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Detai

Syllabus
Of

DIPLOMA IN ELECTRONICS & COMMUNICATION ENGINEERING

COURSE TITLE: DIPLOMA INELECTRONIC & COMUNICATION ENGINEERING
DURATION : 3 YEAR
MODE : SEMESTER

THIRD SEMESTER

COURSE TITLE	Paper Code	*MARKS*				
		THEORY		PRACTICAL		TOTAL
		INTERNAL	EXTERNAL	INTERNAL	EXTERNAL	
Computer Application I	DECE/S/310	40	60			100
Computer Application I	DECE/S/310P			40	60	100
Digital Electronics	DECE/S/320	40	60			100
Digital Electronics	DECE/S/220p			40	60	100
Network Filters & Electronics Devices	DECE/S/330	40	60			100
Network Filters & Electronics Devices	DECE/S/330P			40	60	100
Electronics Devices & Circuits II	DECE/S/340	40	60			100
Electronics Devices & Circuits II	DECE/S/340P			40	60	100
Principles of Communication Engineering	DECE/S/350	40	60			100

Principles of Communication Engineering	**DECE/S/350P**			**40**	**60**	**100**

FOURTH SEMESTER

COURSE TITLE	**Paper Code**	***MARKS***				
		THEORY		**PRACTICAL**		**TOTAL**
		INTERNAL	**EXTERNAL**	**INTERNAL**	**EXTERNAL**	
Computer Application II	**DECE/S/410**	**40**	**60**			**100**
Computer Application II	**DECE/S/410P**			**40**	**60**	**100**
Electronic Instruments and Measuremments	**DECE/S/420**	**40**	**60**			**100**
Electronic Instruments and Measuremments	**DECE/S/420p**			**40**	**60**	**100**
Electronics Devices & Circuts III	**DECE/S/430**	**40**	**60**			**100**
Electronics Devices & Circuts III	**DECE/S/430P**			**40**	**60**	**100**
Electronic Drawing ,Design & Fabrication	**DECE/S/440**	**40**	**60**			**100**
Electronic Drawing ,Design & Fabrication	**DECE/S/440P**			**40**	**60**	**100**
Technique Microprocessor I	**DECE/S/450**	**40**	**60**			**100**
Technique Microprocessor I	**DECE/S/450P**			**40**	**60**	**100**

FIFTH SEMESTER

COURSE TITLE	**Paper Code**	***MARKS***				
		THEORY		**PRACTICAL**		**TOTAL**
		INTERNAL	**EXTERNAL**	**INTERNAL**	**EXTERNAL**	
Industrial Management	**DECE/S/3510**	**40**	**60**			**100**
Consumer Electronics	**DECE/S/520**	**40**	**60**			**100**
Consumer Electronics	**DECE/S/520p**			**40**	**60**	**100**
Microprocessors II	**DECE/S/530**	**40**	**60**			**100**
Microprocessors II	**DECE/S/530P**			**40**	**60**	**100**
Troubleshootiong and Maintenance of Ele. Eaquipment	**DECE/S/540**	**40**	**60**			**100**
Troubleshootiong and Maintenance of Ele. Eaquipment	**DECE/S/540P**			**40**	**60**	**100**
Communication System I	**DECE/S/550**	**40**	**60**			**100**
Communication System I	**DECE/S/550P**			**40**	**60**	**100**

SIXTH SEMESTER

COURSE TITLE	**Paper Code**	***MARKS***				
		THEORY		**PRACTICAL**		**TOTAL**
		INTERNAL	**EXTERNAL**	**INTERNAL**	**EXTERNAL**	
Medical Electronics	**DECE/S/410**	**40**	**60**			**100**
Medical Electronics	**DECE/S/410P**			**40**	**60**	**100**
Communication System II	**DECE/S/420**	**40**	**60**			**100**
Communication System II	**DECE/S/420p**			**40**	**60**	**100**
Microwave Engineering	**DECE/S/430**	**40**	**60**			**100**
Microwave Engineering	**DECE/S/430P**			**40**	**60**	**100**
PC Orgnization	**DECE/S/440**	**40**	**60**			**100**

PC Orgnization	**DECE/S/440P**			**40**	**60**	**100**
Project Work	**DECE/S/450P**			**40**	**60**	**100**

SEMESTER I

DECE/S/110 APPLIED MATHEMATICS1

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will com prise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed.

SECTION A

1. ALGEBRA

Application of Quadratic equations simultaneous equations (one linear and other Quadratic Equation) in two variables to engineering problems.

Arithmetic Progression, its nth term and sum of n terms with their applications to engineering problems. Geometrical Progression, its nth term and sum of n terms and to infinity with application to engineering problems.

Partial fractions (excluding repeated quadratic factors) formally introduction of permutations & combinations, applications of formulae for npr ncr

Binomial theorem (expansion without proof) for positive integral index (expansion and general term).

Binomial theorem for any index (expansion without proof only). First and second binomial approximation with application to engineering problems.

SECTION B

2. TRIGNOMETRY

Concept of angles, measurement of angles in degrees, grades and radians and their conversions. Trignometrical ratios and their relations.

Review of ratios of some standard angles (0,30,45,60,90 degrees), TRatios of Allied angles (without proof), Sum, difference formulae and their applications (without proof).

Product formulae (Transformation of product to sum, difference and vice versa).TRatios of multiple angles, submultiples angles (2A, 3A, A/2).

Area of a triangle, Hero's formulae, solution of triangles with direct applications of cosine formulae, sine formulae, Napier's analogy only.

SECTION C

3. COORDINATE GEOMETRY

Cartesian coordinates (two dimensions), Distance between two points, Internal and External division formulae, Application of area formulae (without proof).
Area of triangle when its vertices are given, coordinates of centroid, incentre of a triangle when the vertices are given, using the formulaes, simple problems on locus.

Application of equation of straight line in various standard forms, intersection of two straight lines, angle between two lines. Perpendicular distance formulae.

General equation of a circle and its characteristics. To find the equation of a circle given (i) Center and radius (ii) Three points on it (iii) Coordinates of end points of a diameter.

SECTION D

Plotting of curves y = (f(x), f(x) being algebraic function of x (maximum upto 2 nd degree).
Definition of conic section. Standard equation of parabola, To find equations of parabola when its focus and directrix are given, Given the equation of a parabola, determination of its focus, vertex axis, directrix and lactus rectum.

Ellipse and hyberbola (standard equations without proof), given the equation in the standard form, determination of focus , directrix , lactus rectum. Axes, eccentricity and center.

Concept of Polar coordinates & their conversion to Cartesian coordinates & vice versa, cylinder,cone,3D

DECE/S/120 APPLIED PHYSICS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks : 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks : 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

MECHANICS

1. UNITS AND DIMENSIONS

Fundamental and derived units in SI System,
Dimensions of Physical Quantitites,
Principle of homogeneity
Dimensional equation,
Applications of dimensional analysis: Checking the correctness of physical equations,
Derivation of simple physical relations, Limitation of Dimensional Analysis, significant figures and Error Analysis.

2. FORCE AND MOTION

Scalars and Vectors,
Velocity & acceleration,
Equations of motion,
Newton's law of motion,
Force & its derivation from Newton's laws of motion,
Composition and resolution of forces,
Parabolic Motion
Horizontal projection and projection at an angle, time of flight,
Horizontal range and maximum horizontal range,
Simple Problems,
Centripetal acceleration, centripetal and centrifugal forces,
Concept of friction and its application.
Application to banking of roads

SECTION B

3. WORK, POWER AND ENERGY

Work and its Units,
Work done on bodies moving on horizontal and inclined planes (consider frictional forces also).
Concept of Power and its units,
Calculations of power (simple cases).
Concept of Kinetic energy and potential energy
Expressions for P.E and K.E,
Conservation of energy in the case of freely falling bodies,
Principle of conservation of energy.

4. ROTATIONAL AND SIMPLE HARMONIC MOTIONS

Definition of moment of inertia,
Moment of inertia of disc, ring & sphere,
Torque and angular momentum and their inter relation,
Principles of conservation (angular momentum and its applications).
Kinetic energy of rolling body,
S.H.M – derivation of displacement, velocity, acceleration, time period and frequency,

Motion of cantilever, Free, forced and resonant vibrations (No derivation).

SECTION C

HEAT

1. TEMPERATURE AND ITS MEASUREMENT

Concept of heat and temperature on the basis of K.E. of molecules.
Unit of heat
Basic Principles of measurement of temperature,
Thermocouple,
Bimetallic and resistance,
Pyrometers and Thermometers
Criteria for the selection of thermometers.

2. EXPANSION OF SOLIDS

Coefficient of linear,
Surface and cubical expansions and relation amongst them,
Thermal stresses (qualitative only) and their applications.

SECTION D

3. HEAT TRANSFER

Three modes of transfer of heat,
Coefficient of thermal conductivity, its determination by Searle's method and Lee's disc method.
Conduction through compound media (Series and parallel for two materials only),
Heat radiation, Characteristics of heat radiations,
Prevost's theory of heat exchange,
Black body radiations,
Emissivity and absorbtivity
Kirchoff's law and stefan's law of radiation.

DECE/S/120P APPLIED PHYSICS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To determine the density of a cylinder using vernier calipers and balance.
2. To determine area of cross section of wire using screw guage.
3. To determine the thickness of glass piece using spherometer.
4. Calculation and verfication of period of vibration of a cantilever (use graph)
5. Verify Parallelogram law of forces.
6. Measurement of K.E. gained by a body dropped through height h.
7. To find the coefficient of linear expression of given rod.
8. Caliberation of Thermocouple.

DECE/S/130 APPLIED CHEMISTRY

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. STRUCTURE OF ATOM

Chemistry as important branch of science, Basic concept of Elements Mixture and compound, Chemical Equation, its balancing , implications and limitations.
Recapitulation of Fundamental Particles of atom i.e. electron. Proton and neutron.
Bohr's model of atom
Line Spectrum of Hydrogen
Modern concept of atomfour quantum numbers, shells,subshells, orbital (shapes of s & p orbitals
Pauli's exclusion principle.
Afbau Energy ranking rule.
Orbital concept types of bonds covalency, formation of ss, sp, pp, bonding with examples.
Hybridization sp, sp2, sp3, (consider BeF2, BF3, CH4) molecules.
Brief concept of modern periodic table of elements.

SECTION B

2. CHEMICAL EQUATION, OXIDATION & REDUCTION

Concept of Oxidation & Reduction.
Electronic concept of oxidation and reduction.
Redox reactions (direct and indirect).
Oxidation No. balancing of simple redox reactions by oxidation No.

SECTION C

3. IONIC EQUILIBIRIUM

Ionization., degree of ionization,
Focus effecting ionization
Ionization of water, ionization equilibrium in aqueous solutions, common ion effect

4. ACIDS AND BASES

Concept of acids and bases, their strength in ionization constant.
PH value, acid base titration, choice of indicators.
Hydrolysis
Buffer solution

5. ELECTROLYSIS

Concept of electrolysis.
Faraday's law of electrolysis.
Engineering applications (electrometallurgy, electroplating & electrorefining)

SECTION D

6. WATER

Hard and soft water, removal of hardness by :
a. Soda lime process.
b. Permutit's process.
c. Ion exchange method.
Disadvantages of hard water in industrial use, boiler scales, priming, foaming corrosion and caustic embrittlement.
Expressing the degree of hardness of water in (with simple problems)
a. Clark's degree
b. O'Hener;s method
Determination of degree of hardness by (with simple problems) :
a. Soap titration method :
b. O'Hener's method :
Water for drinking purposes .

7. SOLUTIONS & COLLOIDS

Solute, solvent, solution & colloids.
Particle size and colloidal state
Tyndell effect, Brownian movement , coagulation.

DECE/S/130P APPLIED CHEMISTRY

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. Introduction of basic concepts of volumetric analysis & other related equipment.
2. Find the strength in grams per litre of the given solution or sodium hydroxide with the help of standard oxalic acid solution.
3. Find the strength of sulphuric acid in grams per litre using standard oxalic acid solution and an intermediate alkali solution indicator phenopthalein.
4. Determine the strength of oxalic acid solution in grams per litre using standard sulphuric acid , Indicator methyl orange.
5. Determine the total alkalinity in ppm in the given sample of water by soap solution method.
6. Estimate the total hardness of a sample of water by soap solution method.
7. Estimate the amount of chlorides present in water using silver nitrate solution. Indicator potassium chromate.
8. Determine percentage purity of commercial samples like blue vitrol and green vitrol volumetrically.
9. Qualitative analysis of some important acidic & basic radicals with direct testing with demonstration of group analysis.

DECE/S/140 INTRODUCTION TO IT

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for papersetter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

information concepts & processing

definition of information, data Vs information, introduction to information system, information representation digital media, images, graphics, animation, audio, video etc. Need a value & quality of information the concept of information entropy & numericals.

SECTION B

Computer appreciation

definition of electronic computer, history, generation, characteristics & application of computers, classification of computers, RAM,ROM, computer hardware, CPU, various I/O devices, peripherals , storage media, software definition and concepts.

SECTION C

Data communication & networks

computer networks , networking of computers, introduction to LAN, WAN, MAN, network topologies , basic concepts in computers computer networks, introduction to GPRS, CDMA,GSM & FM technologies.

SECTION D

Introduction to internet technologies

HTML, DHTML, WWW, FTP, TELENET, web browser, net surfing , search engines, email, ISP, e commerce, public key, private key, safety of business transaction on web.

Concepts in operation system

Elementary concepts in operation system, GUI, introduction to DOS, MS windows,

SEMESTER II

DECE/S/210 COMMUNICATION SKILLS1

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Corresponding : (Official, Business And Personal)

? One Letter from each category (Official, Business and Personal) may be set in the examination paper and the students be asked to write one of them.

SECTION B

2. Grammar

? A brief review of easy form of tenses. Conversion of direct narration into indirect form of narration and vice versa (only simple sentences). Punctuation.

SECTION C

3. Essay

? Preferably on scientific topic from the given outlines. The paper setter may be instructed to give a choice of attempting one out of three topics. The question paper may provide the outlines. The essay will be of 250 to 300 words. The examiner may select three topics one from each of the following.

(i) Science
(ii) Technology
(iii) General.

SECTION D

Written Communication

report, notices, agenda notes, business correspondence preparation of summery & prices.

DECE/S/210P COMMUNICATION SKILLS1

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1 Locate a particular book in the library.
2 Find out some words in the dictionary.
3 Prounciation, stress and intonation.
4. Give abbreviations of particular words and vice versa
5. Give meaning of some words.
6. Spell some words.
7. Practice of handling some communication systems like telephone and noting down and conveying messages.

DECE/S/220 APPLIED MATHEMATICSII

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 30Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Differential Calculus

Concept of limits. Four standard limits $\lim_{x \to a} \frac{x^n - a^n}{x - a}$

$\lim_{x \to 0} \frac{\sin x}{x}$ $\lim_{x \to 0} \frac{a^x - 1}{x}$ $\lim_{x \to 0} (1+x)^{1/x}$

Differentiation by definition of x , sinx, cos x, tan x, e

Differentiation of sum, product and quotient of functions. Differentiation of function as a function.
Differentiation of trigonometric inverse functions. Logarithmic differentiation,
Successive differentiation (excluding nth order)
Applications :
(a) Rate Measures
(b) Errors
(c) Maxima and Minima
(d) Equation of tangent to a curve for explicit functions only and equation of a normal.
(e) Newton's Method of solving equation using the formula f(a) /f'(a)

SECTION B

2. Integral Calculus

Integration as inverse operation of differentiation.
Simple Integration by substitution, by parts and by partial fractions (for linear factors only).
Evaluation of definite integrals (simple problems)

Evaluation of $\int_0^{pi/2} Sin^n x\, dx$ $\int_0^{pi/2} Cos^n x\, dx$ $\int_0^{pi/2} Sin^m x\, Cos^n x$

using formulae without proof (m and n being positive integers only)

Applications :

(a) area bounded by a curve and axes
(b) volume of solid formed by revolution of an area about axes. (Simple problems).
(c) Centre of gravity
(d) Moment of Inertia
(e) Average value
(f) Root mean square value of a function
(g) gama function(reduction formula)

SECTION C

3. Differential Equation

Concept of formation of Differential Equation and solution of first order differential equation.
(a) Variables separation.
(b) Homogeneous differential Equation
(c) Linear Differential Equation. ax n

Solution of Linear differential Equations having e , Sin ax, Cos ax and x in the right hand side.

SECTION D

matrix

addition, subtraction, multification, rank of matrix

DECE/S/230 ELECTRICAL ENGINEERING

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Generalised Treatment of Electrical Machines

? Introduction
? Definition of motor and generator
? Basic principle of generator and a motor
? Torque due to alignment of two magnetic fields and the concept of torque angle
? Basic Electromagnetic laws
? E.M.F. induced in coil rotating in a magnetic field
? Elementary concept of an Electrical Machine
? Common features of rotating electrical machines

2. Three Phase Supply

? Advantages of three phase system over single phase system
? Star Delta connections
? Relation between phase and line voltage single phase system and three phase system
? Power and power factor in three phase system and their measurements

SECTION B

3. DC Machines

? Main constructional features, principle of working
? Function of the commutator for motoring and generating action
? Types of armature winding (Lap and wave winding no detailed diagram)
? Factors determining induced e.m.f.
? Factor determining Electromagnetic torque
? Principles of generating and motoring
? Action and relationship between terminal voltage and induced e.m.f.
? Factors determining the speed of a DC motor
? Different types of a excitation

? Performance and characteristics of different types of DC machines (working as motor)
? Starting of DC, motors and starters
? Application of DC motors

SECTION C

4. Transformers

? Principles of operation and constructional details of single phase and three phase transformers. Core type and shell type transformers, difference between single phase and three phase transformers and advantages and dis advantages
? Voltage regulation of a transformer (No mathematical treatment is required)
? Losses in a transformer
? Efficiency, condition for maximum efficiency and all day efficiency
? Auto transformer and instrument transformer

SECTION D

5. A.C. Motors

? Brief introduction about three phase induction motors, its principle of operation
? Types of induction motors and constructional features of Squirrel cage and slipring motors
? Starting of 3phase induction motors: Star Delta and DOL (Directonline) starters
? Reversal of direction of rotation of 3 phase motors
? Applications of induction motors
? Introduction to synchronous motors and their applications

6. Single Phase and Kilowatt Motors

? Introduction
? Principle of operation of single phase motors
? Types of single phase induction motors and their constructional details (i.e. split phase, capacitor start and run, shaded pole and reluctance start motors)
? Single phase synchronous motorsreluctance motor (hysterisis motor)
? Commutator type single phase motors Repulsion Induction motor, shaded pole motors, AC series and universal motors

DECE/S/230P ELECTRICAL ENGINEERING

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To measure power and power factors in a 3 phase system with
a) balanced load
b) unbalanced load by the two wattmeter method and any other method
2. To find the value of capacitance of a capacitor to improve the power factor of an induction motors
3. To determine efficiency and regulation of a transformer by a direct loading
4. To measure the induced e.m.f. of a separately excited d.c. generator as a function of field current

5. To measure the terminal voltage of a d.c. shunt generator as a function of a load current
6. To measure the speed of a separately excited d.c. motor as a function of load armature current at rated armature voltage
7. To determine the efficiency of a dc shunt motor by the measurement of losses (Sunburn's method)
8. To observe the difference in the effect of switching on a single phase capacitor start induction motor with
a) the capacitor disconnected and
b) the capacitor connected
Also to determine how to reverse the direction of rotation
9. Study of DOL starter, Starting of 3phase induction motor by DOL starter, Reversing the direction of rotation of 3phase induction motor

DECE/S/240 ELECTRONIC DEVICES AND CIRCUITSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Introduction

? Introduction to active and passive components. The specification of passive components, fixed and variable resistors their various types and specialization including thermistors, LDR and VDR and colour codes fixed and variable capacitors, their various types and important specifications and colour codes.

2. Semiconductor Physics

? Intrinsic semiconductorsConductivity, atomic and crystal structure of germanium and silicon, covalent bonds, generation and recombination, effect of temperature on conductivity of intrinsic semiconductors, energy levels diagram of conductor, insulators and intrinsic semiconductors, Extrinsic semiconductor materials Doping of impurity, P and N type semiconductors and their conductivity, Minority and majority carriers; Drift and Diffusion currents.

3. Semiconductor Diode

? PN junction diode, mechanism of current flow in PN junction, drift and diffusion current, depletion layer, potential barrier, behaviour of PN junction characteristics, zener and avalanche breakdown, concept of junction capacitance in forward and reverse bias conditions.

Semiconductor diode characteristics, static and dynamic resistances and their calculation from diode characteristics. Dynamic resistance of diode in terms of diode current.

$r = 25/ I$

$D D$

Diode (PN junction) as rectifier, half wave rectifier, full wave rectifier, including bridge rectifier, relationship between D.C. output voltage and A.C. input voltage, rectification efficiency and ripple factor for rectifier circuits, filler circuits: Shunt capacitor, series inductor, capacitor input, filter bleeder resistance, physical explanations of the working of the filters and typical applications of each type. Different types of diodes; briek idea and typical applications of power diodes, zener diodes; varactor diodes and point contact diodes. Important specifications of rectifier diode and zener diode.

SECTION B

4. Introduction to Bipolar Transistor

? Concept of bipolar transistor as two junction three terminal device having two kinds of current carriers ; PNP and NPN transistors, their symbols and mechanisms of current flow: explanation of fundamental current relations.

$I0 = Ib + Ic$

And $I0= alpha\ I0 + I\ cbo$

Concept of leakage current Icbo, effect of temperature on leakage current; CB , CE and CC configurations. Common base configuration (CB): Input and output characteristics; determination of transistor parameters input and output dynamic resistance, current amplification factor. Common emitter configuration: current relations in CE configuration, collector current in terms of base current and leakage current (ICBO) input and output characteristics, determination of dynamic input and output resistance and current amplification factor B from its characteristics. Common collector configuration; expression of emmiter current in terms of the base current and leakage current in CC configuration. Comparision of CB and CC configuration with regard to dynamic input and output resistance, current gain and leakage current, prefernce of CE configuration over CB configuration. Transistor as an amplifier in CE configuration, DC load line, its equation and drawing it on collector characteristics. Determination of small signal voltage and current gain of a basic transistor amplifier using CE output characteristics and DC load line; concept of power gain as product or voltage gain and current gain.

SECTION C

5. Transistor Biasing and stabilisation of Operating Point

? Different transistor biasing circuits for fixing the operating point, temperature and ‘BDC’ on operating point, need for stabilization of operating point, effect of fixing operating point in cut off and saturation region on performance of the amplifier. Calculation of operating point for different biasing circuits, Simple design problems on potential divider biasing circuit.

SECTION D

6. Single Stage Transistor amplifier

Single stage CE amplifier circuit with proper biasing components. AC load line and its use in:

Calculation of current and voltage gain of a single amplifier circuit.

Explanation of phase reversal of the output voltage with respect to input voltage

Transistor hybrid low frequency model in CE configuration, 'h' parameters and their physical significance, typical values of the parameters.

Expressions for voltage gain, input and output impedance for a single stage CE amplifier circuit in 'h' parameters, appropriate approximation.

7. Field Effect Transistor (FET)

Construction, operation, characteristics and equivalent circuit of JFET and its circuit application

Construction, operation, characteristics and equivalent circuit of MOSFET in depletion, enhancement modes and its circuit applications

Comparision of JFET, MOSFET, BJT

Simple FET amplifier circuit and its working principles (without analysis)

DECE/S/250 ELECTRONIC COMPONENTS AND MATERIALS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**

Total Marks: 100 **Continuous Internal Assessment: 40 Marks**

Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Materials

? Classification of materials into conducting semiconducting and insulating materials through a brief reference to atomic structure

(a) Conducting Materials

Resistivity and factors affecting resistivity such as temperature, alloying and mechanical stressing

Classification of conducting materials into low resistivity and high resistivity materials. Some examples of each and their typical applications.

SECTION B

(b) Insulating Materials:

Electrical properties: volume resistivity, surface resistance, dielectric loss, dielectric strength (brakdown voltage) and dielectric constant

Thermal properties: Heat resistance, classification according to temperature endurance, thermal conductivity

Plastics : Classification into thermo plastic and thermosetting categories; examples of each and their typical applications

Important relevant (electrical, mechanical and thermal) characteristics and applications of the following materials

Mica Paper (dry and impregnated)
Asbestos Rubber
Ceramic Silicon rubber
Glass PVC
Cotton Polythene
Jute Polyester
Teflon
Acrylics
Silicon grease
Bakelite Phosphor Bronze alloy
Epoxy Glass Berylliumcopper alloy
Varnish Soldering Lead alloy
Lacquer Copper
Enamel Silver, Gold

(c) Magnetic Materials

Different magnetic materials; (Dia, para, ferro) their properties

Ferromagnetism, Ferrimagnetism, domains, permeability, Hysterisis loop (including coercive force and residual magnetism, their examples and typical applications

SECTION C

2. Components

Capacitors, Polyester. Metallised Polyester, ceramic, paper, mica and electrolytic types, constructional details and testing, specifications, temperature and frequency stability and other limitations. Mutual comparision.

Resistors : carbon film, metal film, carbon composition wire wound and variables types (presets and potentiometers) Constructional details and testing, specifications, temperature and frequency dependence and noise considerations. Mutual comparision

SECTION D

Transformers. Inductors and RF Coils; Methods of manufacture of inductors, RF coils and small transformers (upto 1 KVA) and their testing. Properties of cores. Need and types of shielding.

Surface Mounted Devices (SMDs)

Connectors, Relays and Switches:

a) Various types of switches, e.g. slide, rotary, push, loggle, microswitches etc. Their symbols, specifications and applications.

b) Concept of 'make' and 'brake' contacts in relays. Operating current, Holding current, Various types of relays. Their symbols, specifications and applications.
c) Various types of connectors, their functions, specifications and applications

DECE/S/240P ELECTRONIC DEVICES AND CIRCUITSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

Practice in the use of following electronic equipments:
(a) Multimeter (analog/digital type)
(b) Regulated power supply
(c) LF signal generator, CRO
(d) CRO
1. Experiments to be performed
? Measurement of voltage at various settings (low and high voltages) of regulated power supply by using analog and digital multimeters.
? Measurement of voltage and current by loading the regulated power supply
? To obtain voltage various voltages like + 15 V + 5 V and measure them with the help of analog and digital multimeter.
? Practice in the use of signal generator and CRO: measurement of d.c. and a.c. voltages, time period/frequency of sine/square wave using triggered sweep CRO.
2. Identification and familarisation of passive components
Experiments to be performed
? Measurement of resistors by an ordinary multimeter and an electronic multimeter and their verification on the basis of colour code and specification.
? Measurement of transistor turns ratio of a transformer and to note its specifications.
? Note the variations in resistance by variation of:
a) light on LDR
b) temperature on a theermistor
3. Semiconductor Diode Characteristics
? Identification of types of packages, terminals and noting different ratings using data books for various types of semiconductor diodes (germanium point contact, silicon low power and high power and switching diode)
? Plotting of forward and VI characteristics for a junction P.N. diode (silicon and germanium diodes).
4. Rectifier circuits using semiconductor diode, measurement of input and output voltage and plotting of input and wave shapes for:
? Half wave rectifier
? Fullwave rectifier
? Bridge rectifier diode circuits
5. Plot forward and reverse VI characteristics for a zener diode.
6. Plot the wave shapes of a full wave rectifier with shunt capacitor, series inductor, and pie filter circuit.
7. Plotting input and output characteristics and calculation of parameters of a transistor

in common base configuration.
8. Plotting input and output characteristics and calculation of parameters of a transistor in common emiiter configuration.
9. Transistor biasing circuit. Measurement of operating point (Ic and Vce) for a :
a) fixed bias circuit
b) potential divider biasing circuit.
(Measurement can be made by changing the transistor in the circuits by another of same type number).
10. Single stage common emitter amplifier circuit.
a) Measurement of voltage gain at KHz at different loa resistance.
b) Measurement of input and output impedance of the amplifier circuit.
11. (a) Plot the FET characteristics
(b) Measure voltage gain and plot the frequency response of FET or MOSFET amplifier circuit.

SEMESTERIII

DECE/S/310 COMPUTER APPLICATIONSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Familiarization With Operating System

? Introduction to computer Operating System (Dos, Windows'95).
? Introduction to Dos structure, system files, batch files & configuration files.
? Booting the system from floppy & hard disk.
? Brief Introduction to Dos internal & external commands.
? Familiarisation with windows structures, its use and application.

SECTION B

2. Preparation of Documents Through Word Processing .

? Idea of text editors like Microsoft word, write etc.
? Opening a document.
? Preparing documents, inserting diagrams & tables.
? Editing document.
(a) Character, word and Line Editing.
(b) Margin Setting, Paragraph alignment.
(c) Block Operations.
(d) Spell Checker
(e) Saving a document.

SECTION C

3. Information Presentation For Decision Making Using Spread Sheet : (Excel/Lotus 123)

? Applications of spread sheet.
? Structure of spread sheet.
? Preparing spread sheet for simple data and numeric operations.
? Using formulae in spread sheet operations.
? Making Tables, sorting and querying.
? Creation of graphs, Pie charts, bar charts.
? Printing reports.

SECTION D

4. Computer aided Drafting (CAD)

? Making simple drawings using features of CAD and confirming the drafting specifications.
? Saving and retrieving drawings.
? Dimensioning.
? Lettering.
? Plotted drawings.

DECE/S/310P COMPUTER APPLICATIONSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

Simple exercises based upon theory syllabus.

DECE/S/320 DIGITAL ELECTRONICS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Introduction

? Basic difference between analog and digital signal.

? Applications and advantages of analog signals.

2. Number System

? Binary and hexadecimal number system, conversion from decimal and hexadecimal to binary and viceversa. BCD representation

? Binary addition, subtraction, multiplication and division including binary points. BC addition. 1's and 2's complement method of addition/subtraction

3. Logic Gates

? Concept of negative and positive logic

? Definition, symbols and truth tables of NOT, AND, OR, NAND,EXOR Gates, NAND and NOR as universal gates.

4. Logic Simplification

? Postulates of Boolean algebra, DE Morgan's Theorems, Various identities.

Formulation of truth table and Boolean equation for simple problem. Implementation of Boolean (logic) equations with gates

? Karnaugh map (upto 4 variables) and simple applications in developing combinational logic circuits

5. Logic Families

? Logic Family Classification:

Definition of SSI, MSI, LSI, VLSI

TTl and MOS families and their sub classification

Characteristics of TTL and MOS digital gates, delay, speed, noise margin, logic levels, power dissipation , fanin , fanout , power supply requirement and comparision between TTL and MOS families

Interfacing TTL and MOS Ics.

? Logic Circuits:
Open collector, wired OR and totem pole output circuit operation (qualitative) for a TTL NAND gate
MOS circuit operation for a standard gate (NOR)
? Tri state Switch/Buffer

SECTION B

6. Codes and Parity]

? Concept of code, weighted and nonweighted codes, examples of 8421, BCD, excess 3 and Gray code.
? Concept of parity, single and double parity and error detection
? Alpha numeric codes: ASCII and EBCDIC.

7. Arithmetic Circuits

? Half adder and Full adder circuit, design and implementation.
? Half and full subtracter circuit, design and implementation.

8. Decoders, Display Devices and Associated Circuits

? LED, LCD, seven segment display, basic operation of various commonly used types
? Four bit decoder circuits for 7 segment display/ driver Ics.

SECTION C

9. Multiplexers and De Multiplexers

? Basic functions and block diagram of MUX and DEMUX. Different types.

10. Latches and Flip Flops

? Concept and types of latch with their working and applications
? Operation using waveforms and truth tables of RS, T, D, JK, Master/ Slave JK flip flops.
? Difference between a latch and a flip flop

11. Counters

? Binary counters
? Divide by N ripple counters (including design), Decade counter.
? Pre settable and programmable counters
? Down counter, updown counter
? Synchronous counters (only introduction)
? Difference between Asynchronous and Synchronous counters
? Ring counter with timing diagram

SECTION D

12. Shift Register

? Introduction and basic concepts including shift left and shift right.
? Serial in parallel out, serial in serial out, parallel in serial out, parallel in parallel out.
? Universal shift register
? Buffer register, Tristate Buffer register

13. Memories

? Basic RAM cell, N X M bit RAM, Expansion of word length and capacity, static and dynamic RAM, basic idea of ROM, PROM, EPROM, AND EEPROM.

13. A/D and D/A Convertors

? General principle of A/D and D/A conversion and brief idea of their applications.
Binary resistor network and resistor ladder network methods of D/A conversion. Dual slope and successive approximation types of ADCs.

DECE/S/320P DIGITAL ELECTRONICS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. AND, OR, NOT, NAND, NOR AND EXOR Ics
Verification and interpretation of truth tables for AND, OR, NOT, NAND, NOR AND Exclusive OR (EXOR) gates
2. Logic functions using universal gates:
Realisation of logic functions with the help of NAND or NOR gates
Construction of a NOR gate latch and verification of its operation
3. Halfadder and Full adder circuits:
Construction of Half adder using EXOR and NAND gates and verification of its operation
Construction of Full adder using EXOR and NAND gates and verify its operation 4. 4 bit adder/subtracter circuit:
Construction of a 4 bit adder, 2's complement subtractor circuit using 4 bit adder IC and an EXOR IC and verify the operation of the circuit
5. IC Flipflop
Verification of truth table for positive edge triggered, negative edge triggered, level triggered IC flipflops (Atleast one IC each of D latch, D flipflop, edge trigerred JK and master slave JK flipflops)
6. Display devices and their decoder/ drivers:
Familarisation and use of different types of single LEDs, common anode and common cathode seven segment LED displays. Use of 7447, 7448 (or equivalent) decoder / driver Ics for 7 segment displays
7. Tristate gate Ics:
Verification of truth table and study the operation of tristate buffer IC 74126 or equivalent
Construction of a 4/8 bit directional bus by using an approximate IC.
8. Decoder, encoder, multiplexer and demultiplexer
Verification of truth table for encoder and decoder ICs
Verification of truth table for one/twoeach of multiplexer and demultiplexer ICs
9. Shift Register
Construction of a 4 bit serialinserialout/serialinparallelout right shift register using JK flip flops and verification of its operation
Construction and testing for its operation of a 4 bit ring counter using JK flip flops
10. Universal Shift Registers IC
Verification of truth table for any one universal shift register IC
11. Asychronous Counter ICs
Use of 7490 equivalent TTL (a) divide by 2 (a) divide by 5 (c) divide by 10 counter
OR
Use of 7493 equivalent TTL (a) divide by 2 (b) divide by 8 (c) divide by 16 counter
12. To construct and test 4/8 bit D/A convertor using IC.

13. To construct and test 4/8 bit A/D convertor using IC.
Note: The students should be exposed to different digital ICs, related to the experiments and the data book.

DECE330 NETWORK, FILTERS AD TRANSMISSION LINES

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Networks

? Two port (four terminals) network: Basic concepts of the following terms:
Symmetrical and assymetrical networks; Balanced and unbalanced network;
Tnetwork, pie network, ladder network; Lattice network; Lnetwork and Bridge Tnetwork

? Symmetrical Network

Concept and significance of the terms characteristic impedance, propagation constant, attenuation constant, phase shift constant and insertion loss.

Expression for characteristics impedance, propogation constant, propogation constant, attenuation constant and phase shift constant in terms of Zo, Zoc for the following:
Tnetwork
Pienetwork

? Asymmetrical Network

Concept and significance of iterative impedance, image impedance, image transfer constant and insertion loss.

The half section (L section); symmetrical T and pie sections into half sections, derivation of iterative impedance, image impedance. Open and short circuit impedance of half section.

SECTION B

2. Attenuators

? Units of attenuation (decibels and Napers); General characteristics of attenuators

? Analysis and design of simple attenuator of following types; Symmetrical T and pie type, L type

SECTION C

3. Filters

? Brief idea of the use of filter networks in different communication system. Concept of low pass, high pass, band pass and band stop filters. Basic response of Butter worth, Chebychev and Cauer filters

? Theorem connecting attenuation constant and characteristics impedance (Z0); determination of cut off frequency, constant K section

? Prototype filter section:

Reactance vs frequency characteristics of a lowpass filter and its significance Attenuation Vs frequency; Phase shift Vs frequency, characteristics impedance vs frequency of T and curves and their significance

Simple design problems of prototype low pass section

? Mderived Filter sections

Limitations of prototype filters, need of mderived filters

Expressions for m in terms of fc (cut off frequency) and f infinity (frequency at which attenuation is infinity) for low pass and high pass filters.

? Crystal filters

Crystal and its equivalent circuits. Special properties of piezoelectric filters and their use

? Active Filters

Basic concept of active filters and comparision with passive filters. Simple design problems on Low pass and High pass first and second order Butter worth filter

SECTION D

4. Transmission Lines

? Transmission lines and their applications; shapes of different types of transmission lines, (including 300 ohms antenna feeder cable, 75 ohm coaxial)

? Distributed (or primary) constant of a transmission line, equivalent circuit of an infinite line, T and pie type representation of a section of transmission line.

? Definition of charactersitic impedance of line; concept of short line termination in Zo; currents and voltage along an infinite line, propogation constant, attenuation and phase shift constant of the line

? Relationship of characteristic impedance, propogation constant attenuation constant and phase constant in terms of distributed constants of the line

? Conditions for minimum distortion and minimum attenuation, of signal on the line; necessity and different methods of loading the communication lines (No derivation)

? Concept of reflection and standing waves on a transmission line; definition of reflection, coefficient in terms of charateristic impedance and load impedance, definition of standing wave ratio (SWR), relation between VSWR and voltage reflection coefficient. maximum impedance on a line in terms of characteristics impedance and VSWR

? Transmission line equation; expressions for voltage, current and impedance at a point on the line for lines with and without losses. Expression for input impedance of the line (No derivations)

? Input impedance of an open and short circuited line and its graphical representation

? Transmission line at high frequency, effect of high frequencies on the losses of a transmission line; Application of transmission lines as a reactive component and impedance transformer (e.g. quarter wave transformer)

? Principle of impedance matching using single stub; comparision of open and short circuited stubs
? Bandwidth consideration of a transmission line

DECE/S/330P NETWORK, FILTERS AD TRANSMISSION LINES

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To measure the characteristic impedance of a symmetrical T and pie network
2. To measure the image impedance of a given symmetrical T/pie network
3. For a prototype low pass filter:
Determine the characteristic impedance experimentally
Plot the attenuation characteristics
4. To design and measure the attenuation of a symmetrical T/pie type attenuator
5. For a prototype high pass filter:
Determine the characteristic impedance experimentally
To Plot the attenuation characteristic
6. To Plot the impedance characteristic of a prototype bandpass filter
To Plot the attenuation characteristic of a prototype bandpass filter
7. To Plot the impedance characteristic of a mderived low pass filter
To Plot the impedance characteristic of a mderived high pass filter
8. To assemble and test the following butter worth active filters
First order low pass and high pass
Second order low pass and high pass
9. To observe the formation of standing waves on a transmission line and measurement of SWR and characteristic impedance of the line.
10. Draw the attenuation characteristics of a crystal filter.

DECE/S/340 ELECTRONIC DEVICES AND CIRCUITSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Multistage Transistor Amplifier

Need of multistage transistor amplifier, different coupling schemes and their working; brief mention of application of each of the types of coupling, working of RC coupled and transformer coupled multistage amplifier, approximate calculation of voltage gain of two stage RC coupled amplifier, Frequency response for RC coupled and transformer coupled amplifier and physical significance of the terms bandwidth, upper and lower cross over frequencies. Direct coupled amplifier and its limitation; Difference amplifier typical circuit diagram and its working

2. Transistor Audio Power Amplifiers

Difference between voltage and power amplifiers; Importance of matching in power amplifier, collector efficiency of power amplifier. Typical single ended power amplifier and its working, graphical method of calculation of output power; heat dissipation curve and importance of heat sinks; class A, Class B and Class C amplifiers; collector efficiency and distortion in class A, B and C amplifiers; collector efficiency and distortion in class A, B and C amplifier (without derivations) working principles of push pull amplifier circuits, its advantages over single ended power amplifier, cross over distortion in Class B operation and its reduction in Class B operation and its reduction. Different driver stages for push pull amplifier circuit. Working principles of complementary symmetry push pull circuit and its advantages. Transformerless audio power amplifiers and their typical applications.

SECTION B

3. Feedback in Amplifiers

? Basic Principles and types of feedback
? Derivation of expression for the gain of an amplifier employing feedback
? Effect of negative feedback on gain, stability, distortion and bandwidth (only physical explanation)
? Typical feedback circuits
? RC coupled amplifiers with emmiter by pass, capacitor removed
? Emmiter follower and its application, simple mathematical analysis for voltage gain and Input impedance of above circuits

4. Sinusoidal Oscillators

? Applications of oscillators; Use of positive feedback and negative feedback negative resistance for generation of oscillators, barkhausen criterion for oscillators.

SECTION C

5. Tuned Voltage Amplifiers

? Classification of amplifiers on the basis of frequency, Series and parallel resonance circuits, expression for resonant frequency, expression for impedance of resonance, relationship between resonant frequency, Q and Band width (no derivation) Hybrid equivalent circuits of transistor and its parameters, in h parameters, single and double tuned

amplifiers; their working principles and frequency response (no mathematical derivation) Concepts of neutralization. Staggered tuned amplifier and typical applications in brief.

6. Opto Electronics Devices and their applications

? Working principles and characteristics of photo resistors, photo diodes, photo transistors, photo voltaic cells, LEDs, LCDs and opto couplers. Simple application of opto electronic devices (one example of each may be mentioned)

SECTION D

7. Operational Amplifier

? Characteristics of ideal operational amplifier and its block diagram, definition of inverting and noninverting inputs, differential voltage gain, input and output voltages, input offset current, input bias current, common mode rejection ratio (CMRR), Power Supply Rejection Ratio (PSRR) and slew rate. Method of offset, Null Adjustment, use of opamplifier as an Invertor, Scale changer, Adder, Subtractor, Differentiator, Integrator, Schmitt trigger circuit, time base generator circuit, S/H switch circuit.

DECE/S/340P ELECTRONIC DEVICES AND CIRCUITSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. Two Stage R.C. Coupled Amplifier

? To measure the overall gain of two stages at 1 KHz and compare it with gain of Ist stage. Also to observe the loading effect of second stage on the first stage.

? To plot the frequency response curve of two stage amplifier and compare it with that of the single stage amplifier

2. Transistor Audio Power Amplifier

? Transistorized single ended power amplifier, measurement of optimum load, maximum undistorted power (by giving maximum allowable signal) efficiency and percentage distortion factor.

? Same measurement as above for the transistorized pushpull amplifier

? Same measurement as in (i) for a complementary symmetry amplifier

3. Feedback in Amplifier

? Single stage amplifier with and without by pass capacitor, measurement of voltage gain and plotting of frequency response in both cases (i.e. with and without by pass capacitor)

? Emitter follower circuit, measurement of voltage gain and plotting of frequency response curve

4. Sinusoidal Oscillator

? Hartley/Calpitt's oscillator circuit measurement of frequency and amplitude of oscillatons by plotting the wave shape on CRO

? Wein bridge oscillator circuitmeasurement of resonant frequency and amplitude of oscillations by plotting the wave shape on CRO

5. Tuned Voltage Amplifier

? Series and parallel resonant circuitmeasurement of resonant frequency. Plotting of the resonance curve (i.e. graph between input frequency and impedance) and calculation of Q of the resonant circuit from this plot

? To measure the frequency response of single tuned voltage amplifier and calculate the Q of the tuned circuit load.

6. Use of the opamp (IC 741) as inverting and noninverting amplifier, adder, integrator, buffer, scale changer

7. To measure the output offset voltage of an opamp (&41) and zero adjustment using nulling techniques

8. Identification of package types and terminals and familarization with characteristics and ratings using da ta book for various opto electronic devices like photo transistor., photo diode, LED, LDR and photo Voltaic Cells (any three)

DECE/S/350 PRINCIPLES OF COMMUNICATION ENGINEERING

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for papersetter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Introduction

? Need for modulation frequency translation and demodulation in communication systems

? Basic scheme of a modern communication system

2. Amplitude Modulation

? Derivation of expression for an amplitude modulated wave. Carrier and side band components. Modulation Index. Spectrum and BW of AM wave. Relative power distribution in carrier and side bands

? Elementary idea of DSBSC, SSBSC, ISB and VSB modulations, their comparision and areas of applications

3. Frequency Modulation

? Expression for frequency modulated wave and its frequency spectrum (without proof and analysis of Bessel function) Modulation index, maximum frequency deviation and deviation ratio, BW and FM signals, Carson's rule

? Effect of noise on FM carrier. Noise triangle, Role of limiter, Need for preemphasis and deemphasis, capture effect.
? Comparision of FM and AM in communication systems

4. Phase Modulation

? Derivation of expression for phase modulated wave, modulation index, comparision with frequency modulation

SECTION B

5. Principles of AM Modulators

? Working principles and typical application as:
Square Law Modulator
Switching Modulator
Collector Modulator
Base Modulator
Balanced Modulator
Rung Modulator

6. Principles of FM Modulators

? Working principles and applications of reactance modulator, varactor diode modulator, VCO and Armstrong phase modulator. Stabilisation of carrier for using AFC (block diagram approach)

SECTION C

7. Demodulation of AM Waves

? Principles of demodulation of AM wave using diode detector circuit; concept of diagonal clipping and formula for RC time constant for minimum distortion (no derivation)
? Principle of demodulation of AM Wave using synchronous detection.

8. Demodulation of FM Waves

? Basic Principles of FM detection using slope detector
? Principles of working of the following demodulators
FosterSeeley discriminator
Ratio detector
Quadrature detector
Phase locked Loop (PLL) FM demodulators

SECTION D

9. Pulse Modulation

? Statement of sampling theorem and elementary idea of sampling frequency for pulse modulation
? Basic concepts of time division multiplexing (TDM) and frequency division multiplexing (FDM)
? Basic ideas about PAM, PPM, PWM and their typical applications
? Pulse code Modulation (PCM) Basic scheme of PCM system. Quantisation, Quantisation error, companding, block diagram of TDMPCM communication system and function of each block. Advantages of PCM systems. Concepts of differential PCM (DPCM)
? Delta Modulation (DM)
Basic principle of delta modulation system, advantages of delta modulation over PCM system. Limitations of delta modulation, Concept of adaptive delta modulation (ADM)

DECE/S/350P PRINCIPLES OF COMMUNICATION ENGINEERING

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation
To measure the modulation index of the wave obtained in above practical
2. To obtain an AM wave from a square law modulator circuit and observe the AM pattern on CRO
To generate a DSBSC signal and observe the pattern on CRO for different levels of modulating signal
3. To obtain a FM wave form reactance tube modulator/voltage controlled oscillator circuit and measure the frequency deviation for different modulating signals.
4. To obtain modulating signal from an AM detector circuit and observe the pattern for different modulating signals.
5. To obtain modulating signal from an FM detector (Foster/Seely/Ratio Detector/quadrature/IC) circuit and plot the discriminator characteristics.
6. To observe the sampled signal and compare it with the analog input signal. Note the effect of varying the sampling pulse width and frequency on the sampled output
7. To verify the sampling theorem
8. To time division multiplex the two given signals
9. To observe and note the pulse modulated signals (PAM,PPM,PWM) and compare them with the corresponding analog input signal
10. To measure the Quantisation noise in a # bit/4 bit coded PCM signal
11. To feed an analog signal to a PCM modulator and compare the demodulated signal with the analog input. Also note the effect of low pass filter at the demodulated output
12. To study the process of delta modulation/demodulation

SEMESTER IV

DECE/S/410 COMPUTER APPLICATIONSII

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Information Storage and retrieval

? Need for information storage and retrieval.
? Creating database file.
? Querying database file on single and multiple keys.
? Programming a very simple application.

SECTION B

2. Programming in 'C'.

? Basic structure of C programs.
? Executing a C program.
? Constants, variables and data types.
? Operators and expressions.
? Managing InputOutput operations like reading a character, writing a character, formatted input, output through print, scan, getch, putch statements etc.
? Decision making and branching using IF …… else, switch, go to statements.
? Decision making and looping using dowhile and for statements.
? Arraysone dimensional and two dimensional.

SECTION C

3. Computers Application Overview

? Commercial and business data processing application.
? Engineering computation.
? CAD, CAM, CAE, CAI.

SECTION D

4. Use of computers for measurement and control, Overview of a computer based data acquistion & control system in Vivavoice.

Note : There will be no theory paper in this subject. The Knowledge attained by students will be evaluated by asking question in Vivavoice.

DECE/S/410P COMPUTER APPLICATIONSII

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks: 40%

1. Creating database.
2. Querying the database.
3. Report generation.
4. Programming in dbase
5. Use of spread sheets/Matlan/Mathematics/Eureka (or any other package) for engineering computers.
6. Use of design packages (appropriate design packages may be selected depending upon the branch).
7. Use of CAI Packages.
8. Programming for DAS & control.
9. Exercises on data acquisition.
10. Exercises on controlon/off switch and proportional control.
11. Programming exercise on executing a C program.
12. Programming exercise on editing a C program.
13. Programming exercise on defining variables and assigning values to variables.
14. Programming exercise on arithmetic and relational operators.
15. Programming exercise on arithmetic expressions and their evaluation.
16. Programming exercise on reading a character.
17. Programming exercise on writing a character.
18. Programming exercise on formatting input using print.
19. Programming exercise on formatting output using scan.
20. Programming exercise on simple if staement.
21. Programming exercise on IF ……. else statement.
22. Programming exercise on switch statement.
23. Programming exercise on go to statement.
24. Programming exercise on dowhile statement.
25. Programming exercise on for statement.
26. Programming exercise on one dimensional arrays.
27. Programming exercise on two dimensional arrays.

DECE/S/420 ELECTRONIC INSTRUMENTS AND MEASUREMENTS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Basics of Measurement

? Review of performance specifications of instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurement and loading effects

2. Measuring Instruments

? Working principles and construction of ammeters and voltmeters (moving coil and moving iron type)

? Difference between ammeter and voltmeter, extension of their range and simple numerical problems

? Principle and working of :

Wattmeter (dynamometer type)

Energy meter (induction type)

SECTION B

3. Multimeter

? Principles of measurement of dc voltage and dc current, ac voltage and ac current and resistance in a multimeter

? Specifications of multimeter and their significance

? Limitations with regards to frequency and input impedance

4. Electronic Voltmeter

? Advantages of conventional multimeter for voltage measurement with respect to input impedance and sensitivity

? Principles of voltage, current and resistance measurement s (block diagrams only)

? Specifications of an electronic voltmeters/Multimeter and their significance

5. AC Milli Voltmeter

? Types of AC milli voltmeters: Amplifierrectifier and rectifieramplifier.Block diagram and explanation of the above types of ac milli voltmeter

? Typical specifications and their significances

SECTION C

6. Cathode Ray Oscilloscope

? Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only no mathematical treatment) Deflection sensitivity, brief mention of phosphor for CRT in relation to their visual persistence and chemical composition

? Explanation for time base operation and need for blanking during fly back; synchronization

? Specifications of a CRO and their significance

? Use of CRO for the measurement of voltage (dc and ac) frequency, time period and phase angles

? Special features of dual trace, delayed sweep and storage CROs (brief mention only): introduction to digital CROs

CRO probes, including current probes

Digital storage oscilloscope: Block diagram and principle of working.

SECTION D

7. Signal Generators and Analysis Instruments

? Block diagram, explanation and specifications of

Laboratory type low frequency and RF signal generators

Pulse generator and function generator

8. Impedance Bridges and QMeters

? Block diagram explanation of working principles of a laboratory type (ba;ancing type) RLC bridge, Specifications of a RLC bridge.

? Block diagram and working principles of a Qmeter

9. Digital Instruments

? Comparision of analog and digital instruments, characteristics of a digital meter

? Working principles of ramp, dual slope and integrating type of a digital voltmeter

? Block diagram and working of a digital multimeter

? Working principle of time interval. Frequency and period measurement using universal counter/frequency counter, timebase stability, accuracy and resolution

? Principles of working and specifications of logic probes, signature analyser and logic analyser.

? Digital LCR bridges

DECE/S/420P ELECTRONIC INSTRUMENTS AND MEASUREMENTS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. Conversion of Galvanometer into Ammeter and Voltmeter
2. To observe the loading effect of a multimeter while measuring voltage across low resistance and high resistance

To observe the limitations of a multimeter for measuring high frequency voltages and Currents

3. To measure Q of a coil and measure its dependence on frequency using a Qmeter
4. Measurement of voltage, frequency, time period and phase angle using CRO
5. Measurement of time period, frequency, average period using universal counter/frequency counter
6. Measurement of rise, fall and delay times using a CRO
7. Measurement of distortion of a RF signal generator using distortion factor meter
8. Measurement of R, L and C bridge/universal bridge

DECE/S/430 ELECTRONICS DEVICES AND CIRCUITSIII

Maximum Time : 3 Hrs. **University Examination : 60 Marks**
Total Marks : 100 **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks :40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Wave Shaping Circuits

? General idea about different wave shapes, Review of transient phenomena in RC and RL circuits. RC and Rl Differentiating and integrating circuits.The applications (physical explanation for square/rectangular input wave shapes only). Diode clippers, series and shunt biased type. Diode clipper circuits. Zener diode clipper circuits. Use of transistors for clipping. Diode clamping circuit for clamping to negative peak, positive peak or any other

level for different input waveforms (e.g. sine, square, triangular). Ideal transistor switch, explanation using C.E. output characteristics.

2. Timer I.C.

? Block diagram of I.C. timer (such as 555) and its working

SECTION B

3. Multi Vibrator Circuits

? Concept of multi vibrator : astable, mono stable, bistable, 555 timer as mono and a stable multi vibrator. Opamp as monostable, astable multi vibrator and Schmitt trigger.

4. Time Base Circuits

? Need of time base (Sweep) wave forms, special features of time base signals. Simple method of generation of saw tooth wave using charging and discharging of a capacitor. Constant current generation of linear sweep voltage circuit using opamp;

SECTION C

5. Integrated Electronics

? Function of transistor by planner process, a typical fabrication process for ICS (brief explanation)

6. Regulated Power Supply

? Concept of regulation, Principles of series and shunt regulators. Three terminal voltage regulator ICs (positive and variable voltage applications) Block diagram of a regulated power supply. Concepts of cv, cc and fold back limiting, short circuit and over – load projection

Major specifications of a regulated power supply and their significance (line and load regulation, output ripple and transients)

Basic working principles of a Switched mode power supply

Concept of floating and grounded power supplies and their interconnections to obtain multiple output supplies

Brief idea of CVT, UPS and dual tracking power supply.

SECTION D

7. VCO (IC565) and PLL (IC 566) and Their Applications

8. Thyristors and UJT

? Name, symbol, characteristics and working principles of bnb diode. Mention of their applications.

? Basic structure, principle of operation and VI characteristics of UJT. Explanation of working of UJT as relaxation oscillator and its use in thyristor triggering.

DECE/S/430P ELECTRONIC DEVICES AND CIRCUITSIII

Maximum Time : 3 Hrs. **University Examination : 60 Marks**
Total Marks : 100 **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks :40%

1. Observe and Plot the output Wave shape of
RC differentiating circuits
RC integrating circuits for square wave input (Observe the effect of the RC time Constant of the circuit on the output wave shape for both the circuits)
2. Construct biased and unbiased series and shunt clipping circuits for positive and negative peak clipping of a sine wave using switching diodes and d.c. sources.
Construct a double clipper circuit using diodes and d.c. sources and observe wave shapes
Construct a zener diode and transistor clipper circuits for positive peak, negative peak and double clipping of sine and other wave shapes.
To clamp sine and square wave to their positive and negative peaks and to a specified Level.
3. To measure Ic and V infinity for a transistor whe n Ib is varied from zero to a maximum value and measure the values of Ib (sat), Ic (sat) V ce (Sat), hfe (min) for saturation at a given voltage and load.
To calculate the values and assemble and test simple transistor switching circuits to switch on an:
a) LED
b) Relay
c) 20/500 mA Lamp of 6 or 12 volts
4. To plot input vs output characteristics of Schmitt trigger circuit and plot the input output wave shapes with a sine wave input
5. To test mono and astable multi stable and multi vibrator and to plot waveforms.
6. To make and test the operations of mono stable stable and a stable multi vibrator circuits circuits using 555 timer.
7. To determine and plot firing characteristics of SCR by varying anode to cathode voltage, and varying gate current.
8. To note the wave shapes and voltages at various points of a UJT relaxation oscillator circuit.
9. To plot the firing characteristics of a triac in different modes, namely, mode I +, I _

DECE/S/440 ELECTRONIC DRAWING, DESIGN AND FABRICATION

Maximum Time : 3 Hrs. **University Examination : 60 Marks**
Total Marks : 100 **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks :40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Circuit Drawing

? Circuit diagram of typical multimeter, Circuit diagram of a typical electronic multimeter, Circuit diagram of a typical transistor radio receiver. Complete block diagram of a typical monochrome TV transmitter and receiver system. Front panel details of typical CRO.

2. Design and Drawing for the Given Specifications

? A small power transformer. A simple power supply using full wave rectifiers and different types of filters. A simple zener regulated power supply. A smallsignal (signalstage low frequency amplifier (given specifications being the input impedance, voltage gain and input signal level and the frequency range).

? Squarewave generator using 555 timer. Sinusoidal oscillatorWein's Bridge type using an Operational Amplifier. Voltagecontrolled oscillator using IC 565.

? Circuitry for using a DC microammeter as Voltmeter Current meter for specified ranges / ohm meter.

SECTION B

2. Fabrication Techniques

Printed circuit Boards (PCBs).

? PCB board materials. Their characteristics and plating, corrosion and its prevention.

? Photo processing, screen printing, etching, high speed drilling, buffing, surface treatment and protection from harsh environments, plated through holes, double sided and multiplayer PCBs.

? Standards of Board sizes. Modular assembles edge convertors, multi board racks, flexible boards.

? Assembly of circuits on PCB, soldering techniques, role of tinning, flow and wave soldering, Solderability, composition of solder. Edge conector. Elements of wire shaping.

SECTION C

Production

? Storage and supply of components for assembly, role of incoming inspection of components, assembly line reduction, tools and jigs for lead bending. Manual and automatic insertion techniques. Closed loop assembly of module and/or complete instruments. Specific examples of small small scale and large scale production be given to illustrate above mentioned methods

Testing:

? Jigs and fixtures for operational testing of modules/subassemblies. Sequence testing for failure analysis. Environmental testing at elevated temperature and humidity. Vibration and mechanical endurance testing. Packing for transportation Documentation

? Statement of brief specifications, detailed specifications and limitations, Block diagram, detailed diagrams. Testing and checking points. Warning relative to high voltage for handling during repair. Fault location guide. Simple solutions for fault removal

SECTION D

4. Computer aided manufacturing Practices
5. Production Planning
6. CNC drilling, photo plating

DECE/S/440P ELECTRONIC DRAWING, DESIGN AND FABRICATION

Maximum Time : 3 Hrs. **University Examination : 60 Marks**
Total Marks : 100 **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks :40%

1. Preparation of PCBs (Handmade and screen printed) from schematic diagrams (46 examples such as single transistor voltage stabilizer, regulated supply, timer etc.)
2. Fabrication of small equipment including chasis., front panel etc (46 jobs of increasing proportionality) involving different techniques of making chassis/cabinets, panel engraving.

DECE/S/450 MICROPROCESSORSI

Maximum Time : 3 Hrs. **University Examination : 60 Marks**
Total Marks : 100 **Continuous Internal Assessment : 40 Marks**
Minimum Pass Marks :40%

A) Instructions for papersetter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Introduction

? Typical organization of a microcomputer system and functions of its various blocks

? Microprocessor, its evolution, function and impact on modern society

2. Architecture of a Microprocessor (with reference to 8085)

? Concept of Bus, Bus organization of 8085

? Functional block diagram of 8085 anfd function of each block

? Pin details of 8085 and related signals.

? Demultiplexing of Address/ Data bus (AD0AD7). Generation of read write control signals.

? How is stored program executed ?

SECTION B

3. Memories and its Interfacing

? Memory organization, memory map. Partitioning of total memory space. Address decoding space. Concept of I/O mapped I/O and memory mapped I/O. Interfacing of memory and I/O devices.

4. Programming Using 8085 Microprocessor

? Brief idea of machine and assembly languages. Machine and Mnemonic codes

? Instruction format and Addressing mode. Identifications of instructions as to which addressing mode they belong.

? Concept of Instruction set. Explanations of the instructions of the following groups of instruction set (of 8085):

Data transfer group, Arithmetic group, Logic group, Stack, I/O Machine Control Group

? Programming exercises in assembly language. (Examples can be taken from the list of Experiments)

SECTION C

5. Instruction Timing and Cycles

? Instruction cycle, machine cycle and T states

? How a stored programme is executed Fetch and execute cycle

6. Interrupts

? Concept of interrupt, maskable and nonmaskable, edge triggered and level triggered interrupts,. Software interrupt, Restart interrupt and its use. Various hardware interrupts of 8085. Servicing interrupts, extending interrupt system.

SECTION D

7. Data Transfer Techniques

? Concept of programmed operations, sync data transfer, async data transfer (hand shaking), Interrupt driven data transfer, DMA, serial output data, serial input data.

8. Brief idea of Interfacing chips: 8255, 8253, 8279, 8259, 8251

9. Comparison study of 8 bit microprocessors i.e. 8085, z80, 6800

DECE/S/450P MICROPROCESSORSI

Maximum Time : 3 Hrs. **University Examination : 60 Marks**

Total Marks : 100 **Continuous Internal Assessment : 40 Marks**

Minimum Pass Marks :40%

1. Addition of two 8 bit numbers
2 a) To obtain 2's complement of 8's bit number
b) To subtract a 8 bit number from another 8 bit number using 2's complement
3. Extract fifth bit of a number in A and store it in other register.
4. Count the number of bits in high state in accumulator
5. Check even parity and odd parity of a binary number
6. Addition of two sixteen bit numbers
7. Subtraction of a sixteen bit number from an other sixteen bit number
8. Multiplication of two 8 bitnumbers by repetitive addition
9. Divide 8 bit numbers by repetitive subtraction
10. a) Smallest number of three numbers
b) Largest number of three numbers
11. To sort an array of unsigned binary numbers in decreasing/increasing order
12. Generate timing delay through software

SEMESTER V

DECE/S/510 INDUSTRIAL MANAGEMENT

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Principles of Management

? Management, different functions of management planning, organizing, coordination and control.
? Structure of an industrial organization.
? Functions of different departments.
? Relationship between individual departments.

2. Human and Industrial Relations.

? Human relations and performance in organization.
? Understand self and others for effective behaviour.
? Behaviour modification techniques.
? Industrial relations and disputes.
? Relations with subordinates, peers and superiors.
? Characteristics of group behaviour and trade unionism
? Mob psychology.
? Grievance, Handling of grievances.
? Agitations, strikes, Lockout, Picketing and Gherao
? Labour Welfare
? Workers participation in management.

3. Professional Ethics

? Concept of Ethics.
? Concept of professionalism.
? Need for professional ethics.
? Code for professional ethics.
? Typical problems of professional engineers.
? Professional bodies and their role.

SECTION B

4. Motivation

? Factors determining motivation.
? Characteristics of motivation.
? Methods for improving motivation.
? Incentives, pay promotion, rewards.
? Job satisfaction and job enrichment.

5. Leadership.

? Need for Leadership.
? Functions of a Leader.
? Factors for accomplishing effective leadership.
? Manager as a leader.

6. Communication

? Importance of communication.
? The communication process.
? Barriers to communication.
? Making communication effective.
? Listening in communication.

7. Human Resource Development

? Introduction.
? Staff development and career development.
? Training strategies and methods.

SECTION C

8. Wage Payment

? Introduction to wages.
? Classification of wage payment scheme.

9. Labour, Industrial and Tax Laws.

? Importance and necessity of industrial legislation.
? Types of labour laws and disputes.
? Brief description of the following Acts

The Factory Act 1948, Payment of Wages Act 1936, Minimum Wages Act 1948, Workmen's Compensation Act 1923. Industrial Dispute Act 1947, Employee's state Insurance Act 1948, Privident fund Act.

? Various types of Taxes Production Tax, Local Tax, Sales Tax, Excise duty, Income Tax.
? Labour Welfare schemes.

10. Accidents and Safety

? Classification of accidents; According to nature of injuries i.e. fatal, temporarory, According to event and According to place.
? Causes of accidents – psychological, physiological and other industrial hazards.
? Effects of accidents.
? Accidentsprone workers.
? Action to be taken in case of accidents with machines, electric shock, road accident, fibres and erection and correction accidents.

? Safety conciousness.
? Safety procedures.
? Safety measures Do's and Don't's.
? Safety publicity.
? Safety measures during executions of Engineering works.

SECTION D

11. Environmental Engineering.

? Ecology.
? Factors causing pollution.
? Effects of Pollution on Human Health.
? Air pollution and control act.
? Water Pollution and control act.
? Pollution control equipment.
? Solid waste mangement.
? Noise pollution and its control.

12. Enterpreneurship Development

? Concept of Enterpreneurship.
? Need of Enterpreneurship in the context of prevailing employment conditions of the country.
? Successful enterpreneurship.
? Preparation of project report.
Training for enterpreneurship development.

DECE/S/520 CONSUMER ELECTRONICS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Audio Systems

? Microphones, Construction, Working principles and applications of microphone: carbon, moving coil, velocity, crystal condenser type, Cordless microphone. Loud Speakers: Direct radiating, horn, loaded woofer, tweeter and range, midrange, multispeaker system, baffles and enclosures Sound recording : on magnetic tape, its principles, block diagram and tapes transport mechanism Digital sound recording on tape and disc CD systems HiFi systems, preamplifiers, amplifiers and Eqaualisers. Stereo Amplifiers.

SECTION B

2. Television

? Basic idea of principles of Black and White and colour TV and their difference.

3. VCR

? Principle of video recording on magnetic tape, block diagram of VCR, VHS tape, transport mechanism

SECTION C

4. Basic Block diagram, working principles of the following:

? Digital/watch/clock
? Calculator
? Washing machine
? Microwave ovens

SECTION D

? Cordless telephones
? Pager
? Electrostat machine
? Electronic ignition system for automobiles
? Cellular Phones

DECE/S/520P CONSUMER ELECTRONICS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To plot the frequency response of a microphone.
2. To plot the frequency response of a loudspeaker.
3. Demonstration of a typical tape transport system.
4. Troubleshooting of the typical tape recorder system.
5. Demonstration of the working of digital watch/clock and calculator
6. Demonstration of the working of automatic and semi automatic washing machine and microwave oven
7. Demonstration of the working of cordless telephone and pager.
8. Demonstration of the working of a Photostat machine.
9. To observe the waveforms and voltage s in B/W and PAL TV receiver.
10. Demonstration of the working of a VCR.

DECE/S/530 MICROPROCESSORSII

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Introduction to 16 bit Microprocessors, Internal architecture of 8086, internal resisters,
2. physical and logical address generation, maximum and minimum modes, clock generation, Minimum system, comparision be tween 8086 and 8088.

SECTION B

2. Programming 8086: Addresing modes, instruction format, instruction template and hand assembly. Instruction set, data transfer, arithmetic bit manipulation, string instructions, program transfer and processor control instructions. Assembler and assembler directives.
3. Programming exercises based on the instruction set and use of assembler.

SECTION C

4. Memory and I/O interface: Memory interface block diagram, I/O interface (direct and indirect).
5. Interrupt interface of 8086: Types of interrupts, interrupt masking, software interrupts

SECTION D

6. Introduction to Micro Controllers. Main features, architecture and applications of 8061 and 8031.
7. Introduction to 32bit microprocessors:80386, 80486 and Pentium.

DECE/S/530P MICROPROCESSORSII

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. Study of instructions of 8086 using Debug.
2. Addition and subtraction of multibyte numbers
3. Multiplication of unsigned/signed numbers
4. Division of unsigned/signed numbers
5. Sorting strings in ascending and descending order
6. Modular programming using subroutines
7. Study of the microcontroller 8051 or 8031

DECE/S/540 TROUBLE SHOOTING AND MAINTENANCE OF ELECTRONIC EQUIPMENT

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks : 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for papersetter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Repair, Servicing and Maintenance Concepts

? Introduction, Modern electronic equipment, Mean time between failures (MTBF), Mean time to repair (MTR), Maintenance policy, potential problems, preventive maintenance, corrective maintenance.

a) Study of basic procedure of service and maintenance
b) Circuit tracing techniques
c) Concepts of shielding, grounding and power supply considerations in instruments

SECTION B

2. Fundamental Trouble Shooting Procedures

? Fault Location

? Fault finding aids
Service manuals
Special tools
? Trouble Shooting Techniques
Functional Area Approach
Split half method
Divergent, convergent and feedback path circuit analysis
Measurement techniques

SECTION C

3. Passive Components

? Test procedures for checking passive components, resistors, capacitors, inductors, chokes and transformers.

4. Semiconductor Devices (From Testing Procedure Point of View)

? Diodes, rectifiers, zener diodes, Bipolar transistors. Field Effect Transistors JFET and MOSFET. Thyristors unijunction transistors, Photo cells, Transistor equivalents.
Data Books on transistors

SECTION D

5. Trouble Shooting Digital Systems

? Typical faults in digital circuits. Use of Logic clip, logic probe, logic pulsar, IC tester

6. Typical Examples of Trouble Shooting

Trouble Shooting procedures in the following:
? Oscilloscope
? Power Supplies
? Digital multimeters
? Signal generator
? PA system
? Tape recorder and
? Stereo amplifier

DECE/S/540P TROUBLE SHOOTING AND MAINTENANCE OF ELECTRONIC EQUIPMENT

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. Selection, demonstration and correct use of tools and accessories: pliers, wire cutter, wire stripper, tweezers, soldering iron, desoldering tools, neon tester, screw driver Acessories: Insulating tapes, solders, solder tips, fluxes, desoldering wick, solder cleaning fluids, sleeves, tags, identifiers
2. Develop skill in assembly of components, wiring, soldering and desoldering methods
3. Selection and use of commonly used passive components and accessories
4. Testing of active and passive components
5. Testing of linear integrated circuits
6. Use of digital tools for trouble shooting digital components

7. Trouble shooting at least two of the following equipment:
Oscilloscope, Power supplies, electronic multimeter, signal generator,PA system , tape recorder and Stereo amplifier
Note : There will be no theory paper.

DECE/S/550 COMMUNICATION SYSTEMSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. AFIFM Transmitters

? Classification of transmitter on the basis of power, frequency

? Concept of low level and high level modulation. Block diagram of low level and high level modulated AM transmitters and working of each stage

? Block diagram and working principles of reactance reactance transistors and FM transmitters

2. AFIFM Radio Recievers

? Principle of working with block diagram of superheterodyne of AM receiver. Function of each block and typical waveforms at input and output of each block

? Performance characteristics of a radio receiver sensitivity, selectivity, fidelity, S?N ratio, image rejection ratio and their measurement procedure. ISI standards on radio receivers (brief idea)

? Selection criteria for intermediate frequency (IF). Concepts of simple and delayed AGC

? Block diagram of an FM reciever, function of each block and waveforms at input and output of different blocks. Need for limiting and deemphasis in FM reception

? Block diagram of communication receivers, differences with respect to broadcast receivers.

SECTION B

3. Antennas:

? Electromagnetic spectrum and its various ranges: VLF. LF, HF, VHF, UHF, Microwave.

? Physical concept of radiation of electromagnetic energy from a dipole. Concept of polarization of EM Waves

? Definition and physical concepts of the terms used with antennas like point source, gain directivity, aperture, effective area, radiation pattern, beam angle, beam width and radiation resistance

? Types of antennasBrief description, characteristics and typical applications of half wave dipole, medium wave (mast) antenna, folded dipole, turns tile, loop antenna , yagi and ferrite rod antenna (used in transistor receivers).

? Brief description of bradside and end fire arrays, their radiation pattern and applications (without analysis); brief idea about Rhombic antenna and disc antenna

SECTION C

4. Propogation

? Basic idea about different modes of radio wave propogation and typical areas of applications. Ground wave propogation and its characteristics, summer field equation for field strength.

? Space wave communicationline of sight propogation, standard atmosphere, concept of effective earth radius range of space wave propogation in standard atmosphere.

? Duct propogation: sky wave propogationionosphere and its layers. Explanation of terms virtual height, critical frequency, maximum usable frequency, multiple hop propogation.

SECTION D

5. Fibre Optic Communications:

? Advantages of fibre optic communication

? Block diagram of fibreoptic communication link

? Constuctional features of optical fibre and fibre optic cables. Concepts of numerical aperture (NA). Modes of propogation in an optical fibre and characteristics of single mode and multi mode fibres. Fibre attenuation and dispersion

? Light siurces Diode, LEDs and their characteristics

? Light detectors and their characteristics

? Basic idea of fibre connection techniquesspleing and lensing

6. Satellite Communications

? Basic idea, passive and active satellites. Meaning of the terms orbits, apogee, perigee

? Geostationary satellites and its need, Block diagram and explanation of satellite communication link.

DECE/S/550P COMMUNICATION SYSTEMSI

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To plot the sensitivity characteristics of a radio reciever and determination of the frequency for maximum sensitivity
2. To plot the sensitivity characteristics of a ratio reciever
3. To plot the fiedelity characteristics of a radio reciever
4. To align AM broadcast reciever
5. To plot the radiation pattern of a directional and omni directional antenna
6. To plot the variation of field strength of a radiated wave, with distance from the transmitting antenna
7. Familarisation and identification of fibre optic compone nts such as fibre optic light source detector, connector assembly etc
8. To assemble the fibre optic communication set up (using teaching module) and compare the transmitted signal with the output of the reciever
9. To measure the light attenuation of the optic fibres

Note:

Visits to appropriate sites of digital/ communication networks, satellite communication, telemetry centers (like remote sensing) and fibre optic communication installations should be made with a view to understand their working, A comprehensive report must be prepared by all students on these visits, especially indicating the dates and locations of their visits.

SEMESTER VI

DECE/S/610 MEDICAL ELECTRONICS

Maximum Time : 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

Anatomy and physiology

Elementary ideas of cell structure, heart and circulatory system central nervous system. muscle action, respiratory system.

SECTION B

overview of medical electronics equipments

Classification , application and specification of diagnostic, therapeutic and clinical laboratory equipment, method of operation of these equipments

SECTION C

electrodes

Bioelectric signal, bio electrodes, electrodes, tissue interface , electrodes uses for ECG ,EEG

Transducers

Typical signal from physiological parameters, pressure transducers

SECTION D

Biomedical recorders

Block diagram description and application of following instruments ECG macnines EEG machine EMG machine.

Patient monitoring system

heart rate measurement, pulse rate measurement, respiration rate measurements etc.

DECE/S/610P MEDICAL ELECTRONICS

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To operate and familiarize with BP apparatus, ECG, machines, ventilator,, incubator, boyle's apparatus, ECG machines, pulse oxymeter.
2. To measure the concentration of blood sugar in ghicometer.
3. To operate and familiarize with audio meter and visual testing instruments.
4. to operate and familiarize with audio meter and visual testing instruments.
5. measurement of leakage current with the help of system analyzer.
6. visit to hospital for exposure of various medical electronics related equipments.

DECE/S/620 COMMUNICATION SYSTEMSII

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Introduction

? Basic block diagram of digital and data communication systems. Their comparision with analog communication systems.

2. Coding

? Introduction to various common codes 5 bit Baudot code. 7 bit ASCII, ARQ, EBCDIC

? Code error detection and correction techniques Redundancy, parity, block check character (BCC). Vertical Redundancy check (VRC). Longitudnal Redundancy Chack (LRC). Cyclic Redundancy Check (CRC), Hamming code

3. Digital Modulation Techniques

Basic block diagram and principle of working of the following:

? Amplitude Shift Keying (ASK), Interrupted Continous wave (ICW), two tone modulation

? Frequency Shift Keying (FSK)
? Phase Shift Keying (PSK)
4.Characteristics/working of data transmission circuits; bandwidth requirements, data transmission speeds, noise cross talk, echo suppressors, distortion, equalizers

SECTION B
5. UART, USART:
? Their need and function in communication systems
6. Modems
? Need and function of modems, Mode of modems operation (low speed, medium speed and high speed modems). Modem Interconnection, Modem data transmission speed, Modem modulation method, Modem Interfacing (RS 232 interface, other interface).
7. Network and Control Co nsiderations:
? Protocols and their functions.
? Data communication network organization. Basic idea of various modes of digital switchingcircuit switching, message switching, packet switching.
? Basic concept of Integrated services
? Digital network (ISDN) its need in modem communication. Brief idea of ISDN interfaces
? Basic idea of local area network (LAN) and its various topologies

SECTION C
8. Telemetry
? Radiotelemetry,
9. RadioPaging Systems: Concept and applications
10. Electronic Exchange:
? Various switching offices (Regional Centre, District Centre, Toll Centre, Local Office) and their hierarchy.
? Principles of space division switches. Basic block diagram of digital exchange and its working.
? Combined space and time switching: Working principle of STS and TST switches.
? Functions of the control system of an automatic exchange. Stored programme Control (SPC) processor and its application in electronic exchange and rural telephone exchange.
? Introduction to PBAX, PABX, EPABX. Function of PBX, PABX relation wth central office. Modern PABX capabilities

SECTION D
11. Operation of Cellular Mobile Telephone System
? Concept of cells and frequency reuse. Special features of cellular mobile telephone.
12. Facsmile (FAX)
? Basic idea of Fax system and its applications. Principle of operation and block diagram of modern FAX system. Important features of modern FAX machines.
13. Carrier Telephony
? Features of carrier telephone system ; hybrid coils. Frequency allocation and formation of groups. Schematic diagram and working of 3channel and 12 channel carrier system. Carrier and pilot frequency generation.

DECE/S/620P COMMUNICATION SYSTEMSII

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. Transmission of Hamming code on a serial link and its reconversion at the receiving end
2. Observe waveforms at input and output of ASK and FSK modulators
3. To transmit parallel data on a serial link using USART
4. Transmission of data using MODEM.
5. Observe waveforms at input and output of TDM circuit
6. To study the construction and working of telephone handset
7. To study the construction and working of a FAX machine.
8. To study the construction and working of an EPABX.
9. To study the working of a cellular mobile system and pagers
10. To Study the working of a LAN syatem.

Note:

Visits to appropriate sites of all types of telephone exchanges (including mobile and rural exchangers), FAX and Carrier telephony should be made with a view to understand their working, A comprehensive report must be prepared by all students on these visits, especially indicating the dates and locations of their visits.

DECE/S/630 MICROWAVE ENGINEERING

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Introduction to MicroWaves:

? Introduction to microwaves and its applications, Classification on the basis of its frequency bands (HF, VHF,UHF, L,S,C, X, Ku, Ka, mm, Sub mm)

2. Microwave Devices

? Basic concepts of thermoionic emmision and vaccum tubes. Effects of inter electrode Emission and Transit time on the high frequency performance of conventional vaccum tubes and their steps to extends their high frequency operations.

? Constructional, characteristics and operating principles and typical applications of the following devices: (No matgematical teatment)

Multi cavity klystron
Reflex klystron
Multicavity magnetron
Travelling wave tube
Gun diode and
Impatt diode

SECTION B

3. Wave Guides

? Rectangular and circular wave guided and their application. Modes of wave guide. Propogation constant of a rectangular wave guide, cut off wavelength, guide wavelength and their relationship with free space wavelength (no mathematical derivation). Impossibility of TEM mode in a wave guide. Field configuration of TE10, TE20 and TM11 modes

4. Microwave Components

? Constructional features, characteristics and application of: tees, bends, matched termination, twists, detector mount, slotted section, directional coupler, fixed and variable attenuator. Isolator, circulator and duplexer; coaxial to wave guide adapter.

5. Microwave Antennas

? Structure characteristics and typical applications of Horn and Dish antennas

SECTION C

6. Microwave Communication Systems:

a) Block diagram and working principles of microwave communication link

b) Troposcatter Communication; Troposphere and its properties, Tropospheric duct formation and propogation, troposcatter propogation. Block diagram of Tropospheric communication link. Diversity phenomenon. Advantages, Disadvantages of Troposcatter communication link

SECTION D

7. Radar Systems:

? Introduction to Radar, its various applications. Radar range equation (no derivation) and its applications.

? Block diagram and operating principles of basic pulse radar, concepts of ambiguous range, radar area of crosssection and its dependence on frequency.

? Block diagram and operating principles of CW (Doppler) and FMCW radars and their applications.

? Block diagram and operating principles of MTI radar.

? Radar displayPPI

DECE/S/630P MICROWAVE ENGINEERING

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To measure electronics and mechanical tuning range of a reflex klystron
2. To measure VSWR of a given load
3. To measure input impedance of a horn
4. To measure the klystron frequency by slotted section method
5. To measure the directivity and coupling of a directional coupler
6. To plot radiation pattern of horn antenna in horizontal and vertical planes
7. To verify the properties of magic tee

Note:
Visits to appropriate sites of microwave industries and communication stations should be made to understand their working, A comprehensive report must be prepared by all students on these visits, especially indicating the dates and locations of their visits.

DECE/S/640 PC ORGANISATION

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

A) Instructions for paper-setter

1. The question paper will consist five sections namely A, B, C, D and E.
2. Each of the sections A, B, C and D will contain two questions and candidates have to attempt at least one question compulsorily from each section. Each section carry 15% of the total marks
3. Section E will comprise of 1015 short answers type questions, which will cover the entire syllabus and will carry 40% of the total marks.

B) Instructions for candidates

1. Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.
2. Use of nonprogrammable scientific calculator is allowed

SECTION A

1. Hardware Organisation of PC

? Micrometer organization, 8086/8088 microprocessor, its architecture, instruction set, memory address and addressing techniques and I/O addressing. The mother board of the PC: memory organization, system timers/counters, interrupt vectoring, Interrupt controller, DMA controller and its channels, PCbus slots, various types of digital buses. Serial I/O ports e.g. COM 1 and 2, parallel ports

2. The Video display of The PC

? The basic principles of the working of Video monitors, video display adapters (monochrome and colour graphic). Video modes

SECTION B

3. The Keyboard of The PC

? The basic principles of the working of a PC Keyboard. Scan modes

4. Disk Drives:

? Constructional features of Hard disk, Floppy disk and their drives (HDD and FDD).

? Logical structure of a disk and its organization: Boot Record, File Allocation Table (FAT) Disk Directory, Data source

SECTION C

5. Peripheral Devices

? Basic features of various other peripheral devices e.g. mouse, printer (DMP, Inkjet, Laser), scanner, plotter, digitizer and Modem

6. Power Supplies

? SMPS used in PC and its various voltages. Basic idea of constant voltage transformer (CVT) and uninterrupted power supply (UPS)off line and Online.

SECTION D

7. The Bios and Dos Services

? The basic idea of BIOS and DOS services for diskette, Serial Port, Keyboard, Printer and Misc. services.

8. Advanced Microprocessors:

? Basic features of 32bit Intel microprocessor 80386, 80486 and Pentium

.

DECE/S/640P PC ORGANISATION

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

1. To identify various components, devices and sections of a PC.
2. To interconnect the system unit with the video monitor, mouse and keyboard and test the operation of the PC.
3. To connect various addon cards and I/O devices to a PC motherboard and test their working.
4. To note the voltages and waveforms at various terminals in the I/O channel (Bus Slots).
5. To study the SMPS circuit of a PC, measure various supply voltages and connect it to the motherboard and other appropriate I/O device.
6. To study the operation of A CVT used to supply power to a PC
7. To study the operation of an uninterrupted power supply (UPS)

DECE/S/650P MAJOR PROJECT WORK

Maximum Time: 3 Hrs. **University Examination: 60 Marks**
Total Marks: 100 **Continuous Internal Assessment: 40 Marks**
Minimum Pass Marks: 40%

Some of the project activities are given below:
1. Projects related to designing small electronic equipment/ instruments
2. Projects related to increasing productivity
3. Projects related to quality assurance
4. Projects related to estimation and economics
5. Projects connected with repair and maintenance of plant and equipment
6. Projects related to design of PCBs
7. Projects related to design of small oscillators and amplifiers circuit
8. Projects related to design, fabrication, testing and application of small digital circuits and components
9. Projects related to microprocessor based circuitry/ instruments
10. Software projects related to electronic field.
11. Projects related to design fabrication testing troubleshooting of medical electronics equipment
12. Any other related problems of interested of host industry