrication in the foundry (gates and wires). Hardware Description Language (HDL) allows designs to be described using any methodology - top down, bottom up or middle out! VHDL can be used to describe hardware at the gate level or in a more abstract way. This course is to introduce the digital system design concepts through hardware description Language, VHDL programming, design flow of VLSI, and architectures of CPLD and FPGA. It is mainly aimed at design of combinational and sequential functions at gate / behavioural level and simulates and verifies their functionality using the Hardware description Language (VHDL)

OBJECTIVES:

On successful completion of the course the students must be able to

- o Understand device level implementation of digital gates.

- o Understand the combinational circuit design and optimizing of the gate

- o Design a combinational circuit for any custom made application

- o Explain the building blocks for the combinational circuit

- o Understand the VHDL code and circuit design process.

- o Develop a VHDL code for any combinational circuit

- o Answer the VHDL primitives and the importance of VHDL code in a digital circuit

- o Design a digital circuit with Muxes and Encoders

- o Understand the functionality of various flipflops through its excitation table.

- o Design of a sequential circuit for any custom made application

- o Explain the style of moore and mealy type machines

- o Understand to implement VHDL code for various flipflops

- o Design of sequential circuit and implementation with VHDL code

- o Develop moore and mealy type machines with its VHDL code

- o Explain the importance of PLA, PAL and PLD

- o Differentiate between the PLA and PAL.

- o Develop the circuit using PAL and PLA.

- o Understand the CPLD and FPGA hardware.

- o Describe what are Semi custom and Full custom ICs

24053 VERY LARGE SCALE INTEGRATION
DETAILED SYLLABUS

Unit	Name of the Topic	Hours
I	**1.1 COMBINATIONAL CIRCUIT DESIGN:** NMOS and CMOS logic implementation of Switch, NOT, AND, OR, NAND, and NOR (Not any circuit). Digital logic variable, functions, inversion, gate/circuits, Boolean algebra and circuit synthesis using gates (Up to 4 variables).	7 Hrs
	1.2 COMBINATIONAL CIRCUIT BUILDING BLOCKS: Circuit synthesis using Multiplexer, Demultiplexer, Encoders and Decoders. Arithmetic adder, Subtractor and Comparator circuits. Hazards and races	7Hrs
II	**2.1 VHDL FOR COMBINATIONAL CIRCUIT**: Introduction to VLSI and its design process. Introduction to CAD tool and VHDL: Design Entry, Synthesis, and Simulation. Introduction to HDL and different level of abstraction VHDL Statements and Assignment, Representation of signals.	8 Hrs
	2.2 VHDL CODE: AND, OR, NAND, NOR gates, Implementation of Mux, Demux, Encoder, decoder. Four bit Arithmetic adder, subtractor and comparator in VHDL	5Hrs
III	**3.1 SEQUENTIAL CIRCUIT DESIGN**: Introduction/Refreshing to Flip-flops and its excitation table, counters and Shift registers.	14 Hrs
	3.2 DESIGN STEPS: State diagram, State table, state assignment. Example for moore and mealy machines. Design of modulo counter (upto 3 bit) with only D flip-flops through state diagram	
IV	**4.1 VHDL FOR SEQUENTIAL CIRCUIT:** VHDL constructs for storage elements. VHDL code for D Latch / D, JK and T Flip-flops with or without reset input.	8 Hrs
	4.2 VHDL EXAMPLES: Counters (up to 3 bit). Moore and Mealy type serial adder. VHDL code for serial Adder.	6Hrs
V	**5 PLDS AND FPGA**: Introduction to PLA and PAL. Implementation of combinational circuits with PAL and PLA (upto 4 variable). Introduction to Complex Programmable Logic device, Field Programmable Gate Array and Custom chips (Functional Block diagram). Introduction to ASIC	13 Hrs

Revision and test   **12Hrs**

TEXT BOOK:

1. "Digital Design" M.Morris Mano Michael D Ciletti Pearson Education 2008
2. "Fundamentals of Digital Logic with VHDL design" Stephen brown and Vranesic 2nd edition McGrawHill,2008
3. "VHDL Primer" Bhasker J Prentice Hall India -2009

REFERENCES:

1. "Digital Electronics with PLD Integration" Nigel P. Cook, Prentice Hall, 2000
2. "Programmable Logic Handbook: PLD, CPLD, and FPGA" Ashok K.Sharma, Mcgraw-Hill, 1998
3. "Digital Logic Simulation and CPLD Programming with VHDL" Steve Waterman Prentice Hall, 2002

24053 VERY LARGE SCALE INTEGRATION
MODEL QUESTION PAPER - I

Time: 3 Hrs   **Max Marks: 75**

PART- A   **MARKS 15 X 1 = 15**

1. Draw the transistor level implementation of NAND gate
2. What do you meant by hazards in the digital circuit?
3. List few combinational circuits
4. Draw the circuit for a Half Adder
5. Distinguish between multiplexer and encoder
6. Define the term synthesis
7. Calculate no of gates required to implement XOR gate.
8. Why is NAND said to be a universal gate?
9. Distinguish between combinational circuit and sequential circuit
10. Write the excitation table for a D Flip Flop
11. List various shift registers present in digital circuit
12. Distinguish between Latch and Flip flop
13. What do you meant by storage elements?
14. Write the VHDL code for a D Flipflop
15. Why do you need a serial adder?
16. Write the importance of T flip flop
17. What do you meant by PLA?
18. Differentiate between PLA and PAL
19. Draw the simple circuit of PAL structure
20. What are FPGA and CPLD?

PART- B   **Marks 5 x 12 = 60**

Answer all Questions

21 A i) Implement the function $F = \Sigma 1, 2, 3, 5, 7, 10, 13$ with minimal gates   [8]
     ii) Implement the above function with a multiplexer   [4]

(OR)

B i) Implement the function $F = \Sigma 1, 2, 3, 5, 7, 10, 13$ with do not care of 4 and 6 with
     minimal gates   [8]
     ii) Implement the above function with a multiplexer   [4]

22 A i) Develop the VHDL code for implementing a four bit arithmetic Adder   [8]
     ii) Develop the VHDL code for implementing a two input mux   [4]

(OR)

B i) Develop the VHDL code for implementing a four bit arithmetic Subtractor   [8]
     ii) Develop the VHDL code for implementing a two output demux   [4]

23 A) Design a modulo 5 counter using D Flip flop. Use proper excitation table
     and state diagram   [12]

(OR)

B) Design a modulo 6 counter using D Flip flop. Use proper excitation table
     and state diagram   [12]

24 A i) Develop the VHDL code for implementing a modulo 6 bit down counter   [8]
     ii) Develop the VHDL code for implementing JK Flip flop   [4]

(OR)

B)   Develop the VHDL code for implementing a modulo 6 bit up /down counter   [12]
         (Note: Separate input should be provided for up or down mode selection)

25 A i) Implementing the Function $F = \Sigma 1, 2, 3, 5, 7$ in PLA   [8]
     ii) Write short notes on CPLD   [4]

<div align="center">(OR)</div>

B i) Implementing the Function F = Σ1, 2, 3, 5, 7 in PAL   [8]

  ii) Write short notes on FPGA   [4]

24053 VERY LARGE SCALE INTEGRATION
MODEL QUESTION PAPER - II

Time: 3 Hrs   **Max Marks: 75**

PART- A   MARKS 15 X 1 = 15

1. What are all universal gates?
2. Define glitch in the digital circuit?
3. Distinguish between combinational and sequential circuits
4. Draw the circuit for a Full Adder
5. Distinguish between encoder and decoder
6. Define the term simulate
7. Calculate no of gates required to implement NAND gate.
8. State demorgans law
9. What is the main element in sequential circuit?
10. Write the excitation table for a T Flip Flop
11. What do you meant by SISO and PISO?
12. Are Latch and Flip flop same?
13. What do you meant by storage elements?
14. Write the VHDL code for a T Flipflop
15. Draw the block diagram of a serial adder?
16. Write the importance of JK flip flop
17. What is the importance of Programmable device?
18. Can we implement sequential circuit in a PLA?
19. Draw the simple circuit of PLA structure
20. Expand FPGA and CPLD?

PART- B   Marks 5 x 12 = 60
Answer all Questions

21 A i) Implement the function $F = \Sigma 0, 2, 3, 7$, with minimal gates   [8]
    ii) Implement the above function with a 4 to 1multiplexer   [4]
(OR)
   B i) Implement the function $F = \Sigma 0, 2, 3, 7$ with do not care of 4 and 6 with minimal gates   [8]
    ii) Implement the above function with a 4 to 1multiplexer   [4]

22 A i) Develop the VHDL code for implementing a 3 bit subtractor   [8]
    ii) Develop the VHDL code for implementing a simple demultiplexer   [4]
(OR)
   B i) Develop the VHDL code for implementing a four bit multiplier   [8]
    ii) Develop the VHDL code for implementing a simple multiplexer   [4]

23 A) Design a modulo 6 counter using D Flip flop. Use proper excitation table and state diagram [12]
(OR)
   B) Design a modulo 4 counter using D Flip flop. Use proper excitation table and state diagram [12]

24 A i) Develop the VHDL code for implementing a modulo 4 bit down counter   [8]
    ii) Develop the VHDL code for implementing T Flip flop   [4]
(OR)
   B) Develop the VHDL code for implementing a modulo 5 bit up /down counter   [12]
        (Note: Separate input should be provided for up or down mode selection)
25 A i) Implementing the Function $F = \Sigma 0, 1, 2, 5, 7$ in PLA   [8]
    ii) Write short notes on PLA   [4]
(OR)
   B i) Implementing the Function $F = \Sigma 0, 1, 2, 3, 5$ in PAL   [8]
    ii) Write short notes on FPGA   [4]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

DIGITAL COMMUNICATION

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)
Course Name : Electronics and Communication Engineering
Subject code : **24071**
Semester   : V Semester
Subject title   : Elective Theory I Digital Communication

TEACHING AND SCHEME OFEXAMINATION:

Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Digital Communication	5	80	25	75	100		3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs)
I	Basics of Digital communication	14
II	Waveform coding techniques	13
III	Digital modulation techniques	14
IV	Data communication codes	14
V	Data network	13
	Revision, Test	12
	Total	80

RATIONALE:

Today, the growth of any industry depends upon electronics and communication. There is the need for digital techniques in each and every field. The reason behind the introduction of this subject is to impart technical excellence in the field of digital communication by analyzing the various digital transmission methods, error control methods and understanding about the multiple access communication.

Objectives

To understand principles of Digital communication
To understand characteristics of data communication systems
To study about PCM
To study adaptive delta modulation.
To learn Differential PCM.
To understand ASK and FSK
To understand PSK and QPSK.
To learn about MSK transmitter and receiver
To Study about various error control codes
To study about communication network
To study about switching methods
To learn multiple access communication.
To learn about LAN and its topologies

24071 DIGITAL COMMUNICATION
DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
1	**BASICS OF DIGITAL COMMUNICATION** Sources and signals – Block diagram of Digital communication system – Advantages over analog communication – Channels for Digital communication – Telephone, Optical fiber, Satellite, computers –Characteristics of Data communication systems – Information capacity (Definition only) – Shannon"s limit for information capacity (Definition only) –Data transmission –Serial and parallel transmission -Synchronous and asynchronous transmission	14
2	**WAVEFORM CODING TECHNIQUES** Pulse modulation – Types (To list only)– Pulse code modulation – Generation and Reception (simple block diagram and explanation only) – Definitions for uniform quantization , non uniform quantization and Companding – Delta modulation –Block diagram of Transmitter and Receiver -Advantages and disadvantages – Adaptive Delta modulation –Block diagram of Transmitter and Receiver - Differential PCM (DPCM)–Block diagram of transmitter and Receiver - Advantages and limitations of DPCM	**13**
3	**DIGITAL MODULATION TECHNIQUES** Generation and Reception of FSK, ASK , PSK, QPSK (Block diagram and explanation only)–Comparison of modulation techniques in terms of modulation signal, Bits per symbol and minimum bandwidth- MSK – Block diagram of MSK transmitter and receiver. TDM- Frame structure, ASCII framing, E1 Framing, T1 Framing for telephone.	**14**
4	**DATA COMMUNICATION CODES** ASCII Code, EBCDIC Code , Baudot Code – Error control – Types of Error control – Error detection codes - Linear block codes – Parity coding – odd and even parity coding –Redundant codes –Error correction codes - Retransmission , forward error correcting code - Hamming code-Fundamentals of convolution coding	**14**
5	**DATA NETWORK** Communication Network – circuit switching – store and forward switching – Layered architecture (OSI model) - packet network – Routing – flow control – Multiple access communication – Local area network – LAN topologies – Bus, Ring and Star topology	13

Reference Books
1. Digital communication – Simon Haykins – Wiley India Edition – 2006
2. Principles of Digital communication – J.S.Chitode – Tech. Publications – Pune - 2008
3. Digital communication – P.Ramakrishna Rao – TMH – 2011
4. Introduction to Digital Communication System by NIIT, PHI Learning Private Ltd, NewDelhi
5. Principles of communication systems By Taub & Schilling- TMH- Third Edition -2008.

24071 DIGITAL COMMUNICATION
MODEL QUESTION PAPER - I

TIME: 3 HOURS   MAX MARKS: 75
PART – A

ANSWER ANY 15 QUESTIONS   15X1 =15 MARKS

1. What is digital communication?
2. What is cross talk?
3. Define Baud rate.
4. What is synchronous communication?
5. Mention the types of pulse modulation.
6. What is the difference between PCM &DPCM?
7. Define companding.
8. What is non uniform quantization?
9. Define frequency shift keying.
10. Define QPSK
11. What is MSK?
12. What is ASCII framing?
13. Define parity.
14. What is the advantage of Baudot code?
15. What is ASCII code?
16. What are convolutional codes?
17. What is a network?
18. What is LAN?
19. What is meant by switching?
20. Mention the different LAN topologies.

PART – B   5X12 =60 MARKS
Answer all questions

21 A) Explain block diagram of digital communication system. Mention its
     advantage over analog communication.   [12]
(or)
  B) Explain asynchronous transmission.   [12]

22 A) Explain PCM generation and reception with block diagram.   [12]
(or)
  B) Explain Adaptive delta modulation with block diagram.   [12]

23 A).Explain FSK generation and reception with block diagram.   [12]
(or)
  B) Explain generation and reception of QPSK.   [12]

24 A) Explain Baudot code, ASCII code and EBCDIC code.   [12]
(or)
  B) Explain parity check codes.   [12]

25 A) What is OSI model? Explain its architecture.   [12]
(or)
  B) Write notes on switching and types of switching.   [12]

24071 DIGITAL COMMUNICATION
MODEL QUESTION PAPER - II
TIME: 3 HOURS   **MAX MARKS: 75**
PART – A
ANSWER ANY 15 QUESTIONS   **15X1 =15 MARKS**

1. Define Shannon's limit for information capacity.
2. What is serial communication?
3. Mention the channels for digital communication.
4. What is an echo compressor?
5. Define pulse modulation
6. What is PCM?
7. Define DPCM.
8. What is uniform quantization?
9. Define PSK.
10. What is amplitude shift keying?
11. What is TDM?
12. What is T1 framing?
13. What is error control?
14. What is EBCDIC code?
15. Mention types of parity.
16. What is retransmission?
17. List the types of networks.
18. What is multiple access communication?
19. What are the types of switching?
20. What is ring topology?

PART – B   **5X12 =60 MARKS**
Answer all questions

21 A) Explain briefly about synchronous transmission.   [12]
                              (or)
   B) Explain about characterstics of data communication systems.   [12]

22 A) Explain Delta modulation transmitter with block diagram.   [12]
                              (or)
   B) Explain DPCM receiver with block diagram.   [12]

23 A) Explain MSK transmitter &receiver with block diagram.   [12]
                              (or)
   B) Explain ASK transmitter &receiver with block diagram   [12]

24 A) Explain 1. Retransmission 2. Forward error correcting   code   [12]
                              (or)
   B) Write notes on 1.Redundant codes 2.Hamming code.   [12]

25 A) Explain about LAN and its topologies.   [12]
                              (or)
   B) Give brief notes on packet networks.   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

PROGRAMMABLE LOGIC CONTROLLER

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

State Board of Technical Education and Training, Tamil Nadu
Syllabus for Diploma in Electrical and Electronics Engineering
L-Scheme

Course Name   : Diploma in Electrical and Electronics Engineering
Subject Code   : **23072**
Semester   : V Semester
Subject Title   : **Elective Theory–I: PROGRAMMABLE LOGIC CONTROLLER**

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester : 16

Subject	Instruction		Examination		
			Assessment marks		
	Hours / Week	Hours / Semester	Internal	Board Examination	Total
PROGRAMMABLE LOGIC CONTROLLER	5	80	25	75	100

TOPICS AND ALLOCATION OF TIME

UNIT	TOPIC	TIME (Hours)
I	**Introduction to Programmable Logic Controller**	12
II	**Input and Output Modules**	14
III	**PLC Programming**	14
IV	**Networking**	14
V	**Data Acquisition Systems**	14
	Revision and Test	12
	Total	80

RATIONALE

Industries are going for automation to reduce their product cost to sustain their market among customers. Industrial automation with newer technology reduces human presence for any process. It leverages different electronic equipments to control different parameter of any industrial process. Programmable logic controllers plays an important role in industrial automation. There are wide scope for diploma holders in installation, testing and maintenance of PLC based automatic process control industries.

OBJECTIVES

To understand

- Evolution, internal structure, interface modules, advantages and market available PLCs.
- Various types of input and output modules.
- Input sensors.
- Various PLC programming methods, basic instructions like ON, OFF, timer, counter, latched and unlatched outputs.
- Simple PLC ladder programs for starters, filling plants.
- PLC networking, industrial standard communication networks.
- SCADA system hardware and software.

23072 PROGRAMMABLE LOGIC CONTROLLER
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours	Mark
I	**Introduction to Programmable Logic Controller** PLC evolution – hardwire control system compared with PLC system - advantages of PLCs – criteria for selection of suitable PLC - Block diagram of PLC – principle of operation – CPU – memory organization – I/O modules – Input types – Logic, Analog – pulse train – expansion modules – power supplies to PLC – modular PLCs - list of various PLCs available	12	15
II	**Input and Output Modules** **Input Modules** Discrete input module – AC input module – DC input module – sinking and sourcing – sensor input – special input modules – Sensors – limit switch, reed switch, photo electric sensor, inductive proximity sensor – Input Addressing scheme in important commercial PLCs. **Output modules** Discrete output module – TTL output module – Relay output – Isolated output module – surge suppression in output – Analog outputs – open collector output. Output Addressing scheme in important commercial PLCs.	14	15
III	**PLC Programming** Symbols used – relays and logic functions – OR, AND, Comparator - Programming Devices – programming methods – STL and CSF, FBD and Ladder methods – simple instructions – Programming NC and NO contacts - EXAMINE ON and EXAMINE OFF instructions - online, offline methods– Latch and Unlatch outputs – pulse edge evaluation – timer instructions – on-delay and off-delay timer. Counter instructions – UP / DOWN counters – Timer and Counter applications. Program control instructions – Data manipulating instructions – Math instructions. converting simple relay ladder diagramm into PLC relay ladder diagram – PID and PWM functions. Sample PLC implementations for Automatic Star-Delta Starter and 4 - floor Lift system.	14	15
IV	**Networking** Levels of industrial control – types of networking – network communications – principles – transmission media – Field Bus – introduction, concepts, international field bus standards – Networking with TCP / IP Protocol – Network architecture – Physical addressing – LAN technologies – Ethernet – Token Ring – Sub-netting – subnet mask – transport layer – ports – sockets network services – file transfer protocol.	14	15
V	**Data Acquisition Systems** Computers in Process control – Data Loggers – Data acquisition systems (DAS) – Alarms – Direct Digital Control (DDC) - Characteristics of digital data – Controller software – Computer Process interface for Data Acquisition and control –Supervisory Digital Control (SCADA) -introduction and brief history of SCADA – SCADA Hardware and software	14	15

TEXT BOOK

Title	Author(s)	Publishers	Edition
Introduction to Programmable Logic Controller	Gary Dunning	Thomson Delmar learning	

REFERENCE BOOKS

Sl.No	Title	Author(s)	Publishers	Edition
1	Programmable Logic Controllers; Principles and applications	Jhon W Webb Ronald A Rels	PHI LearningPvt Ltd	2012
2	Exploring Programmable Logic Controllers with applications	Srivastava	BPB Publishers	2012
3	Programmable Logic Controllers	Vijay R Yadhav	Khanna Publishers	
4	Programmable Logic Controllers; Principles and applications	NIIT	NIIT	**2010**

23072 PROGRAMMABLE LOGIC CONTROLLER
MODEL QUESTION PAPER I

Time – Three hours   **Maximum Marks: 75**
Part A   15 X 1 = 15

Note: Answer any 15 questions. All questions carry equal marks.

1. State the use of PLC.
2. List the various types of PLC.
3. What is the function of analog input module?
4. Draw the symbol of Float switch
5. List the four major parts of PLC
6. State the purpose of input output interface.
7. Mention the output address scheme of Siemens Micro PLC
8. List the various types of input devices connected with a PLC
9. Draw the symbol for PLC comparator
10. When NO contact becomes NC contact in a relay.
11. List the different types of programming methods of PLC
12. State the uses of counter in a PLC
13. Mention some transmission media.
14. Which field bus is required with distributed control system?
15. What is communication protocol?
16. What is the classification of network?
17. Expand DAS .
18. Expand SCADA.
19. Write any two advantage of SCADA.
20. Write about Direct Digital Controller

Part B   5 x 12 = 60 marks
Answer all Questions

21 A) Discuss in detail about advantages of PLC over hardwired system.   [12]
(or)
  B) Draw the basic block diagram of PLC and give brief account on each block.   [12]

22 A) Draw the discrete input module and explain the operation.   [12]
(or)
  B) Discuss in detail about various output module of PLC.   [12]

23 A) Explain ON delay and OFF delay timer instructions with simple examples.   [12]
(or)
  B) Develop relay logic diagram of star delta starter and convert it into logic diagram   [12]

24 A) Draw a typical architecture of industrial control system showing field bus and explain?   [12]
(or)
  B) Give a note on: i) Ethernet ii) Transport layer   [12]

25 A) what do you understand by DAS. Discuss its function with simple real time example.   [12]
(or)
  B) Discuss in detail about SCADA software.   [12]

23072 PROGRAMMABLE LOGIC CONTROLLER
MODEL QUESTION PAPER II

Time – Three hours   **Maximum Marks : 75**
         Part A   **15 X 1 = 15**

Note: Answer any 15 questions. All questions carry equal marks.

1. List some standard PLCs available in market.
2. Mention the function of CPU in PLC.
3. What is the function of analog output module?
4. What are types of IC Memory used in PLC?
5. Draw the symbol of limit switch.
6. Name the component in isolation section
7. List the various types of output devices connected with a PLC
8. State the advantages of photo electric sensors
9. Mention the different types of timer values.
10. Which function is needed for process control instrumentation?
11. What are the commonly used timers?
12. What is input scan?
13. Mention any two international field bus standards
14. What is the necessity of file transfer protocol?
15. What are the requirements of field bus?
16. What is the function of transport layer?
17. State the uses of data acquisition system.
18. Expand SCADA.
19. What do you understand by data logging?
20. State two characteristics of digital data controller.

                    Part B   **5 x 12 = 60 marks**
                 Answer all Questions

21 A) Discuss in detail about the PLC operation.   [12]
                              (or)
   B) Explain the memory organization of standard PLCs   [12]

22 A) Discuss about AC input module.   [12]
                              (or)
   B) Draw the discrete output module and explain the operation.   [12]

23 A) What are the counting operation available in standard PLCs? Explain them. [12]
                              (or)
   B) Develop ladder logic control for 4 floor lift system and explain.   [12]

24 A) Discuss about various layers in Communication protocol   [12]
                              (or)
   B) Give a note on: Field level communication protocol.   [12]

25 A) Explain the operation of a Data acquisition systems with a generalized block   diagram. [12]
                              (or)
   B) What do you understand by SCADA system? Give a brief account on it   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

ADVANCEDCOMMUNICATION SYSTEMS PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24055**
Semester : V Semester
Subject title : **ADVANCED COMMUNICATION SYSTEMS PRACTICAL**

<u>**TEACHING AND SCHEME OF EXAMINATION:**</u>

Number of Weeks/ Semester : 16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Advanced Communication practical	5	80	25	75	100		3Hrs

<u>**ALLOCATION OF MARKS**</u>

CIRCUIT DIAGRAM   :   20

CONNECTION   :   25

 EXECUTION & HANDLING OF EQUIPMENT   :   15

OUTPUT / RESULT   :   10

VIVA – VOCE   :   05
_____
TOTAL   :   75

24055 ADVANCED COMMUNICATION SYSTEMS PRACTICAL

List of Experiments

Note: ALL experiments have to be conducted
1. Trace the output waveform of a PSK modulation circuit
2. Trace the output waveform of a PSK demodulation circuit
3. Find the output of a ASK Modulation circuit.
4. Find the output of a ASK Demodulation circuit.
5. Determine the output of a FSK Transmitter
6. Determine the output of a FSK Receiver
7. Determine the output of a TDM signal. .
8. Trace the output waveform of PCM signal
9. Construct and test Analog transmitter and receiver
10. Trace the output of a Pulse width modulated Signal.
11. Construct a circuit to find the given LED and Photo diode characteristics
12. Set up a fiber optic analog link
13. Set up a fiber optic digital link
14. Measure the bending loss and propagation loss in fiber optics.
15. Test the performance of Manchester encoder and decoder
16. Measure the Numerical aperture of optical fiber
17. Construct & test a voice link using Optical fiber
18. Install & test a DTH system.

MAJOR EQUIPMENTS REQUIRED

SL.NO.	Name of the Equipment	Range	Required Nos.
1.	Regulated power supply	0-30V	5
2.	Dual trace CRO	-	2
3.	Signal Generator	1MHz	1
4.	Fiber optics kit	-	1
5.	PCM trainer KIT	-	1
6.	ASK modulation &demodulation kit	-	1
7.	PSK modulation &demodulation kit	-	1
8	FSK modulation &demodulation kit	-	1

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

MICROCONTROLLER PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24056**
Semester : V Semester
Subject title : **Microcontroller practical**

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
Microcontroller practical	5	80	25	75	100		3Hrs

ALLOCATION OF MARKS

Scheme of Examinations
The Evaluation has to be done as given below

Allocation of marks for Board Practical Examination

I) Programme	- 30 Marks
II) Debugging and Execution	- 30 Marks
III) Result	- 10 Marks
IV) Viva – Voce	- 5 marks

Total	**- 75 Marks**

EQUIPMENTS REQUIRED

S.No	Name of the Equipments	Required Nos
1.	8051 Microcontroller Kit	18 Nos
2.	Digital I/O Interface Board	02 Nos
3.	Matrix keyboard Interface Board	02 Nos
4.	Seven segment LED display Interface Board	02 Nos
5.	Traffic light Interface Board	02 Nos
6.	8 bit ADC Interface Board	02 Nos
7.	8 bit DAC Interface Board	02 Nos
8.	STEPPER MOTOR CONTROL Interface Board	02 Nos
9.	DC motor control Interface Board	02 Nos
10.	Sending data through serial port between controller kits	02 Nos

24056 - MICROCONTROLLER PRACTICAL

Note1: ALL THE EXPEIMENTS SHOULD BE CONDUCTED
   2: Different data are to be given for each batch

Part - A

1. Write an Assembly Language Programme for Multi-byte Addition and execute the same in the 8051 Kit.
2. Write an Assembly Language Programme for Multiplication and Division of two numbers and execute the same in the 8051 Kit.
3. Write an Assembly Language Programme for Arranging the given data in Ascending order and execute the same in the 8051 Kit.
4. Write an Assembly Language Programme for BCD to Hex conversion and execute the same in the 8051 Kit.
5. Write an Assembly Language Programme for Hex to BCD conversion and execute the same in the 8051 Kit.
6. Write an Assembly Language Programme for ASCII to Binary and execute the same in the 8051 Kit.
7. Write an Assembly Language Programme for Parity bit generation and execute the same in the 8051 Kit.
8. Write an Assembly Language Programme for using timer / Counter and execute the same in the 8051 Kit.

Part - B

INTERFACING WITH APPLICATION BOARDS

1. Write an Assembly Language Programme for interfacing Digital I/O board and test it.
2. Write an Assembly Language Programme for interfacing Matrix keyboard and test it.
3. Write an Assembly Language Programme for interfacing seven segment LED displays and test it.
4. Write an Assembly Language Programme for interfacing Traffic light control and test it.
5. Write an Assembly Language Programme for interfacing 8 bit ADC and test it.
6. Write an Assembly Language Programme for interfacing 8 bit DAC and test it.
7. Write an Assembly Language Programme for interfacing STEPPER MOTOR and test it.
8. Write an Assembly Language Programme for interfacing DC motor and test it.
9. Write an Assembly Language Programme for Sending data through serial port between controller kits and test it.

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

VERY LARGE SCALE INTEGRATION PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

L-SCHEME
(Implements from the Academic year 2011-2012 onwards)

Course Name	: Electronics and Communication Engineering
Course Code	: **24057**
Semester	: V semester
Subject Title	: **Very Large Scale Integration Practical**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
Very Large Scale Integration Practical	5 Hrs	80 Hrs	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

RATIONALE:

VHDL is a versatile and powerful hardware description language which is useful for modeling digital systems at various levels of design abstraction. This language is for describing the structural, physical and behavioral characteristics of digital systems. Execution of a VHDL program results in a simulation of the digital system allows us to validate the design prior to fabrication of Digital Integrated circuit. This practical introduces basic on VHDL concepts and constructs. It introduces the VHDL from simulation cycle to synthesis level in combinational and sequential circuits.

GUIDELINES:

All the experiments given in the list of experiments should be completed and given for the end semester practical examination.
In order to develop best skills in handling Instruments/Equipment and taking readings in the practical classes, every three students should be provided with a separate experimental setup for doing experiments in the laboratory.
The external examiners are requested to ensure that a single experimental question should not be given to more than three students while admitting a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Interface circuit diagram	**10 marks**
Algorithm/ flow chart	**20 marks**
Program	**20 Marks**
Observation	**10 marks**
Result	**10 marks**
VivaVoce	**5 marks**
	_____
Total	**75 Marks**

<u>24057 Very Large Scale Integration Practical</u>
List of experiments

1. **SIMULATION OF VHDL CODE FOR COMBINATIONAL CIRCUIT**
   Optimize a 4 variable combinational function (SOP or POS), describe it in VHDL code and simulate it. Example: F= (0,5,8,9,12) in sop or pos

2. **SIMULATION OF VHDL CODE FOR ARITHMETIC CIRCUITS**
   Design and Develop the circuit for the following arithmetic function in VHDL Codes and Simulate it. Addition,   Subtraction   Multiplication (4 x 4 bits)

3. **SIMULATION OF VHDL CODE FOR MULTIPLEXER**
   Design and develop a 2 bit multiplexer and portmap the same for developing upto 8 bit multiplexer.

4. **SIMULATION OF VHDL CODE FOR DEMULTIPLEXER**
   Design and develop an 8 output demultiplexer. Simulate the same code in the software

5. **VHDL IMPLEMENTATION OF MULTIPLEXER**
   Describe the code for a multiplexer and implement it in FPGA kit in which switches are connected for select input and for data inputs a LED is connected to the output.

6. **VHDL IMPLEMENTATION OF DEMULTIPLEXER**
   Switches are connected for select inputs and a data input, Eight LEDs are connected to the output of the circuit.

7. **VHDL IMPLEMENTATION OF 7 SEGMENT DECODER**
   Develop Boolean expression for 4 input variables and 7 output variables. Design and develop a seven segment decoder in VHDL for 7 equations. A seven segment display is connected to the output of the circuit. Four switches are connected to the input. The 4 bit input is decoded to 7 segment equivalent.

8. **VHDL IMPLEMENTATION OF 7 SEGMENT DECODER BY LUT**
   Develop a 7 segment decoder using Look up table. Describe the seven segment decoder in VHDL using developed Look up table. A seven segment display is connected to the output of the circuit. Four switches are connected to the input. The 4 bit input is decoded into 7 segment equivalent.

9. **VHDL IMPLEMENTATION OF ENCODER**
   Design and develop HDL code for decimal (Octal) to BCD encoder. There will be10 input switches (or 8 switches) and 4 LEDs in the FPGA kit. The input given from switches and it is noted that any one of the switch is active. The binary equivalent for the corresponding input switch will be glowing in the LED as output.

10. SIMULATION OF VHDL CODE FOR DELAY
Develop a VHDL code for making a delayed output for 1second or 2 seconds by assuming clock frequency provided in the FPGA Kit.

11. VHDL IMPLEMENTATION FOR BLINKING A LED
Develop a VHDL Code for delay and verify by simulating it. This delay output is connected to LED. Delay is adjusted such away LED blinks for every 1 or 2 seconds.

12. SIMULATE A VHDL TEST BENCH CODE FOR TESTING A GATE
Develop a VHDL test bench code for testing any one of the simple gate. Simulate the test bench code in the HDL software.

13. VHDL IMPLEMENTATION FOR BLINKING A ARRAY OF LEDS
Design and develop a VHDL Code for 4 bit binary up counter. Four LEDs are connected at the output of the counter. The counter should up for every one seconds.

14. VHDL IMPLEMENTATION OF A SPELLER WITH AN ARRAY OF LEDS
Design and develop VHDL Code for a 5 bit Johnson ring counter 4 bit The LEDs are connected at the output of the counter. The speller should work for every one seconds.

15. VHDL IMPLEMENTATION OF 7 SEGMENT DISPLAY
Design and develop a seven segment decoder in VHDL. Design and develop a 4 bit BCD counter, the output of the counter is given to seven segment decoder. A seven segment display is connected to the output of the decoder. The display shows 0,1, 2.. 9 for every one second

SPECIFIC INSTRUCTIONS TO CARRY OUT THE PRACTICAL CLASS WORK AS WELL AS THE BOARD EXAMINATIONS PRACTICALS
1. Gate level or behavioral level or structural model can be used for all experiments.
2. Manual for the PPGA Kit and interface kit can be given to students for the final exam.

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS
1. FPGA should have atleast 10 switches for input, 8 LEDs for output, a 7 segment display, debounced push switch(2 Nos) for manual clock input and external clock source. Also It should have the provision for various interfaces like stepper motor, traffic light and DC motor control.
2. Manual for the PPGA Kit and interface kit can be given to students for the final exam.

VI SEMESTER

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

EMBEDDED SYSTEMS

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

L-SCHEME

(Implements from the Academic year 2011-2012 onwards)

Course Name   **:** Electronics and Communication Engineering
Subject Code   : **20461**
Semester   **:** VI semester
Subject Title   : **EMBEDDED SYSTEMS**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
Embedded systems	6	96	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

Topics and Allocation of Hours:

Sl.No.	Topic	Time(Hrs)
I	**ARM Processor Architecture**	14
II	**ARM instruction set and Interupts**	13
III	**Catch mechanism**	14
IV	**Memory Protection and Management unit**	14
V	**Embedded OS and RTOS**	13
	Revision and test	12
	Total	80

RATIONALE:

Increasingly, embedded systems developers and system-on-chip designers select specific microprocessor cores and a family of tools, libraries, and off-the-shelf components to quickly develop embedded system-based products. A major processor in this industry is ARM. Since 1985, the ARM architecture has become the most pervasive 32-bit architecture in the world. ARM processors are embedded in products ranging from cell/mobile phones to automotive braking systems. A worldwide community of ARM partners and third-party vendors has developed among semiconductor and product design companies, including hardware engineers, system designers, and software developers. This course has been to describe the operation of the ARM core from a product developer's perspective with a clear emphasis on its architecture by assuming no previous ARM experience.

OBJECTIVES:

- On successful completion of the course, the students must be able to

- Distinguish between CISC and RISC architecture

- Understand the ARM design philosophy

- Explain the ARM architecture and the pipeline structure

- Describe the little and big endian methods of representation

- Explain the Instruction sets of ARM processor.

- Understand various operational modes in ARM processor

- List the various exceptions and handling methods

- Develop an assembly level code for basic arithmetic primitive operations

- Understand the cache mechanism and cache policies

- List and explain various cache mechanisms

- Explain the essential of cache memory, write buffers and its policies

- Explain the importance of Lockdown and its method

- Explain the importance of MPU and MMU

- Understand the functionality of virtual memory

- Relate and distinguish between OS and RTOS in their functionality

- Understand hard time and soft time RTOS

- Explain multitasking, scheduling, ITC, and synchronization

- Develop simple application in RTOS

24061 EMBEDDED SYSTEMS

DETAILED SYLLABUS (Only simple programmes)

Unit	Name of the Topic	Hours
I	**1.1 ARM PROCESSOR ARCHITECTURE:** The RISC and ARM design philosophy, Embedded System Hardware.	4
	1.2 ARM PROCESSOR FUNDAMENTALS: Data Flow model, Registers, modes of operation, Current Program Status Register, Pipeline, Exceptions, Interrupts, and the Vector Table	8
	ARM nomenclature and families. Big Endian and Little Endian	2
II	**2.1 ARM INSTRUCTIONS SETS AND INTERRUPTS:** ARM and Thumb Instruction Sets, Data Processing Instructions, Branch Instructions, Load-Store Instructions, Software Interrupt Instruction, Program Status Register Instructions, Conditional Execution, Stack Instructions, Software Interrupt Instruction. **2.2 ARM PROCESSOR EXCEPTIONS AND MODES:** vector table, priorities, link Register offsets, interrupts, and IRQ / FIQ exceptions interrupt stack design and implementation. **2.3 SIMPLE PROGRAM:** Addition, Subtraction, Multiplication in assembly	13 Hrs
III	**3.1 CACHE MECHANISM:** Introduction to cache memory, memory hierarchy and cache memory, Cache architecture and cache policies. **3.2 CONCEPT OF FLUSHING AND CLEANING CACHE:** Flushing and Cleaning ARM cache core. **3.3 CONCEPT OF CACHE LOCKDOWN:** Locking Code and Data in Cache. Cache and write buffer	14 Hrs
IV	4.1 MEMORY PROTECTION AND MANAGEMENT UNIT: Introduction to protection unit, Protected Regions, and Demonstration of an MPU system. Virtual Memory working principle	14 Hrs
V	**5.1 EMBEDDED OS AND RTOS:** Fundamental Components to Embedded OS, Simple Little Operating System: Initialization, memory model, interrupts and exceptions handling, Scheduler, and context switch. **5.2 INTRODUCTION TO RTOS:** Real-time systems concepts, foreground/background systems, critical sections, resources, multitasking, Context switching, scheduling, re-entrancy, task priorities, mutual exclusion. **5.3 SYNCHRONIZATION AND IPC**: Introduction to Semaphores and types. Inter process communication: pipes and message box.	13 Hrs

TEXT BOOKS:
1) "ARM System Developer's Guide Designing and Optimizing" by Andrew N.Sloss Elsevier publication, 2004.
2) "MicroC/OS – II" second edition The Real Time Kernel Jean J. Labrosse Publisher:
   Viva Books Private Ltd (Feb 2002)

REFERENCE BOOK:
1) "Embedded systems" B.Kanta Rao PHI publishers, Eastern Economy Edition, 2011
2) "Embedded Systems Architecture" - Tammy Noergaard, Newness edition, 2005
3) "ARM System-on-Chip Architecture" 2nd Edition, Steve Furbe,
   Pearson Education, 2000
4) "Embedded/Real Time Systems" Dr. K.V.K.K PRASAD Dream tech press, 2009

24061 EMBEDDED SYSTEMS
MODEL QUESTION PAPER - I

Time: 3 Hrs   **Max Marks: 75**
                    PART- A   **Marks 15 x 1 = 15**

Note: Answer any 15 Questions. All Questions carry equal marks

1. Distinguish between RISC and CISC
2. Give one example for CISC
3. What is the importance of pipelining in a processor?
4. Write few importance of ARM processor than other processor
5. Why do you need interrupt in the processor?
6. Write the instruction for transferring the data from memory to processor
7. Write the instruction for transferring the data from processor to memory
8. Distinguish between stack and stack pointer
9. Drew the memory hierarchy in the microprocessor based system
10. What do you need cache memory?
11. List the types of cache mechanism present for the embedded system
12. What do you meant by memory hit and miss?
13. What are MPU and MMU?
14. Write the importance of MMU
15. What do you meant by Virtual memory?
16. Why do you need memory protection unit?
17. What is RTOS?
18. List the fundamental components of the Embedded OS.
19. What do you meant by IPC?
20. Distinguish between Task and Process

PART- B   Marks 5 x 12 = 60
Answer all Questions

21A i) What are all various execution modes of ARM processor and discuss one by one   [8]
   ii) What are all the features in status registers in ARM   (4)
                                    (OR)
  B i) Discuss about Little-Endian and Big-endian formats with suitable example   [6]
   ii) Distinguish between vectored and non vectored interrupt   [6]

22 A i) Develop an assembly code for performing simple addition in ARM   [8]
    ii) Write various level of index in Load instructions supported by ARM   [4]
                                    (OR)
  B i) Develop an assembly code for performing simple subtraction in ARM   [8]
   ii) Write various level of index in store instructions supported by ARM   [4]

23 A i) Discuss about direct mapped cache mechanism with suitable diagram   [8]
    ii) What is the roll of write buffer in cache mechanism?   [4]
                                    (OR)
  B i) Discuss about set associative cache mechanism with suitable diagram   [8]
   ii) Why do we need cache locking?   [4]

24 A) Explain memory management unit in detailed diagram   [12]
                                    (OR)
  B) Explain memory protection unit in detailed diagram   [12]

25 A i) Discuss various methods of process synchronization   [8]
    ii) Why do we need IPC mechanism in an OS?   [4]
                                    (OR)
  B i) What is the roll of semaphore and discuss its various types?   [6]
   ii) List different scheduling methods and discuss shortly   [6]

24061 EMBEDDED SYSTEMS
MODEL QUESTION PAPER - II

Time: 3 Hrs   **Max Marks: 75**
PART- A   **Marks 15 x 1 = 15**
Note: Answer any 15 Questions. – All Questions carry equal marks

1. What is RISC?
2. What is CISC?
3. What is the importance of stack pointer in a processor?
4. Write the unique feature of ARM processor than other processor
5. Define interrupt in the processor?
6. What does the instruction LDR do?
7. What does the instruction STR do?
8. Where is stack allocated in the ARM processor?
9. Show the memory hierarchy in the microprocessor based system
10. What is the importance cache memory?
11. Write the types of cache mechanism present
12. Define memory hit and miss
13. What are MPU and MMU?
14. Why do we need a MMU?
15. Define Virtual memory?
16. Why do you need memory protection unit?
17. Distinguish between OS and RTOS?
18. Write the basic operation in Embedded OS.
19. Why do we need IPC?
20. Define Task and Process

PART- B   **Marks 5 x 12 = 60**
Answer all Questions

21 A i) What are all various modes of operation in ARM processor and discuss   [8]
    ii) What are all the features in CPSR in ARM   [4]
                                   (OR)
  B i) Discuss about Registers in ARM processor   [6]
    ii) Explain various interrupts in ARM processor   [6]

22 A i) Develop an assembly code for performing single precision addition in ARM   [8]
    ii) Write various level of index in store instructions supported by ARM   [4]
                                   (OR)
  B i) Develop an assembly code for performing single precision subtraction in ARM   [8]
    ii) Write various levels of store and Load instructions supported by ARM   [4]

23 A i) Discuss about cache mechanism in embedded system with suitable diagram   [8]
    ii) Discuss the functional operation of write buffer in cache mechanism?   [4]
                                   (OR)
  B i) Discuss about cache mechanism types with suitable diagram   [8]
    ii) What is the feature of cache locking?   [4]

24 A Explain the operation MMU in detailed diagram   [12]
                                   (OR)
  B i) Explain the operation MPU in detailed diagram   [12]

25 A i) Why do we need synchronization mechanism?   [8]
    ii) What is the importance of IPC mechanism in an OS?   [4]
                                   (OR)
  B i) Explain the function and various types of semaphore?   [6]
    ii) What is scheduling? Discuss shortly   [6]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

COMPUTER HARDWARE NETWORK

**DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU**

L – SCHEME
(Implements from the Academic Year 2012-2013 onwards)

Course Name   : Diploma in Electronics and Communication Engineering
Subject Code   : **24682**
Semester   : VI Semester
Subject Title   : **COMPUTER HARDWARE AND NETWORKS**

TEACHING AND SCHEME OF EXAMINATION:

No. of Weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
COMPUTER HARDWARE AND NETWORKS	5 Hours	80 Hours	25	75	100	3 Hours

Topics and Allocation of Hours:

Sl. No	Topics	Time (Hours)
Unit-I	MOTHERBOARD COMPONENTS AND MEMORY STORAGE DEVICES	14 Hours
Unit-II	I/O DEVICES AND INTERFACE	14 Hours
Unit-III	TROUBLE SHOOTING OF DESKTOP AND LAPTOPS	14 Hours
Unit-IV	COMPUTER NETWORK DEVICES AND OSI LAYERS	14 Hours
Unit-V	802.X AND TCP/IP PROTOCOLS	14 Hours
	Revision and Examinations	10 Hours
Total		80 Hours

Rationale:

Maintaining and servicing the computers, laptops and peripherals are essential requirements of the computer students. The clear understanding of computer network devices and protocols are also taught in this subject.

OBJECTIVES:

On completion of the following units of syllabus contents, the students can

- Identify the major components that make up the system unit.
- Understand the principle of operations of Keyboard, mouse and Displays.
- Study about the specification of I/O Ports of all I/O devices like serial, parallel, USB – Game port, Blue tooth and IP Connectors
- Understand the technology of high quality multiple color graphic output devices like Dot matrix, Inkjet, Laser, Line, MFP and computer system.
- Understand the operations to Power Supply devices.
- Know the use of diagnostic Software.
- Identify the major components of Laptop.
- Troubles shoot the problems in Laptop.
- Understand the concept of data communication.
- Discuss the advantages and disadvantages of different network topologies.
- Compare different network classifications based on different category.
- Know the use of different network devices.
- Understand the different layers of OSI and their functions.
- Compare different LAN protocols.
- Identify the protocols used in TCP /IP and compare with OSI model.
- Use of IP addressing and TCP/ IP protocols briefly.

24682 COMPUTER HARDWARE AND NETWORKS
DETAILED SYLLABUS

Unit No.	Name of the Topic	Hours
I	**MOTHERBOARD COMPONENTS AND MEMORY STORAGE DEVICES**	**2 Hrs**
	1.1 Introduction: Parts - Mother board, expansion slots, memory, power supply, drives and front panel and rear panel connectors – Hardware, Software and Firmware.	
	1.2 Processors: Architecture and block diagram of multicore Processor, Features of new processor(Definition only)-chipsets (Concepts only)	**2 Hrs**
	1.3 Bus Standards Overview and features of PCI, AGP, USB, PCMCIA, Processor BUS - High Speed Bus	
	1.4 Primary Memory: Introduction-Main Memory, Cache memory –DDR2-DDR3, RAM versions – 1TB RAM – Direct RDRAM	**2 Hrs**
	1.5 Secondary Storage: Hard Disk – Construction – Working Principle – Specification of IDE, Ultra ATA, Serial ATA; HDD Partition - Formatting. Troubleshooting hard disk drives.	**2 Hrs** **3 Hrs**
	1.6 Removable Storage: CD&DVD construction – reading & writing operations; CD-R,CD-RW; DVD-ROM, DVD-RW; construction and working of DVD Reader / Writer. Blue-ray: Introduction – Disc Parameters – Recording and Playback Principles – Solid state memory devices.	**3 Hrs**
II	**I/O DEVICES AND INTERFACE**	
	2.1 Keyboard and Mouse: Keyboard: Signals – operation of membrane and mechanical keyboards–troubleshooting; wireless Keyboard. Mouse-types, connectors, operation of Optical mouse and Troubleshooting.	**2 Hrs**
	2.2 Printers: Introduction – Types of printers– Dot Matrix, Inkjet, Laser, line printer, MFP (Multi Function Printer), Thermal printer - Operation – Construction – Features and Troubleshooting	**4 Hrs**
	2.3 I/O Ports: Serial, Parallel, USB, Game Port, Bluetooth interface, IR connector, fire ware, Signal specification problems with interfaces.	**2 Hrs**
	2.4 Displays and Graphic Cards: Panel Displays– Principles of LED, LCD and TFT Displays. SVGA Port signals – common problems and solutions.	**2 Hrs**
	2.5 Modem: Working principles – Broadband modems only (USB) - common problems and solutions	**1 Hr**
	2.6 Power Supply: Servo Stabilizers, online and offline UPS - working principles; Surge suppressors and spike isolators. SMPS: Principles of Operation and Block Diagram of ATX Power Supply, connector Specifications.	**3 Hrs**
III	**MAINTENANCE AND TROUBLE SHOOTING OF DESKTOP AND LAPTOPS**	**3 Hrs**
	3.1 Bios-setup: Standard CMOS setup, Advanced BIOS setup, Power management, advanced chipset features, PC Bios communication – upgrading BIOS, Flash BIOS -setup.	**2 Hrs**
	3.2 POST: Definition – IPL hardware – POST Test sequence – beep codes and error messages.	**2 Hrs**

		3.3 Diagnostic Software and Viruses: Computer Viruses – Precautions – Anti-virus Software – identify the signature of viruses – Firewalls and latest diagnostic software's.	**2 Hrs**
		3.4 Laptop: Difference between laptop and desktop- Types of laptop – block diagram – working principles–configuring laptops and power settings - SMD components, ESD and precautions.	**2 Hrs**
		3.5 Laptop components: Adapter – types, Battery – types and basic problems, RAM– types, CPU – types, Laptop Mother Board - block diagram, Laptop Keyboard –Mouse and Touchpad - Ports. **3.6 Installation and Troubleshooting:** Formatting, Partitioning and Installation of OS – Trouble Shooting Laptop Hardware problems - Preventive maintenance techniques for laptops.	**3 Hrs**
IV		**COMPUTER NETWORK DEVICES AND OSI LAYERS** **4.1 Data Communication:** Components of a data communication – Data flow: simplex – half duplex – full duplex; Networks – Definition - Network criteria – Types of Connections: Point to point – multipoint; Topologies: Star, Bus, Ring, Mesh, Hybrid – Advantages and Disadvantages of each topology.	**4 Hrs**
		4.2 Types of Networks: LAN – MAN – WAN – CAN – HAN – Internet – Intranet –Extranet, Client-Server, Peer To Peer Networks.	**3 Hrs**
		4.3 Transmission Media : Classification of transmission media - Guided – Twisted pair, Coaxial, Fiber optics; Unguided – Radio waves – Infrared – LOS – VSAT – cabling and standards	**3 Hrs**
		4.4 Network devices: Features and concepts of Switches – Routers(Wired and Wireless) – Gateways**.**	**2 Hrs**
		4.5 Network Models: Protocol definition - standards - OSI Model – layered architecture – functions of all layers**.**	**2 Hrs**
V		**802.X AND TCP/IP PROTOCOLS** **5.1 Overview of TCP / IP:** OSI & TCP/IP – Transport Layers Protocol – connection oriented and connectionless Services – Sockets - TCP & UDP.	**2 Hrs**
		5.2 802.X Protocols : Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) – Token ring (802.5) – Ethernet – type of Ethernet (Fast Ethernet, gigabit Ethernet) – Comparison between 802.3, 802.4 and 802.5	**3 Hrs**
		5.3 Network Layers Protocol: IP –Interior Gateway Protocols (IGMP, ICMP, ARP, RARP Concept only).	**4 Hrs**
		5.4 IP Addressing : Dotted Decimal Notation –Subnetting & Supernetting – VLSM Technique-IPv6 (concepts only)	**2 Hrs**
		5.5 Application Layer Protocols: FTP– Telnet – SMTP– HTTP – DNS – POP.	**3 Hrs**

TEXT BOOKS:

1. IBM PC and CLONES, B.Govindrajalu, Tata McGrawhill Publishers, IBM PC and CLONES
2. Computer Installation and Servicing, D.Balasubramanian, Tata McGraw Hill
3. Computer Installation and Servicing
4. The complete PC upgrade and Maintenance, Mark Minasi, BPB Publication, The complete PC upgrade and Maintenance
5. Troubleshooting, Maintaining and Repairing PCs, Stephen J Bigelow ,Tata MCGraw Hill Publication ,Troubleshooting Maintaining and Repairing PCs
6. Upgrading and repairing laptops, Scott Mueller, QUE Publication, Upgrading and repairing laptops
7. Data Communication and networking, Behrouz A.Forouzan, Tata Mc-Graw Hill, New Delhi,
8. Data and Computer Communications, William Stallings, Prentice-Hall of India, Eighth Edition
9. Computer Networks, Andrew S.Tanenbaum, Prentice-Hall of India, New Delhi,

REFERENCE BOOKS:

1. Computer Networks,Achyut Godbole,Tata Mc-Graw Hill -New Delhi

2. Principles of Wireless Networks– A unified   Approach, Kaveh Pahlavan and Prashant

   Krishnamurty, Pearson Education, 2002

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24682 COMPUTER HARDWARE AND NETWORKS
MODEL QUESTION PAPER – 1

Time: 3 Hrs   Max. Marks: 75
                                PART – A   Marks 15 x 1 = 15
Note : Answer any 15 Questions. – All Questions carry equal marks

1. What is a Chipset?
2. Define: Direct RDRAM.
3. What is the Secondary Storage?
4. Give any two features of PCI.
5. Expand the term LED.
6. What are membrane and mechanical keyboard?
7. Define: Blue tooth interface.
8. List out the types of printers.
9. Define: BIOS.
10. List out the types of adapter.
11. Give the types of RAM.
12. Define: Power Management.
13. What is the data communication?
14. Define: Data Flow.
15. Expand the term: MAN.
16. What are the types of transmission media?
17. Give an example for connection-oriented protocol.
18. Expand the term: POP.
19. What is subnetting?
20. Define socket.

                    PART – B   Marks 5 x 12 = 60
                          Answer all Questions

21 A i) Explain in detail about the architecture of Multi core Processor with neat diagram. [12]
                                    (OR)
   B i) Explain the Processor Bus.   [6]
    ii) Explain the working principles of CD-R.   [6]

22 A i) Write the signal specification problems with interfaces.   [8]
     ii) Explain the operation of optical mouse.   [4]
                                    (OR)
     B. Explain the working principle of modem.   [12]

23 A i) Write about SMD Components.   [6]
     ii) What are the signatures of viruses?   [6]
                                    (OR)
   B) What is POST? List out the tests performed by POST   [12]

24 A) Explain in detail about OSI model with neat diagram.   [12]
                                    (OR)
   B) Explain in detail about Network devices.   [12]

25 A) Explain in detail about TCP and UDP.   [12]
                                    (OR)
   B) Discuss about 802.X protocols with neat diagram.   [12]

24682 COMPUTER HARDWARE AND NETWORKS
Model Question Paper – II

Time: 3 Hrs   Max. Marks: 75
                   PART – A   **Marks 15 x 1 = 15**
Note : **Answer any 15 Questions. – All Questions carry equal marks**

1. What is the other name of motherboard?
2. Define: BUS.
3. Define: processor.
4. What is the use of ultra ATA?
5. What is parallel port?
6. Define: Spike Isolator.
7. Expand the term UPS.
8. What is Multi Function Printer?
9. What is CMOS?
10. What are the types of error messages?
11. Give an example for anti-virus software.
12. What is ESD?
13. Give any two advantages of star topology.
14. What is an adaptive routing?
15. What is half duplex?
16. What is VSAT?
17. What is connectionless protocol?
18. Expand: IGMP.
19. What is supernetting?]
20. What is DNS?

                   PART – B   **Marks 5 x 12 = 60**
                   Answer all Questions

21 A i) How will you format the hard disk?   [6]
    ii) Draw and explain the USB.   [6]
                              (OR)
B. Discuss the format and version of DVD-ROM.   [12]

22 A i) Explain in detail about SVGA.   [6]
    ii) Write the working principle of LCD.   [6]
                              (OR)
  B) Explain the working of wireless keyboard with block diagram.   [12]

23 A) How will you upgrade BIOS?   [12]
                              (OR)
  B i) Draw the block diagram of laptop motherboard and explain it.   [8]
  ii) Write down the steps involved in OS installation.   [4]

24 A) With neat diagram explain the types of networks.   [12]
                              (OR)
  B) Discuss about unguided transmission media with neat diagram.   [12]

25 A i) With neat diagram explain about TELNET.   [6]
    ii) Explain in detail about SMTP.   [6]
                              (OR)
  B i) With neat diagram explain about VLSM technique.   [6]
  ii) Write short notes on IPV6.   [6]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

TELEVISION ENGINEERING

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24081**
Semester : V Semester
Subject title : Elective Theory II Television Engineering

TEACHING AND SCHEME OFEXAMINATION:

Number of Weeks/ Semester : 16 weeks

Subject	Instruction		Examination			
	Hrs. Week	Hrs Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Television Engineering	5	80	25	75	100	3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs)
I	Television fundamentals	14
II	Camera and Picture tubes	13
III	Television Transmitter	14
IV	Television Receiver	14
V	Advanced Television systems	13
	Revision, Test	12
	Total	80

RATIONALE:

The rationale behind introducing this subject is to make the students understand the structure, working and all other relevant aspects of Television Engineering which has become an integral part of Electronic media which is growing at an exponentially high rate all around the world.

OBJECTIVES

To understand monochrome TV transmitter and receiver
To understand principles of scanning
To study about TV standards
To study fundamentals of color TV
To learn about camera tube and its working.
To understand the working of picture tubes.
To learn about color TV transmitter
To Study about color TV receiver
To study about LED, LCD displays
To study fundamentals of CCTV
To learn HD TV and 3D TV

24081TELEVISION ENGINEERING

DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
1	**T.V. FUNDAMENTALS** **Monochrome TV:** Basic block diagram of Monochrome TV transmitter and Receiver – Scanning process – horizontal, vertical and sequential scanning – flicker – interlaced scanning (qualitative treatment only) – need for synchronization – blanking pulses – Aspect ratio– Resolution – Types – vertical and horizontal resolution – video bandwidth – composite video signal (CVS)– CVS for one horizontal line – Definitions for Vertical sync pulse, Serrated vertical pulse, Equalizing pulse – Positive & Negative modulation - TV Standards – List of Types of TV standards. **Color T.V. Fundamentals**: Additive mixing of colors – Types – color perception – Chromaticity diagram – Definition for Luminance, Hue, Saturation and Chrominance.	10 4
2	**CAMERA AND PICTURE TUBES** **CAMERA TUBE**: Characteristics – Types of camera tube – working principle of Vidicon and Plumbicon camera tube, CCD camera – Video processing of camera pick up signal – Block diagram and Principle of working of color TV camera tube. **PICTURE TUBE** : Construction and working of Monochrome picture tube – screen phosphor – screen burn – Aluminized screen – Types of color picture tubes -construction and working principle of Delta gun and Trinitron Color picture tubes – Automatic degaussing	7 6
3	**TELEVISION TRANSMITTER** Principles – Block diagram of Low level IF Modulated TV transmitter – Visual Exciter –Aural Exciter – principle of working of CIN Diplexer – Block diagram of color TV transmitter – color compatibility – PAL color coder –functional blocks and working of each block – Merits and demerits of PAL system.	14
4	**TELEVISION RECEIVEER** Block diagram of Monochrome Receiver – functions of each block – Need for AGC – Advantages of AGC – Video amplifier requirements – High frequency & Low frequency compensation – Block diagram of PAL color Receiver – Need for sync separator – Basic sync separator circuits – Vertical sync separation & Horizontal sync separation – AFC – Need for AFC – Horizontal AFC – Hunting in AFC – Anti Hunt network.	14
5	**ADVANCED TELEVISION SYSTEMS** Principles of Flat panel display, Plasma display, LED & LCD display – Block diagram of a digital color TV receiver – Remote control IR transmitter and receiver – closed circuit TV system (CCTV) – Applications of CCTV – Telecine equipment – Digital CCD Telecine system – Block diagram of VCD Player – Block diagram of DVD Player – Introduction to High definition TV (HDTV) & 3DTV.	13

REFERENCE BOOKS:

1. Monochrome TV Practice, Principles, Technology &servicing by R.R.Gulati-Second Edition- New Age publishers-2004.
2. Monochrome & color TV by R.R.Gulati - New Age publishers -2003
3. TV &Video Engg. By A.M.Dhake – Second Edition TMH -2003
4. Color TV, Theory and practice – by S.P.Bali-TMH – 1994
5. Modern VCD-Video CD Player Introduction, servicing and troubleshooting by Manohar Lotia & Pradeep Nair

24081 TELEVISION ENGINEERING
MODEL QUESTION PAPER - I

TIME: 3 HOURS   **MAX MARKS: 75**

PART – A

ANSWER ANY 15 QUESTIONS   **15X1 =15 MARKS**

1. What is scanning?
2. What is meant by flicker?
3. Mention any two TV standards
4. What is the need for synchronizing pulses?
5. Mention the types of camera tube
6. What is automatic degaussing?
7. Define screen burn
8. What is meant by dark current.
9. What is high level modulation?
10. What is the use of visual exciter?
11. What is the use of CIN diplexer?
12. What is VSB filter?
13. Define AGC.
14. What is use of tuner section?
15. What is Anti hunt network?
16. What is a sync separator?
17. What is HDTV?
18. Mention any two types of display?
19. Give the merits of digital receiver.
20. What is CCTV?

PART – B   **5X12 =60 MARKS**
Answer all Questions

21 A) Explain a Monochrome TV transmitter with block diagram.   [12]

(Or)

B) Explain horizontal and vertical scanning.   [12]

22 A) Explain the working of Videocon camera tube with a neat diagram.   [12]

(Or)

B) Explain the working of a Delta gun color picture tube.   [12]

23 A) Explain working of a PAL color coder with neat diagram.   [12]

(Or)

B) With a neat block diagram explain color TV transmitter.   [12]

24 A) Draw the block diagram of PAL color TV receiver and explain.   [12]

(Or)

B) Explain video amplifier circuit with high frequency and low frequency   [12]
    Compensation.   [12]

25 A) Explain the Digital color TV receiver with block diagram.   [12]

(Or)

B) Explain the functions of a remote IR transmitter and IR receiver.   [12]

24081 TELEVISION ENGINEERING
MODEL QUESTION PAPER - II
TIME: 3 HOURS   **MAX MARKS: 75**
PART – A
ANSWER ANY   15 QUESTIONS   **15X1 =15 MARKS**
1. What is aspect ratio?
2. What is the need for blanking pulses?
3. Mention types of mixing of colors
4. What is meant by Hue?
5. What is a camera tube?
6. What is the advantage of aluminized screen?
7. What is a picture tube?.
8. Mention types of picture tube.
9. Define low level modulation.
10. What is a delay equalizer?
11. Mention one advantage of low level IF modulation.
12. What is the principle of a TV transmitter?
13. Expand EHT.
14. What is the use of HF and LF compensation?
15. Define AFC.
16. What is meant by hunting?
17. Give one advantage of plasma display.
18. Mention the applications of CCTV.
19. What is the need for Telecine system?
20. Mention advantages of DVD.

PART – B   **5X12 =60 MARKS**
Answer all Questions

21 A) Explain with a neat diagram a Monochrome TV receiver   [12]
                                    (or)
   B) Explain about (1) chromaticity diagram (2) composite video signal.   [12]

22 A) Explain the construction and operation of Plumbicon camera tube.   [12]
                                    (or)
   B) Explain the working of monochrome picture tube.   [12]

23 A) Draw the block diagram of low level IF modulated transmitter and explain [12]
                                    (or)
   B) Explain (1) Visual exciter (2) Aural exciter.   [12]

24 A) Draw the block diagram of Monochrome receiver and explain each block.   [12]
                                    (or)
   B) Explain the need for sync separator. Explain the basic sync separator circuit. [12]

 25 A) Explain the working of Digital CCD Telecine system.   [12]
                                    (or)
   B) Explain working of VCD player in playback mode with block diagram.   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

BIOMEDICAL &TELEMEDICINE

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **23082**
Semester   : VI Semester
Subject title : **ELECTIVE THEROY II : BIOMEDICAL INSTRUMENTAION**

TEACHING AND SCHEME OFEXAMINATION:

Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination				
	Hrs. Week	Hrs Semester	Marks				Duration
			Internal Assessment	Board Examination	Total		
BIOMEDICAL AND INSTUMENTAION	5	80	25	75	100		3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs)
I	PHYSIOLOGICAL & CLINICAL MEASUREMENT	14
II	BIO - MEDICAL RECORDERS	14
III	THERAPEUTIC INSTRUMENTS	14
IV	BIO – TELEMETRY AND PATIENT SAFETY	14
V	MODERN IMAGING TECHNIQUES	14
	Revision, Test	10
	Total	80

Rationale:

Recent advances in medical field have been fuelled by the instruments developed by the Electronics and Instrumentation Engineers. Pacemakers, Ultrasound Machine CAT, Medical diagnostic systems are few names   which have been contributed by engineers. Now health care industry uses many instruments which are to be looked after by instrumentation engineers. This subject will enable the students to learn the basic principles of different instruments/equipment used in the health care industry. The practical work done in this area will impart skill in the use, servicing and maintenance of these instruments/equipment. Proficiency in this area will widen the knowledge and skill of diploma holders in the field of biomedical instrumentation.

Objectives:

After learning this subject, the student will be able to understand about

- The generation of Bio potential and its measurement using various Electrodes.
- The measurement of Blood pressure.
- The measurement of Respiration rate.
- The principle of operation of ECG recorders
- The principle of operation of EEG & EMG recorders
- The working principle of Audio meter.
- The principle of operation of pacemakers.
- The basic principle of Dialysis.
- The principle of operation of Endoscopy.
- The working principle of telemetry.
- The basic principle of Telemedicine.
- The basic principle of various types of lasers.
- The basic principle of CT Scanners.
- The principle of operations of various Imaging techniques used in medical field.
- The various method of accident prevention

Unit	Name of the Topic	Hours	Marks
I	**PHYSIOLOGICAL & CLINICAL MEASUREMENT** Elementary ideas of cell structure, heart and circulatory system, control nervous system, Musclo-skeletal system, Respiratory system Body temperature and reproduction system. Bio – potential and their generation – resting and action potential – propagation of action potential. Electrodes – Micro – Skin – surface – needle electrodes Measurement of Blood pressure (direct, indirect) – instantaneous flow (Electro magnetic flow meter, ultrasonic blood flow meter) – blood pH Measurement of Respiration rate – lung volume – heart rate – Temperature (body temperature & Skin temperature) Chromatography, Photometry, Flurometry.	14	15
II	**BIO - MEDICAL RECORDERS:** Electro cardiograph (ECG) – Lead system – ECG electrodes – ECG amplifiers – ECG recording units – analysis of ECG curves. Nervous system – EEG recorder – 10-20 lead system – recording techniques – EEG wave types – Clinical use of EEG – brain tumour Electro – myograph (EMG) – EMG waves – measurement of conduction velocity – EMG recording techniques – Electro – retinograph (ERG) Audiometer – principle – types – Basics audiometer working	14	15
III	**THERAPEUTIC INSTRUMENTS:** Cardiac pacemaker – classification – External pace makers – implantable pacemaker – pacing techniques – programmable pacemaker – power source of implantable pacemakers (Hg batteries, nuclear batteries, Lithium cells) Cardiac defibrillators – types – AC – DC defibrillators Heart lung machine – Oxygenators – Blood pumps – peristaltic pump – Heart valves – Problems of artificial heart valves. Dialysis – Hemo dialysis – peritoneal dialysis. Endoscopy – principle of working and applications	14	15
IV	**BIO – TELEMETRY AND PATIENT SAFETY:** Introduction – physiological – adaptable to bio – telemetry – components of a bio telemetry system – application of telemetry in patient care – problems associated with implantable telemetry. Fluid balance – electrolytic balance – acid base balance. Physiological efforts of electric current – Micro and macro shock – leakage current – shock hazards from electrical equipment. Methods of Accident Prevention – Grounding – Double Insulation – Protection by low voltage – Ground fault circuit interrupter – Isolation of patient connected parts – Isolated power distribution system. Safety aspects in electro surgical units – burns, high frequency current hazards, Explosion hazards Telemedicine – Introduction – working – applications	14	15

Unit	Name of the Topic	Hours	Marks
V	**MODERN IMAGING TECHNIQUES:** LASER beam properties – block diagram – operation of CO2 and NDYag LASER – applications of LASER in medicine . X ray apparatus – block diagram – operation – special techniques in X-ray imaging – Tomogram – computerized Axial tomography – Ultrasonic imaging techniques – Echo cardiography – Angiography – CT scanner - Magnetic resonance imaging techniques	14	15

REFERENCE BOOKS

Sl.No	Name of the Book	Author	Publisher
1	Biomedical Instrumentation and measurement	Leslie Cromwell – Fred.J. Weibell,	
2	Medical Electronics	Kumara doss	
3	Medicine and Clinical Engineering	Jacobson and Webstar	
4	Handbook of Bio – Medical Instrumentation.	R. S. Khandpur	
5	Introduction to Medical Electronics.	B.R. Klin	
6	Introduction to Biomedical Instrumentation	Mandeep Singh	Printice Hall India 2010

23082 - BIO MEDICAL INSTRUMENTATION
Model Question Paper-I

TIME: 3 HOURS   **MAX MARKS: 75**
PART – A

ANSWER ANY 15 QUESTIONS   **15X1 =15 MARKS**
1. Define action potential.
2. What is meant by respiration rate?
3. What is the use of electrodes?
4. Define pH.
5. State the purpose of RL electrode in ECG.
6. What do you mean by brain tumor.
7. What is an audiometer?
8. What is EMG test?
9. What is fibrillation?
10. Give the types of blood pump.
11. What is a cardiac pacemaker?
12. What is a hemodialyser?
13. Whish tissue has less percent of water content?
14. What is fluid balance?
15. What is biotelemetry?
16. Define macro shock.
17. Mention any two properties of laser beam.
18. What is electrocardiography?
19. State the application of computerized axial tomography.
20. What is angiography?

PART – B   **5X12 =60 MARKS**
Answer all Questions

21 A i) Write short notes on micro electrode.   [4]
   ii) Explain about the lung volume measurement.   [8]
                        (or)
  B i) Discuss about direct method of blood pressure measurement.   [6]
   ii) Explain about chromatographic technique for analyzing various constituents present
      in blood samples.   [6]

22 A i) Analyze the waveforms obtained in ECG.   [4]
   ii) Explain the working of ERG with neat block diagram.   [8]
                        (or)
  B i) Explain the 10-20 lead system used in EEG with neat sketch.
   ii) Explain about the basic block diagram of audiometer.

23 A i) Differentiate internal & external pacemaker.
   ii) Discuss about operation of heart lung machine.
                        (or)
  B i) Explain the working of dc defibrillator with a neat diagram.
   ii) Briefly discuss about the working of endoscopy with a neat diagram.

24 A i) Explain the various components of biotelemetry.
   ii) Explain in detail about the various methods of accident prevention.
                        (or)
  B i) Explain the physiological effects of electrical current in detail.
   ii) Write down the safety aspects in surgical unit.

25 A i) Explain the application of laser in medicine.
   ii) Write briefly about ultrasonic imaging technique.

(or)
B i) Explain the working of a X- ray machine with block diagram.
  ii) Explain the basic block diagram of Magnetic Resonance Imaging technique.

23082 BIO MEDICAL INSTRUMENTATION

Model Question Paper-II

TIME: 3 HOURS   **MAX MARKS: 75**

PART A

Answer any 15 questions   **15X1 =15 MARKS**

1. What are the salts responsible for action and nesting potential?
2. What is blood PH?
3. What instrument is used to analysis the working of brain?
4. Define respiration rate and lung volume
5. What is speech audiometry?
6. Give one application of Audiometer?
7. What is fibrillation?
8. State one problem associated with implementable telementry.
9. What is the use of RL electrode in ECG?
10. What is macro shock? Enumerate the application of artificial heart valve.
11. Write short notes on telemedicine.
12. Trace a normal ECG waveform and range the salient points?
13. What do you meant by dialysis? And state various methods.
14. Show the different brain waves with their frequency
15. What do you mean by heart rate?.
16. Differentiate micro and macro shock.
17. What is Fluid balance?
18. List the various special techniques in X-ray imaging.
19. Mention any four medical application of LASER?
20. What is the application of computerised axial tomography?

PART – B   5X12 =60 MARKS
Answer all Questions

21 A Explain the different types of electrode used to measure bio potential.   [12]
         OR
 B Draw the block diagram of Electromagnetic flow meter and explain its
   construction and application w .r. t biomedical.   [12]

22 A Draw the block diagram of ECG and explain its working.   [12]
         OR
 B How conduction velocity muscle is measured.   [12]

23 A What is a pace maker? List and explain the various power sources used
   for implantable pace marker?   [12]
         OR
 B Draw the block diagram of heart machine and explain its working.   [12]

24 A List the various method of accident prevention and explain each.   [12]
         OR
 B Draw the block diagram of Biotelementry system and explain.   [12]

25 A Explain the operation of CO2 LASER.   [12]
         OR
 B. Explain the working of magnetic resonance using a block diagram.   [12]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

ELECTRONIC SYSTEM DESIGN

**DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU**

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24083**
Semester : VI Semester
Subject title : **Elective Theory II: ELECTRONIC SYSTEM DESIGN**

TEACHING AND SCHEME OF EXAMINATION:

Number of Weeks/ Semester : 16 weeks

Subject	Instruction		Examination			
	Hrs. Week	Hrs Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ELECTRONIC SYSTEM DESIGN	5	80	25	75	100	3Hrs

TOPICS AND ALLOCATION:

Unit	Topic	Time (Hrs)
I	Power supplies	14
II	Amplifier, Voltage to current and current to voltage converter	13
III	ADC, DAC, Instrumentation amplifier and transducer	14
IV	Signal generators	14
V	Microcontroller based application	13
	Revision and test	12
	Total	80

Rationale:
In design of any simple circuit it is necessary to find the value of components used in the circuits. this subject will make the students to understand the important specifications of various components and selection of components to be used in design.

Objective
- To understand to design of DC regulated power supply of various voltages with different protection circuits
- To understand the design of different types of amplifiers for various applications
- To understand the use of various transducers and make use them
- To design various systems using the analog data collected from transducers
- To design various signal generator
- To understand design of drivers for LED and Motors
- To understand the use of microcontrollers for various application

24083 ELECTRONIC SYSTEM DESIGN
DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
I	**Design of Power supply:** DC power supply with filters, regulators & protection circuits, Multi output and variable power supply design	14
II	**Design of small signal amplifiers:** Emitter follower, Darlington pair amplifiers with and without Bootstrapping, Two stage direct coupled amplifiers. Design of audio power amplifier with drivers, Design of simple PA system Voltage to current converter, current to voltage converter.	13
III	**Data acquisition system:** ADC, DAC, Design of Instrumentation amplifier with the bridge type transducer, Temperature measurement, Design of Electronic voltmeter and ammeter, Display system.	14
IV	**Design of function generators:** Design of AM signal using multiplier IC, AM signal demodulation using envelope detector, Design of FM signal using VCO (using IC NE566).	14
V	**High voltage/high current driver:** Circuit for Relay and motor control applications. Microcontroller based closed loop system, security systems, scrolling display; Microcontroller based stepper motor control system.	13

REFERENCES

1. N.C.Goyel, R.K.Khetan, A Monograph on Electronic s Design Principles, Khanna Publishers

2. DC Power Supply Handbook, Agilent Technologies

3. The art of electronics by Paul Horowitz, and Hill, Cambridge University Press

4. Electronic Devices and circuits by David A.Bell, Oxford University Press

5. Electronic Devices and circuits by Theodore F Bogart Jr. , Pearson Edition

24083 ELECTRONIC SYSTEM DEISGN
MODEL QUESTION PAPER – I

TIME: 3 HOURS   **MAX MARKS: 75**
PART – A
ANSWER ANY   15 QUESTIONS   **15X1 =15 MARKS**

1. List the building blocks of regulated power supply in sequence
2. What will be the voltage drop in full wave bridge rectifier, when the load is connected?
3. Mention the component used for identifying the over current in the power supply
4. What is meant by line regulation in regulated power supply
5. Define the term small signal amplifier
6. Which components are eliminated in direct coupled two stage amplifier compared to capacitor coupled two stage amplifier
7. What is the advantage of using emitter follower circuit
8. What do you understand by the term Public Address System
9. What do you understand by the term DAS
10. Mention the necessity of I to V converter
11. In instrumentation amplifier, which of the operational amplifier is used
12. Which opamp circuit is used to measure very low voltage
13. Name the device which is used to get the demodulated signal
14. What is the relationship between bandwidth and frequency that is used to design the R and C values in diode envelope detector
15. What is a function generator
16. Mention the disadvantages of a diode detector circuit
17. What is relay
18. Name the common microcontroller peripherals
19. What is the function of an 'assembler'
20. What is the necessity for interfacing between microcontroller and its peripheral

PART – B   **5X12 =60 MARKS**
Answer all Questions

21 A) An unregulated DC power supply provides a DC voltage that can vary between 18V and 22V. Design a 15Voltege Zener Voltage regulator for a load having $I_{L(min)}$ =20mA and $I_{L(max)}$ =120mA. Specify resistor and Zener diode including power ratings.   [12]
(or)
B) An unregulated power supply is fed from 230V, 50Hz ac source. The transformer rating is 230/12V. The bridge rectifier is used with a filter capacitor of 1000µfd. Find the voltage across the 2Kohm resistance connected across the supply.   [12]

22 A) Design an audio amplifer circuit using TBA 810 and explain the control procedures.   [12]
(or)
B) A common emitter amplifier has Vcc = 15V, R_B = 75Kohm and R_E =910ohm. The β of the Silicon transistor is 100 and the load resistance is 600ohm. Find the voltage gain of the circuit [12]

23 A i) The logic levels used in a 4 bit R-2R ladder DAC are 1 level is+5V and 0 level is 0V. Find the output voltage when the input is 1010_2 [4]
   ii) Design a 4bit weighted resister DAC whose full scale output voltage is -10V when 0 level is0V and 1 level is +5V   [8]
(or)
B) Design an instrumentation amplifier with input voltages of +2V and +4V assuming all the Resistance as 4Kohm find Vo.   [12]

24 A) Discuss the operation of VCO in FM demodulation. State the design issues   [12]

(or)

B i) Design a square/ triangular wave function generator using OP-amps to operate at a frequency of 2KHz with the triangular wave having peak-peak value of 3V.   [6]

ii) Explain how envelope detection is working using diode detector   [6]

25 A) Discuss the application of microcontroller in the design of security system.   [12]

(or)

B) Design a driver circuit for relay as a current protection.   [12]

24083 ELECTRONIC SYSTEM DEISGN
MODEL QUESTION PAPER – II

TIME: 3 HOURS   **MAX MARKS: 75**
PART – A
ANSWER ANY   15 QUESTIONS   **15X1 =15 MARKS**

1. Mention the difference between transformer and centre tapped transformer
2. Define voltage regulation of power supply
3. What value of current limiting resistor should be used to limit the maximum current to 0.5Amp
4. When the power supply is switched off, the indicating LED glows for some time. What is the reason?
5. Which capacitor in amplifier circuit is larger. Why
6. What is the voltage gain of common collector amplifer
7. Draw the circuit diagram of the Darlington pair transistor circuit
8. What is the band width of the audio amplifier circuit
9. What is the advantage of R-2R ladder DAC over weighted summer DAC
10. Mention the various displays used in process industry
11. Draw the bridge circuit with a temperature sensor in one arm
12. Which circuit is used to select on of the channels in Data Acquisition System
13. What is the equation for computing the VCO free running carrier frequency for the FM detector
14. What is the role of multiplier in design of AM signal
15. List few function generator ICs
16. What are the advantages of digital phase detectors over analog phase detector
17. What is drop out current in relays
18. Draw the internal block diagram of a typical microcontroller
19. List the types of relays
20. What are the advantages and limitations of a microcontroller

PART – B   **5X12 =60 MARKS**
Answer all Questions

21 A) Design a series voltage regulator with error amplifier to produce 12V DC and
$I_{L(max)}$ =40mA. The supply voltage Vs = 20V.   [12]
(or)
   B) Describe in detail about source and load effects of power supply. Construct a test circuit
   and write test procedures.   [12]

22 A) Explain in detail about the Public Address System components and procedure to install PAS [12]
(or)
   B) A relay of 12V/200ohm is to be driven by a digital circuit by using Darlington pair circuit.
   The digital circuit could drive 400µA with +ve logic '1' level. If β_1 =100, find β_2 =and $R_{C1.}$ [12]

23 A) Draw the block diagram of temperature measurement and display system with LM35   [12]
(or)
   B) Design an Electronic Voltmeter for measuring in the range of 200mV; 2V and 20VDC.
   Explain your design   [12]

24 A i) Discuss the blocks involved in design of a function generator.   [8]
   ii) An AM signal is detected by a diode envelop detector whose R=10Kohm and C=1000pF.
   If the modulation index is 30%, calculate the highest modulating frequency that can be
   detected without out distortion   [4]
(or)
   B) Discuss in detail, the design of AM signal modulation and demodulation   [12]

25 A) With necessary instructions to initialize the interface, design a scrolling display to message "HELLO". Explain the hardware requirements and driver circuits associated with the design [12]

(or)

B i) Write the instructions to control a stepper motor. Explain the steps involved.   [6]

ii) Discuss about the driver circuit used for high voltage relays   [6]

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

EMBEDDED SYSTEMS PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

L-SCHEME

(Implements from the Academic year 2011-2012 onwards)

Course Name	**:**	Electronics and Communication Engineering	
Course Code	:	24064	
Semester	**:**	VI Semester	
Subject Title	**:**	**Embedded systems Practical**	

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
Embedded systems practical	5	80	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

RATIONALE:

ARM is a major processor widely used in the embedded system in products ranging from cell/mobile phones to automotive braking and control systems. Since 1985, the ARM architecture has become the most pervasive 32-bit architecture in the world. This practical course has been set up to describe the operation of the ARM core from experimenting simple exercises with a clear emphasis on its architecture by assuming no previous ARM experience. In Diploma level, the ARM architecture is studied and experimented for its internals through hands on. This is achieved by experiencing the experiments through industrial and society needs. Also this practical subject makes the students to get acquainted with embedded c program, ability to describe the system requirement and to make a complete prototype working model.

GUIDELINES:
- All the experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling Instruments/Equipment and taking readings in the practical classes, every three students should be provided with a separate experimental setup for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while admitting a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Interface circuit diagram	10 marks
Algorithm/ flow chart	20 marks
Program	20 Marks
Observation	10 marks
Result	10 marks
VivoVoce	5 marks
	_____
Total	75 Marks

24064 Embedded systems Practical
List of experiments

1. **STUDY OF ARM PROCESSOR KIT** (whatever the ARM processor kit the institution is having)
   Example: LPC2148
   The student should able to
   Understand the memory mapping of the IO and peripherals
   List the peripherals present in the processor
   Explain that how to use an IO pin, related SFRs and instructions
   Explain that how to use timer, UART, its related SFR and instructions sets

2. **SIMULATION OF ARITHMETIC OPERATION ON ARM IN ASSEMBLY**
   Develop an assembly level code for the single precision (32 bit) arithmetic function. a. Addition, b. Subtraction and b. Multiplication
   (**Note:** simulate the program in the software)

3. **SIMULATION OF ASSEMBLY LEVEL PROGRAM FOR SOFT DELAY**
   Develop an assembly level code for the 32 bit or 64 bit delay routine. Calculate the no of clock taken for the routine and adjust the delay value for the desired.   (Note: simulate the program in the software)

4. **SIMPLE LED BLINKING WITH VARIABLE SPEED IN ASM**
   Develop an assembly level program of ARM processor to blink a LED (including delay routine) in variable speed in the trainer kit. Upon change in the delay program the speed should vary. No need to change the speed dynamically.
   (Note: Student should study the list of special function registers associated for accessing the IO pin. Manual containing List of IO registers (SFR for IO) can be given to the students for the final exam)

5. **REALIZATION OF INPUT AND OUTPUT PORT IN ASM**
   Develop an assembly level program of ARM processor to read a port in which switches are connected in the trainer kit. Send back the receive input to output in which LEDs are connected in the trainer kit
   Note: Student should study the list of special function registers associated for accessing Port the read and write. Manual containing List of IO registers (SFR for IO) can be given to the students for the board exam)

6. **SIMPLE LED BLINKING WITH VARIABLE SPEED IN C**
   Develop a C program for ARM processor to blink a LED (including delay routine) in variable speed. Upon change in the input switch the speed should vary. (Note: The C code should be in while loop)

7. **SEVEN SEGMENT LED DISPLAY INTERFACE IN C**
   Develop a C program for ARM processor to interface a seven segment LED display. The display should count up for every one second.

8. **SEVEN SEGMENT LED DISPLAY INTERFACE IN C**
   Develop a C program for ARM processor to interface a seven segment LED display. The display should count up for every one second. The delay can be used from experiment 3

9. **REALIZING TIMER PERIPHERAL IN ARM BY POLLING METHOD**
   Develop a C program for ARM processor to run a timer peripheral in ARM. The timer flag can be pooled for timer end. As timer ends reset the timer and update new value to the LED display.

10. **REALIZING TIMER PERIPHERAL IN ARM BY INTERRUPT DRIVEN METHOD**
    Develop a C program for ARM processor to run a timer peripheral in ARM. The timer flag can be pooled for timer end. As timer ends reset the timer and update new value to the LED display.

11. **SERIAL TRANSMISSION AND RECEPTION OF A CHARACTER IN C BY POLLING METHOD**
    Write a C Programs for receiving a character from other device (Computer) and send the next character of the received one to the device back.
    Note: Student should understand the SFRs used for serial communication. Manual containing list of SFRs for the UART can be given to the students for their final examination

12. **SERIAL TRANSMISSION AND RECEPTION OF A CHARACTER IN C BY INTERRUPT METHOD**
    Write a C Programs for receiving a character from other device (Computer) and send the next character of the received one to the device back.

13. **DISPLAYING ALPHANUMERIC CHARACTERS IN 2X16 LINE LCD MODULE**
    Write a C Programs for displaying a number and an alphabet in the LCD module by just calling the built in LCD function. The display should come in the desired line and column.
    (Built in function for the LCD can be given in the manual)

14. **CONVERTING HEXADECIMAL TO DECIMAL AND TO DISPLAY IN LCD**
    Write a C Programs for converting the given 8 bit hexadecimal into decimal and there by converting into ASCII which is to be displayed in the LCD module.
    (Built in function for the LCD can be given in the manual)

15. **ACCESSING INTERNAL ADC OF THE ARM PROCESSOR AND TO DISPLAY IN LCD**
    Write a C Programs for reading an ADC, convert into decimal and to display it
    The ADC input is connected to any analog sensor.
    (Note: Student should study the SFR associated with ADC, Manual containing List of SFR for accessing ADC can be given for the examination.)

MODEL QUESTIONS FOR THE BOARD PRACTICAL EXAMINATIONS

- Develop a code for running a seven segment display which counts up for pressing a key and counts down for pressing another key. Implement the same in the given _____Trainer kit

- Design a system which read temperature data from the sensor through ADC. Display the read data in the display module. (Built function for LCD can be used)

- Write a C Programs for reading the RTC and to display it in LCD. (Built function for LCD can be used)

- Write a C Programs for receiving a character from other device (Computer) and send the next character of the received one to the device back. Implement it in trainer kit

- Develop an assembly level code for the double precision arithmetic function. a. Addition, b. Subtraction

SPECIFIC INSTRUCTIONS TO CARRY OUT THE PRACTICAL CLASS WORK AS WELL AS THE BOARD EXAMINATIONS PRACTICALS
1. Manual for the ARM instructions sets and manual for the trainer kit (Excluding sample program) can be allowed for their board exam.
2. Definition for built in function for the board can be given to students for their board exam.
3. Manual contains procedure for program down loading through boot loader or JTAG can be given to students for their board exam

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

1. ARM7 TDMI Kit – 10 nos (10 batches with 3 students in each batch) with interface boards for the above experiments The Chip set may be TMS470, LPC2138, LPC2148, or STR7 etc
2. Interface support and devices like RTC, ADC, LCD, Seven segment display, LEDS and Switches.
3. Manual for the kit and for interfacing board with stepper motor
4. Manual for the built in function for the Board.

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

COMPUTER HARDWARE NETWORK AND PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
L – SCHEME
(Implemented from the academic year 2012 - 2013 onwards)

Course Name   :   Diploma in Electronics and Communication Engineering.
Subject Code   :   24684
Semester   :   VI Semester
Subject Title   :   COMPUTER HARDWARE AND NETWORK PRACTICAL

SCHEME OF INSTRUCTION AND EXAMINATION

No. of weeks per semester: 16 weeks

Subject	Instructions		Examination		
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total
COMPUTER HARDWARE AND NETWORK PRACTICAL	5	80	25	75	100

RATIONALE

The course aims at making the students familiar with various parts of computers and laptops and how to assemble them and the different types of peripherals desired. In addition, the course will provide the students with necessary knowledge and skills in computer and laptop software installation and maintenance and to make him diagnose the software faults. This subject also gives the knowledge and competency to diagnose the problems in computer hardware and peripherals and also gives the knowledge for trouble shooting for systematic repair and maintenance of computers and laptops

OBJECTIVES

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

- Know the various indicators, switches and connectors used in Computers.
- Familiarize the layout of SMPS, motherboard and various Disk Drives.
- Configure Bios set up options.
- Install various secondary storage devices with memory partition and formatting.
- Know the various types of printer installation and to handle the troubleshooting ability.
- Acquire the practical knowledge about the installation of various devices like scanner, web camera, cell phone and bio-metric devices.
- Assemble PC system and checking the working condition.
- Installation of Dual OS in a system.
- Identify the problems in Computer systems, software installation and rectification also.
- Assembling and disassembling of Laptop to identify the parts and to install OS and configure it.
- Enable to perform different cabling in a network.
- Configure Internet connection and use utilities to debug the network issues.
- Configure router for any topology

LAB EXERCISES

part A – computer servicing practicals	
1	**Identification of System Layout.** Front panel indicators & switches and Front side & rear side connectors. Familiarize the computer system Layout: Marking positions of SMPS, Motherboard, FDD, HDD, CD, DVD and add on cards. Configure bios setup program and troubleshoot the typical problems using BIOS utility.
2	**HARD DISK** Install Hard Disk. Configure CMOS-Setup. Partition and Format Hard Disk. Identify Master /Slave / IDE Devices. Practice with scan disk, disk cleanup, disk De-fragmenter, Virus Detecting and Rectifying Software.
3	a) Install and Configure a DVD Writer and a Blu-ray Disc writer. b) Recording a Blank DVD and Blu-ray Disc.
4	**Printer Installation and Servicing:** a) Head Cleaning in dot matrix printer b) Install and configure Dot matrix printer and Laser printer c) Troubleshoot the above printers. d) Check and connect the data cable connectivity
5	**Install and configure** Scanner, Web cam, Cell phone and bio-metric device with system. Troubleshoot the problems
6	Assemble a system with add on cards and check the working condition of the system and install OS.
7	**Dual OS Installation**
8	Assembling and Disassembling of Laptop to identify the parts and to install OS and configure it.

part B – computer network practicals	
9	Do the following Cabling works in a network a) Cable Crimping b) Standard Cabling c) Cross Cabling d) IO connector crimping e) Testing the crimped cable using a cable tester
10	Configure Host IP, Subnet Mask and Default Gateway in a system in LAN (TCP/IP Configuration). Configure Internet connection and use IPCONFIG, PING / Tracert and Netstat utilities to debug the network issues
11	Interface two PCs using Peer To Peer network using connectivity devices – Switch and Router in a LAN and share the Drives and Folders.
12	Transfer files between systems in LAN using FTP Configuration, install Print server in a LAN and share the printer in a network.
13	Configure DNS to establish interconnection between systems and describe how a name is mapped to IP Address
14	Install and configure Network Devices: HUB, Switch and Routers
15	Install and Configure Wired and Wireless NIC and transfer files between systems in LAN and Wireless LAN.

part C (NOT FOR EXAMINATION)	
	Visit Any industry/ Institute (Engineering colleges, University campus etc.,) and study the following: Type and configuration of client PCs and OS Type and configuration of Server and Domains Used Type of Networking (Topology and medium used) Different Network devices used (Switches, Routers, Access points etc.,) Different types of peripherals used Applications used by the user. Prepare a detailed report of about 4 to 5 pages and include in the lab record.

SCHEME OF VALUATION

Procedure Writing – One Question from PART - A	10 Marks
Procedure Writing – One Question from PART - A	15 Marks
Executing program (PART – A)	15 Marks
Executing program (PART – B)	20 Marks
Result with printout (PART – A)	5 Marks
Result with printout (PART – B)	5 Marks
VIVA – VOCE	5 Marks
TOTAL	75 Marks

COMPUTER HARDWARE AND NETWORK PRACTICAL - REQUIREMENTS

PART A – COMPUTER SERVICING PRACTICAL	
1.	**Hardware Requirements :** • Computer with Pentium / Core processors with add on cards – 36Nos • Hard disk drive - 06 Nos • CD Drive - 06 Nos • DVD Writer - 06 Nos • Blank DVD - 50 Nos • Blank Blu-ray disk - 50 Nos • Head cleaning CD • Dot matrix Printer - 06 Nos • Laser Printer - 06 Nos • Digital Camera - 02 Nos • Web Camera - 02 Nos • Scanner - 02 Nos • Blue tooth device and cell phone - 02 Nos • Bio-metric device - 02 Nos • Laptop - 18Nos
2.	**Software Requirements:** • Windows XP operating system • Linux operating system • Disk Manager (for the purpose of partition and format) • Norton or E-Trust Antivirus software • Scandisk • DVD Writer S/W • CD Burning S/W (Ahead Nero or latest S/W) • Blu-ray Burning S/W

PART B – COMPUTER NETWORK PRACTICAL	
1.	Tools Requirement • Crimping Tool - 06 Nos • Network Cables
2.	Equipment Requirement • Modem - 01 No • Laser Printer - 01 No • Hub - 01 No • Router - 01 No • Switch - 01 No
3.	System Requirement • Pentium Systems with on board Ethernet Card (NIC) - 18 Nos
4.	Software Requirement • Windows 2000 or 2003 or LINUX Server. • OS Windows XP with service pack • Drivers Software

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

SIMULATION PRACTICAL

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24066**
Semester   : VI Semester
Subject title   : **SIMULATION PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

 Number of Weeks/ Semester   :   16 weeks

Subject	Instruction		Examination			
	Hrs. Week	Hrs Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
SIMULATION PRACTICAL	5	80	25	75	100	3Hrs

Objective

To design and verify the results of various electronic circuits using simulation software and verify the result in the computer

24066 SIMULATION PRACTICAL

Note:
   1.   All experiments should be designed and verified through *SPICE* simulation tool (like PSPICE /Multisim/ Lab VIEW/ OrCAD/ TINA)
1. Study of simulation software features using simple circuits
2. Rectifier Circuits (Half wave, full wave and bridge rectifiers with filters)
3. Power supply design with regulators
4. Waveform generators using transistors (Astable multivibrators)
5. Waveform generators using transistors (mono stable multivibrators)
6. Clippers and Clampers
7. Op-amp applications – I (any three circuits)
    (Inverting and non-inverting amplifiers, voltage follower, integrator,
    Differentiator, summing amplifier, difference amplifier)
8. Op-amp applications – II (any three circuits)
   (Hartley and phase shift oscillators, sine, square and triangular waveform   generators, precision rectifiers)
9. Instrumentation amplifiers
10. AM Modulation and Demodulation
11. FM Modulation and Demodulation
12. ASK Modulation and Demodulation
13. FSK Modulation and Demodulation
14. PSK Modulation and Demodulation
15. Single side PCB layout design using CAD tool
    Drawing the schematic of simple electronic circuit and design of PCB layout
    using CAD tool
16. Multilayer PCB layout design using CAD tool

DIPLOMA IN ELECTRONICS AND COMMUNICAITON ENGINEERING

L - SCHEME

2011 - 2012

PROJECT WORK

**DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU**

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS
L-SCHEME
(Implemented from the Academic year 2011-2012 onwards)

Course Name : Electronics and Communication Engineering
Subject code : **24067**
Semester   : VI Semester
Subject title   : **PROJECT WORK**
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TEACHING AND SCHEME OF EXAMINATIONS:

No. of Weeks per Semester : 16 Weeks

Subject	Instruction		Examination		
	Hours/ Week	Hours/ Semester	Assessment Marks		
			Internal	Board Exam	Total
PROJECT WORK	4	64	25	75	100

Minimum Marks for Pass is 50 out of which minimum 35 marks should be obtained out of 75 marks in the board Examination alone.

OBJECTIVES:

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
- Get exposure on industrial environment and its work ethics.
- Understand what entrepreneurship is and how to become an entrepreneur.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.
- Understand the facts and importance of environmental management.

Understand and gain knowledge about disaster management

INTERNAL ASSESSMENT:
The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	Period of assessment	Max. Marks
First Review	6th week	10
Second Review	14th week	10
Attendance	Entire semester	5
Total		**25**

EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	Max Marks
Marks for Report Preparation, Demo, Viva-voce	45
Marks for answers of 15 questions which is to be set by the external examiner from the given question bank consisting of questions in the following three topics Entrepreneurship, Disaster Management and Environmental Management. Out of fifteen questions five questions to appear from each of the above topics i.e. 5 questions x 3 topics = 15 questions 15 questions x 2marks = 30 Marks	30
Total	**75**

<u>DETAILED SYLLABUS</u>

ENTREPRENEURSHIP, ENVIRONMENTAL & DISASTER MANAGEMENT

1. ENTREPRENEURSHIP

1.1 Introduction – Entrepreneur - characteristics of Entrepreneur - contributions of an Entrepreneur - functions of entrepreneur - Barriers to entrepreneurship - Roll of government in Entrepreneurial development.

1.2 Small scale industries (SSI) - SSI role in country's economic growth – importance of SSI - starting of an SSI - Government organization and Non-governmental organizations supporting SSI - DIC,NSIC,SIDO,KVIC, Development banks and their objectives - role of commercial banks in assisting SSI - Women entrepreneurs and opportunities – Subsidy and concessions to Small Scale Industries.

2. ENVIRONMENTAL MANAGEMENT

2.1 Introduction – Environmental Ethics – Assessment of Socio Economic Impact – Environmental Audit – Mitigation of adverse impact on Environment – Importance of Pollution Control – Types of Industries and Industrial Pollution.

2.2 Solid waste management – Characteristics of Industrial wastes – Methods of Collection, transfer and disposal of solid wastes – Converting waste to energy – Hazardous waste management Treatment technologies.

2.3 Waste water management – Characteristics of Industrial effluents – Treatment and disposal methods – Pollution of water sources and effects on human health.

2.4 Air pollution management – Sources and effects – Dispersion of air pollutants – Air pollution control methods – Air quality management.

2.5 Noise pollution management – Effects of noise on people – Noise control methods.

3. DISASTER MANAGEMENT

3.1 Introduction – Disasters due to natural calamities such as Earthquake, Rain, Flood, Hurricane, Cyclones etc – Man made Disasters – Crisis due to fires, accidents, strikes etc – Loss of property and life..

3.2 Disaster Mitigation measures – Causes for major disasters – Risk Identification – Hazard Zones – Selection of sites for Industries and residential buildings – Minimum distances from Sea – Orientation of Buildings – Stability of Structures – Fire escapes in buildings - Cyclone shelters – Warning systems.

3.3 Disaster Management – Preparedness, Response, Recovery – Arrangements to be made in the industries / factories and buildings – Mobilization of Emergency Services - Search and Rescue operations – First Aids – Transportation of affected people – Hospital facilities – Fire fighting arrangements – Communication systems – Restoration of Power supply – Getting assistance of neighbors / Other organizations in Recovery and Rebuilding works – Financial commitments – Compensations to be paid – Insurances – Rehabilitation.

LIST OF QUESTIONS

1. ENTREPRENEURSHIP

1. Define the term Entrepreneur.
2. What is Entrepreneurship? Explain.
3. List the various stages of decisions an entrepreneur has to make before reaching the goal of his project.
4. What is innovation?
5. State briefly the role of an entrepreneur in the economic growth of a country.
6. List the characteristics of an Entrepreneur.
7. What are the critical elements of an Entrepreneur?
8. State the major functions of an Entrepreneur.
9. What are barriers to Entrepreneurship?
10. Define Small Scale Industry.
11. What are the qualities of Entrepreneur?

12. What are the benefits of Entrepreneur?

13. What are the various SSI that can flourish in your district?

14. Identify the infrastructural needs for an industry.

15. What are the various agencies involved in the establishment and development of various SSI?

16. Name some of the agencies funding SSI.

17. Explain the roles played by Government in Entrepreneural development.

18. What are the various concessions and incentives available for a SSI.

19. Name some consumer products with wide demand that can be manufactured by a SSI?

20. What is feasibility study?

21. What is the importance of SSI?

22. What is DIC? State its functions.

23. What is NSIC? State its functions.

24. What is SIDO? State its functions.

25. Name the Development Banks in India working towards Entrepreneurial development.

26. State the role of commercial bank in assisting SSI sector.

27. What are the different phases of Entrepreneurial Development programme?

28. What is an Industrial Estate?

29. What are the facilities available in an Industrial Estate?

30. Identify the various training agencies associated with SSI.

31. List the governmental agencies from whom you shall get financial assistance for a SSI.

32. What is KVIC? State its objectives.

33. Name some state finance corporations.

34. What are the steps involved in preparing a feasibility report?

35. What are the factors to be considered regarding raw materials for a SSI?

36. What are the features of a SSI?

37. What are the advantages of becoming an Entrepreneur?

38. Name the Organizations offering assistance for the development of Women entrepreneurs.

39. State the business opportunities for Women entrepreneurs.

40. State the different subsidies given to SSI's.

2. ENVIRONMENTRAL MANAGEMENT

1. What is the responsibility of an Engineer-in-charge of an Industry with respect to Public Health?

2. Define Environmental Ethic.

3. How Industries play their role in polluting the environment?

4. What is the necessity of pollution control? What are all the different organizations you know, which deal with pollution control?

5. List out the different types of pollutions caused by a Chemical / Textile / Leather / Automobile / Cement factory.

6. What is meant by Hazardous waste?

7. Define Industrial waste management.

8. Differentiate between garbage, rubbish, refuse and trash based on their composition and source.

9. Explain briefly how the quantity of solid waste generated in an industry could be reduced.

10. What are the objectives of treatments of solid wastes before disposal?

11. What are the different methods of disposal of solid wastes?

12. Explain how the principle of recycling could be applied in the process of waste minimization.

13. Define the term 'Environmental Waste Audit'.

14. List and discuss the factors pertinent to the selection of landfill site.

15. Explain the purpose of daily cover in a sanitary landfill and state the minimum desirable depth of daily cover.

16. Describe any two methods of converting waste into energy.

17. What actions, a local body such as a municipality could take when the agency appointed for collecting and disposing the solid wastes fails to do the work continuously for number of days?

18. Write a note on Characteristics of hazardous waste.

19. What is the difference between municipal and industrial effluent ?

20. List few of the undesirable parameters / pollutants anticipated in the effluents from oil refinery industry / thermal power plants / textile industries / woolen mills / dye industries / electroplating industries / cement plants / leather industries   (any two may be asked)

21. Explain briefly the process of Equalization and Neutralization of waste water of varying characteristics discharged from an Industry.

22. Explain briefly the Physical treatments "Sedimentation" and "Floatation" processes in the waste water treatment.

23. Explain briefly when and how chemical / biological treatments are given to the waste water.

24. List the four common advanced waste water treatment processes and the pollutants they remove.

25. Describe refractory organics and the method used to remove them from the effluent.

26. Explain biological nitrification and de-nitrification.

27. Describe the basic approaches to land treatment of Industrial Effluent.

28. Describe the locations for the ultimate disposal of sludge and the treatment steps needed prior to ultimate disposal.

29. List any five Industries, which act as the major sources for Hazardous Air Pollutants.

30. List out the names of any three hazardous air pollutants and their effects on human health.

31. Explain the influence of moisture, temperature and sunlight on the severity of air pollution effects on materials.

32. Differentiate between acute and chronic health effects from Air pollution.

33. Define the term Acid rain and explain how it occurs.

34. Discuss briefly the causes for global warming and its consequences

35. Suggest suitable Air pollution control devices for a few pollutants and sources.

36. Explain how evaporative emissions and exhaust emissions are commonly controlled.

37. What are the harmful elements present in the automobile smokes? How their presence could be controlled?

38. What is the Advantage of Ozone layer in the atmosphere? State few reasons for its destruction.

39. Explain the mechanism by which hearing damage occurs.

40. List any five effects of noise other than hearing damage.

41. Explain why impulsive noise is more dangerous than steady state noise.

42. Explain briefly the Source – Path – Receiver concept of Noise control.

43. Where silencers or mufflers are used ? Explain how they reduce the noise.

44. Describe two techniques to protect the receiver from hearing loss when design / redress for noise control fail.

45. What are the problems faced by the people residing along the side of a railway track and near to an Airport? What provisions could be made in their houses to reduce the problem?

3. DISASTER MANAGEMENT

1. What is meant by Disaster Management? What are the different stages of Disaster management?

2. Differentiate Natural Disasters and Man made Disasters with examples.

3. Describe the necessity of Risk identification and Assessment Surveys while planning a project.

4. What is Disasters recovery and what does it mean to an Industry?

5. What are the factors to be considered while planning the rebuilding works after a major disaster due to flood / cyclone / earthquake? (Any one may be asked)

6. List out the public emergency services available in the state, which could be approached for help during a natural disaster.

7. Specify the role played by an Engineer in the process of Disaster management.

8. What is the cause for Earthquakes? How they are measured? Which parts of India are more vulnerable for frequent earthquakes?

9. What was the cause for the Tsunami 2004 which inflicted heavy loss to life and property along the coast of Tamilnadu ? Specify its epicenter and magnitude.

10. Specify the Earthquake Hazard Zones in which the following towns of Tamilnadu lie: (a) Chennai (b) Nagapattinam (c) Coimbatore (d) Madurai (e) Salem.

11. Which parts of India are experiencing frequent natural calamities such as (a) heavy rain fall (b) huge losses due to floods (c) severe cyclones

12. Define basic wind speed. What will be the peak wind speed in (a) Very high damage risk zone – A, (b) High damage risk zone, (c) Low damage risk zone

13. Specify the minimum distance from the Sea shore and minimum height above the mean sea level, desirable for the location of buildings.

14. Explain how the topography of the site plays a role in the disasters caused by floods and cyclones.

15. Explain how the shape and orientation of buildings could reduce the damages due to cyclones.

16. What is a cyclone shelter? When and where it is provided? What are its requirements?

17. What Precautionary measures have to be taken by the authorities before opening a dam for discharging the excess water into a canal/river?

18. What are the causes for fire accidents? Specify the remedial measures to be taken in buildings to avoid fire accidents.

19. What is a fire escape in multi-storeyed buildings? What are its requirements?

20. How the imamates of a multi-storey building are to be evacuated in the event of a fire/Chemical spill/Toxic Air Situation/ Terrorist attack, (any one may be asked).

21. Describe different fire fighting arrangements to be provided in an Industry.

22. Explain the necessity of disaster warning systems in Industries.

23. Explain how rescue operations have to be carried out in the case of collapse of buildings due to earthquake / blast / Cyclone / flood.

24. What are the necessary steps to be taken to avoid dangerous epidemics after a flood disaster?

25. What relief works that has to be carried out to save the lives of workers when the factory area is suddenly affected by a dangerous gas leak / sudden flooding?

26. What are the difficulties faced by an Industry when there is a sudden power failure? How such a situation could be managed?

27. What are the difficulties faced by the Management when there is a group clash between the workers? How such a situation could be managed?

28. What will be the problems faced by the management of an Industry when a worker dies because of the failure of a mechanical device due to poor maintenance? How to manage such a situation?

29. What precautionary measures have to be taken to avoid accidents to labourers in the Industry in a workshop / during handling of dangerous Chemicals / during construction of buildings / during the building maintenance works.

30. Explain the necessity of medical care facilities in an Industry / Project site.

31. Explain the necessity of proper training to the employees of Industries dealing with hazardous products, to act during disasters.

32. What type of disaster is expected in coal mines, cotton mills, Oil refineries, ship yards and gas plants?

33. What is meant by Emergency Plan Rehearsal? What are the advantages of such Rehearsals?

34. What action you will take when your employees could not reach the factory site because of continuous strike by Public Transport workers?

35. What immediate actions you will initiate when the quarters of your factory workers are suddenly flooded due to the breach in a nearly lake / dam, during heavy rain?

36. What steps you will take to avoid a break down when the workers union of your Industry have given a strike notice?

37. List out few possible crisis in an organization caused by its workers? What could be the part of the middle level officials in managing such crisis?

38. What types of warning systems are available to alert the people in the case of predicted disasters, such as floods, cyclone etc.

39. Explain the necessity of Team work in the crisis management in an Industry / Local body.

40. What factors are to be considered while fixing compensation to the workers in the case of severe accidents causing disability / death to them?

41. Explain the legal / financial problems the management has to face if safely measures taken by them are found to be in adequate.

42. Describe the importance of insurance to men and machinery of an Industry dealing with dangerous jobs.

43. What precautions have to be taken while storing explosives in a match/ fire crackers factory?

44. What are the arrangements required for emergency rescue works in the case of Atomic Power Plants?

45. Why residential quarters are not constructed nearer to Atomic Power Plants?

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Electronics and Communication Engineering
Alternative subjects for K- scheme with that of L-scheme

semester	Subjects in K scheme — Subjects Name	Semester	Alternative in L scheme — Subject Name
III	Electronic Devices and Circuits	III	Electronic Devices and Circuits
	Electric Circuits and Instrumentation	III	Electric Circuits and Instrumentation
	'C' Programming and OOPS	III	'C' Programming
	Electronic Devices and Circuits Lab	III	Electronic Devices and Circuits Practical
	Electric Circuits & Instrumentation Lab	III	Electric Circuits & Instrumentation Practical
	'C' Programming Lab	III	Programming in 'C' Practical
IV	Analog and Digital Electronics	IV	Digital Electronics
	Industrial Electronics	IV	Industrial Electronics
	Communication Engineering	IV	Communication Engineering
	Analog and Digital Electronics Lab	IV	Integrated Circuits Practical
	IE and CE Lab	IV	Industrial Electronics & Communication Engineering Practical
	English Communication Lab	IV	Communication Skills and Life Skills Practical
V	Microprocessor and Micro controller	V	Micro controller
	Advanced Communication Systems	V	Advanced Communication Systems
	Elective – I 1.Digital Signal Processor		No alternative
	2.VLSI	V	Very Large Scale Integration
	3.Robotics and Auto-Electronics	V	Robotics
	Microprocessor and Microcontroller Lab	V	Microcontroller Practical
	Advanced Communication Systems Lab	V	Advanced Communication Systems Practical
	Elective - I Lab 1**.** Digital Signal Processor Lab		No alternative
	2.VLSI Lab	V	Very Large Scale Integration Practical
	3. Robotics and Auto-Electronics Lab		No alternative
VI	Computer Hardware and Networking	VI	Computer Hardware and Network
	Embedded Systems	VI	Embedded Systems
	Elective - II 1.Digital Image Processing		No alternative
	2.Television Engineering	VI	Television Engineering
	3.Bio-Medical Instrumentation	VI	Bio medical Instrumentation
	Computer Hardware and Networking Lab	VI	Computer Hardware and Network Practical
	Embedded Systems Lab	VI	Embedded Systems Practical
	Project Work & Entrepreneurship	VI	Project Work

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