

Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal

Course of Study and Scheme of Examination B.E. Electronics and Communication SEMESTER - VII

Scheme: BE(EC)_July2000

Implemented from academic session 2003-04

| S. No | Course Category | Course Code (New) | Name of Course | Hours Per week | | | C R E D I T S | Distribution of Marks | | | | | | |
|--------------|-----------------|-------------------|--|----------------|----|-----|---------------------------------|-----------------------|-------------|----------------|---------------------|-----|-------|-------|
| | | | | L | T | P | | C | Theory Exam | Practical Exam | Internal Assessment | | | Total |
| | | | | | | | | | | | MST | TW | Total | |
| | | | | I | II | III | | | I+II+III | | | | | |
| 1 | DC-17 | EC701 | Optical Communication | 3 | 1 | 2 | 6 | 100 | 50 | 20 | 30 | 50 | 200 | |
| 2 | DC-18 | EC702 | Computer Networks | 3 | 1 | 2 | 6 | 100 | 50 | 20 | 30 | 50 | 200 | |
| 3 | DC-19 | EC703 | Microwave Engineering | 3 | 1 | 2 | 6 | 100 | 50 | 20 | 30 | 50 | 200 | |
| 4 | DCO (E)-I | Refer Table below | Elective-I | 3 | 1 | 0 | 4 | 100 | - | 20 | - | 20 | 120 | |
| 5 | DCO (E)-II | Refer Table below | Elective-II | 3 | 1 | 0 | 4 | 100 | - | 20 | - | 20 | 120 | |
| 6 | DC-20 | EC704 | Major Project (Planning & Literature Survey) | 0 | 0 | 4 | 4 | - | - | - | 50 | 50 | 50 | |
| 7 | DC-21 | EC705 | Industrial Training (Four weeks)* | 0 | 0 | 0 | 4 | - | 50 | - | 30 | 30 | 80 | |
| 8 | NECC-9 | EC706 | Seminar/Group Discussion etc. | 0 | 0 | 1 | 1 | - | - | - | 30 | 30 | 30 | |
| Total | | | | 15 | 5 | 11 | 35 | 500 | 200 | 100 | 200 | 300 | 1000 | |

* Students will go for Industrial Training after VI semester in the summer vacations and will be assessed in VII semester.

MST-Mid Semester Test, TW-Term Work

| ELECTIVE-I | | ELECTIVE-II | |
|------------|---|-------------|---|
| EC-710 | Cellular & Mobile Communication | EC-720 | Telematics |
| EC-711 | Bio-Medical Instrumentation | EC-721 | Neural Networks |
| EC-712 | e-Enterprise | EC-722 | Satellite Communication |

Note :- 1. Minimum strength of **Ten Students** is required to offer an Elective in the College in a particular Academic Session.

2. Choice of Elective Course ones made for an examination cannot be changed for future examinations.

Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal

Course of Study and Scheme of Examination B.E. Electronics and Communication SEMESTER - VIII

Scheme: BE(EC)_July2000

Implemented from academic session 2003-04

| S. No | Course Category | Course Code (New) | Name of Course | Hours Per week | | | C R E D I T S | Distribution of Marks | | | | | |
|--------------|-----------------|-------------------|--|----------------|----------|-----------|---------------------------------|-----------------------|----------------|---------------------|------------|------------|-------------|
| | | | | | | | | Theory Exam | Practical Exam | Internal Assessment | | | Total |
| | | | | | | | | | | MST | TW | Total | |
| | | | | | | | | L | T | P | C | I | II |
| 1 | DC-22 | EC801 | Advance Communication Systems | 3 | 1 | 0 | 4 | 100 | - | 20 | - | 20 | 120 |
| 2 | DC-23 | EC802 | Television & RADAR Engineering | 3 | 1 | 2 | 6 | 100 | 50 | 20 | 30 | 50 | 200 |
| 3 | DC-24 | EC803 | VLSI Design | 3 | 1 | 2 | 6 | 100 | 50 | 20 | 30 | 50 | 200 |
| 4 | DCO (E)-III | Refer Table below | Elective-III | 3 | 1 | 0 | 4 | 100 | - | 20 | - | 20 | 120 |
| 5 | DC-25 | EC804 | Major project | 0 | 0 | 8 | 8 | - | 200 | - | 100 | 100 | 300 |
| 6 | NECC-10 | EC805 | Self Study | 0 | 0 | 2 | 2 | - | - | - | 30 | 30 | 30 |
| 7 | NECC-11 | EC806 | Seminar/Group Discussion etc | 0 | 0 | 2 | 2 | - | - | - | 30 | 30 | 30 |
| Total | | | | 12 | 4 | 16 | 32 | 400 | 300 | 80 | 220 | 300 | 1000 |

MST-Mid Semester Test, TW-Term Work

| ELECTIVE-III | |
|---------------------|--|
| EC-810 | Digital Image Processing |
| EC-811 | ATM Networks |
| EC-812 | Web Engineering |

Note :- 1. Minimum strength of **Ten Students** is required to offer an Elective in the College in a particular Academic Session.
2. Choice of Elective Course ones made for an examination cannot be changed for future examinations.

PROGRAMME: B.E. Electronics and Communication, VII-Semester
Course: EC701 Optical Communication

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-6C | | | THEORY PAPER |
|-------------------------|-----------------------|-------------|-----------|---|---|---|
| | | | L | T | P | |
| Departmental Core DC-17 | Optical Communication | EC701 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | COMMON WITH | 3 | 1 | 2 | |
| | | EX | | | | |

COURSE CONTENTS

Unit-I

Introduction to optical communication principles of light transmission optical fiber modes and configurations, Mode theory for circular wave-guides, Single-mode fibers, Multimode fibers, Numerical aperture, Mode field diameter, V-number, fiber materials, Fiber fabrication techniques.

Unit-II

Optical sources, LED'S, LASER diodes, Model reflection noise, Power launching and coupling, population inversion, fiber splicing, optical connectors, Photo-detectors, PIN, Avalanche detector, Response time, Avalanche multiplication noise.

Unit III

Signal degradation in optical fibers, Attenuation losses, Signal distortion in optical wave guides, Material dispersion, Wave guide dispersion, Chromatic dispersion, Inter-modal distortion, Pulse broadening in Graded index fibers, Mode coupling, Advance fiber designs: dispersion shifted, Dispersion flattened, Dispersion compensating fibers, Design optimization of single mode fibers.

Unit-IV

Coherent optical fiber communication, Modulation techniques for Homodyne and Heterodyne systems, Optical filter link design. Rise time budget and link power budget, Long haul systems bit error rate, line coding, NRZ, RZ, Block Codes eye pattern.

Unit-V

Advance system and techniques, wavelength division multiplexing, optical amplifiers semiconductor amplifier, EDFA, Comparison between semiconductor and optical amplifier, Gain band width, Photonic switching, Optical Networks . Optical fiber bus, Ring topology, Star architectures, FDDI, SON-ET.

List of Experiments:

1. Launching of light into the optical fiber and calculate numerical aperture & V-number.
2. Observing Holograms and their study.
3. Optic version mach-Zehnder interferometer.
4. Measurement of attenuation loss in an optical fiber.

PROGRAMME: Electronics and Communication, VII-Semester

Course: EC701 Optical Communication

5. Diffraction using Gratings.
6. Construction of Michelson Interferometer.
7. Setting up a fiber optic analog link and study of PAM.
8. Setting up fiber optic digital link and study of TDM and Manchester coding.
9. Measurement of various misalignment losses in an optical fiber.
10. Study of optical fiber on PC.

References:

- G. Keiner, Optical fiber communication.
- Frams J. & V.K. Jam, Optical Communication Systems.
- Ghatak A.K., & Thyagarajan, K., Optical Communication.

PROGRAMME: B.E. Electronics and Communication, VII-Semester
Course: EC702 Computer Networks

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-6C | | | THEORY PAPER |
|----------------------------|----------------------|------------------------|------------------|---|---|---|
| Departmental Core DC-18 | Computer Networks | EC702 | L | T | P | Max.Marks- 100 Min.Marks-35 Duration-3hrs. |
| | | COMMON WITH | 3 | 1 | 2 | |
| | | IT, CS, EX, EE | | | | |

COURSE CONTENTS

Unit-I

Introduction to computer network, classification of networks (WAN, MAN, LAN), distributed systems, digital signals and data rates, bit stream, symbols and band rate, transmission media, modems, structure of computer network, circuit, packet, message switching topological design, back bone design OSI, reference model.

Unit-II

Physical and data link layer, bit communication between DTE and DCE, RS232C, novel modem Terminal handling, multiplexing and concentration data link layer service and design issues, errors detection and correction, retransmission strategies, sliding window protocols, satellite and packet radio networks, pure aloha protocols, slotted aloha protocol, satellite networks, reservation aloha protocol, DES, PCEM, packet radio networks.

Unit-III

Network layer, basic design issues, network layer services, connection oriented and connection less services, routing, static multipath, centralized isolated distributed hierarchical broadcast, flow based routing, congestion deadlocks radio concept of Ethernet LAN topology and architecture CSMA/CD protocol, token ring LAN token bus LAN, Fiber optic LAN principle of LAN bridges, transparent bridge source routing bridges, gateway, gateway design issues x25 internet working.

Unit-IV

ISDN, B-ISDN and ATM, evolution of ISDN, goal of ISDN services, ISDN system architecture and network terminating devices ISDN interface ISDN signaling, broad band ISDN, Asynchronous transfer modem ATM adaptation layer, transport layer, OSI transport protocol, session layer designing issues, data exchange OSI session layer primitives, transport protocol TCP

Unit-V

Presentation layer, abstract syntax notation data compressed on oxyptography, application layer OST service elements ACSE and CCR, the transfer access and management, concurrence control nistual terminals, electronic mail directory services distributed systems, formal protocol modules, network management, mobile networking.

PROGRAMME: B.E. Electronics and Communication, VII-Semester Course: EC702 Computer Networks

List of Experiments:

1. Study of different types of LANs
2. Channel Capacity Performance
3. B/W - Noise relation Working
4. Internet Performance
5. Simplex, half duplex, full duplex Performance
6. TDM Performance
7. FDM Performance

References:

- Tanenbum, Computer Networks, PHI.
- Keizer, LANs.
- Stalling W., Computer Networks, PHI.
- ISDN & Broadband.
- ISDN: Stalling W., PHI.

PROGRAMME: B.E. Electronic and Communication, VII Semester
Course: EC703 Microwave Engineering

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-6C | | | THEORY PAPER |
|-------------------------------|--------------------------|-------------|-----------|---|---|---|
| | | | L | T | P | |
| Departmental Core DC-19 | Microwave Engineering | EC703 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | | 3 | 1 | 2 | |

COURSE CONTENTS

Unit-I

Microwave Transmission System

General representation of E M field in terms of TEM, TE and TM components, Uniform guide structures, rectangular wave guides, Circular Wave guides, Solution in terms of various modes, Properties of propagating and evanescent modes, Dominant modes, Normalized model voltages and currents, Power flow and energy storage in modes frequency range of operation for single mode working, effect of higher order modes, Strip line and micro strip lines-general properties, Comparison of coaxial, Micro strip and rectangular wave guides in terms of band width, power handling capacity, economical consideration etc.

Unit-II

Microwave Networks and Component

Transmission line ports of microwave network, Scattering matrix, Properties of scattering matrix of reciprocal, Nonreciprocal, loss less, Passive networks, Examples of two, three and four port networks, wave guide components like attenuator, Phase shifters and couplers, Flanges, Bends, Irises, Posts, Loads, Principle of operation and properties of E-plane, H-plane Tee junctions of wave guides, Hybrid T, Multi-hole directional coupler, Direction couplers, Microwave resonators- rectangular. Excitation of wave guide and resonators by couplers. Principles of operation of nonreciprocal devices, properties of ferrites, Isolators and phase shifters.

Unit-III

Microwave Solid State Devices and Application

PIN diodes, Properties and applications, Microwave detector diodes, detection characteristics, Varactor diodes, parametric amplifier fundamentals, Manley-Rowe power relation MASER, LASER , Amplifiers, Frequency converters and harmonic generators using Varactor diodes, Transferred electron devices, Gunn effect, Various modes of operation of Gunn oscillator, IMPATT, TRAPATT, BARITT.

Unit-IV

Microwave Vacuum Tube Devices

Interaction electron beam with electromagnetic field, power transfer condition. Principles of working of two cavity and Reflex Klystrons, arrival time curve and oscillation conditions in reflex klystrons, mode-frequency characteristics. Effect of repeller voltage variation on power and frequency of output. Principle of working of magnetrons. Electron dynamics in planar and cylindrical magnetrons, Cutoff magnetic field, Resonant cavities in magnetron, Π -mode operation Mode separation techniques, Rising sun cavity and strapping. Principle of working of TWT amplifier. Slow wave structures, Approximate gain relationship in forward wave TWT.

Unit-V

Microwave Measurements

Square law detection, Broadband and tuned detectors. Wave-guide probes, Probe and detector mounts, Slotted line arrangement and VSWR meter, Measurement of wave-guide impedance at load port by slotted line, Microwave bench components and source modulation.

Measurement scattering matrix parameters microwave power measurement-High, Medium and low-level power measurement techniques. Characteristics of bolometers, bolometer mounts, Power measurement bridges, Microwave frequency measurement techniques calibrated resonators (transmission and absorption Type)

List of Experiments

1. Study of the characteristics of Klystron Tube and to determine its electronic tuning range.
2. To determine the frequency & wavelength in a rectangular wave-guide working on TE₁₀ mode.
3. To determine the Standing Wave-Ratio and reflection coefficient.
4. To measure an unknown impedance with Smith chart.
5. To study V-I characteristics of Gunn Diode.
6. To study the following characteristics of Gunn Diode
 - a. Output power and frequency as a function of voltage.
 - b. Square wave modulation through PIN diode.
 - c. Study of Magic Tee.
7. Study of Circulator/Isolator.
8. Study of Multihole Directional Coupler.
9. Study of Attenuator (Fixed and Variable type)

References:

- Liao Y.S. “Microwave Devices”, PHI
- Collins R.E. Microwave Engine, McGraw Hill.
- Reich J.H. Microwave Principles.
- Pozar, D M ‘Microwave Engineering’

ELECTIVES-VII SEM**PROGRAMME: B.E. Electronics and Communication: VII-Semester****Course: EC711 Bio-Medical Instrumentation**

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | | | THEORY PAPER |
|--------------------|-----------------------------|-------------|-----------|---|---|---|
| | | | L | T | P | |
| Departmental | Bio-Medical Instrumentation | EC711 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| Electives | | COMMON WITH | 3 | 1 | 0 | |
| DCO(E)-I | | EX | | | | |

COURSE CONTENTS**Unit-I**

Introduction to Bio-Medical instrumentation, Objectives of instrumentation systems, Biometrics, Design Consideration factors, Block diagram of man instrument system, Definitions, Basic transducer principles, Various types of transducers and their applications in Bio-instrumentation, Bio-electrodes, Electrode theory, Various bio-signal recorders.

Unit-II

Source of bioelectric potential, Resting and action potential, anatomy and physiology of heart, Muscle and nerve, Neuro- muscular joint, Neural conduction.

Unit-III

Cardio-vascular Measurement: Blood pressure measurement, Blood flow measurement, Blood pH measurement, Blood gas analyzer, respirator and ventilators, phono cardiograph, Einthoven triangle, ECG, EMG,EEG, their specifications, mode of working including the functional block, complete electronic circuitry of ECG including isolation techniques, Analysis of noise pickup in bio-potentials recording.

Unit-IV

Non-invasive instrumentation techniques for diagnosis, introduction to medical imaging, X-rays, CAT scanners, Ultra sonography, Nuclear magnetic resonance imaging (MRI), Thermographs.

Unit-V

Introduction to biotelemetry, physiological parameters adaptable for telemetry, Block diagram and application, Electrical safety of patient, Physiological effects of electric current, Shock hazards and methods of accident.

PROGRAMME: B.E. Electronics and Communication, VII-Semester

Course: EC710 Cellular & Mobile Communication

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | | | THEORY PAPER |
|--------------------|-------------------|-------------|-----------|---|---|---|
| | | | L | T | P | |
| Departmental | Cellular & Mobile | EC-710 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| Electives | Communication | COMMON WITH | 3 | 1 | 0 | |
| DCO(E)-I | | EX | | | | |

COURSE CONTENTS

Unit-I

Introduction to cellular mobile system A basic cellular system, Performance criteria, Uniqueness of Mobile Radio Environment, Operation of cellular systems, Planning and cellular system.

Elements of Cellular Radio System Design: General description of problem, Concept of frequency channels, Co channel interface reduction factor, Hand off, Cell splitting, Consideration of the components of cellular systems.

Unit-II

Interface: Introduction to co-channel interface, Real time Co-channel interface Co-channel measurement, Design of antenna system, Antenna parameter and their effects, Diversity receiver non co-channel interface different types.

Unit-III

Cell coverage for signal and traffic : General introduction, Obtaining the mobile point-to-point mode propagation over water or flat open area, foliage loss, propagation near in distance, long distance propagation, point-to-point prediction model-characteristics, cell site, Antenna heights and signal coverage cells, Mobile-to-mobile propagation.

Unit-IV

Cell site antennas and mobile antennas: Antennas at cell site, mobile antennas.

Frequency management and Channel Assignment : Frequency management, Fixed channels assignment, Non-fixed channel assignment, Traffic and channel assignment.

Unit-V

Digital Cellular System: GSM, Architecture, Layer Modeling, Transmission, GSM channels, Multiple process, CDMA, Terms, Power limits & Control Modulation characteristics, Call processing, Hand off.

References :

- Lee, Cellular and Mobile Communication, McGraw Hill.
- Faher Kamilo., Wireless Digital Communication, PHI.

PROGRAMME: B.E. Electronics and Communication-VII Semester
Course: EC-712 e-Enterprise

| CATEGORY OF COURSE | COURSE TITLE | Course Code | CREDITS - 4C | | | THEORY PAPERS |
|---------------------------------|--------------|-------------|--------------|---|---|---|
| | | | L | T | P | |
| Departmental Electives DCO(E)-I | e-Enterprise | EC-712 | | | | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | COMMON WITH | | | | |
| | | IT, EI, EX | 3 | 1 | 0 | |

Course Contents

Unit-I

Introduction

Introduction to Internet Business, Defining E-business, Advantages of e-business, Reasons for Going Online, Differentiating between E-business categories, e-Application models: B to C, B to B.

Preparing for online Business

Competitor Analysis on the Internet, The Fourth Channel, Paradigms in the New Economy, Driving Business Process Re-engineering, Designing, Developing and Deploying the System.

Unit-II

e-Enterprise Methodology and Architecture

Selecting the Technology

Internet Networking, Exploring the IT Infrastructure, Deciding on the Enterprise Middleware, Choosing the Right Enterprise Applications, Building the E-business Applications.

Comparing Web Technologies

Finding the Right Browser, Te Hypertext Markup Language, The Dynamic Web, Dynamic Server Concepts, Web Application Servers, The Extensible Markup Language, Plug-ins, JavaScript.

Unit-III

Internet marketing technologies

Web Design, Attracting Visitors to your site, Virtual Societies, Localization, Promoting your E-business, Banner Ad Campaigning, Online Measurement, One to one marketing, Direct marketing, Choosing the Right ISP,

E-business Applications

Search Engines and Portals, Searching the internet, The future of searching, Intelligent Network Agents, Portal Sites, the New All in One Mega web Sites.

Concept of e-learning, e-governance, e-banking etc.

Legal Issues

Global Contracts, The Web Site, Encryption Algorithms, Developing a Dark Site

Unit-IV

Shopping and ORM Solutions

Online Shopping, Shopping Solutions, Implications of the New Economy, Electronic Software Distribution, Configurator Tools, Operational Resources Management, Joining the Shopping and the ORM Solutions.

Interactive Communication Experiences

The Basics, Moderating Online Meetings, Internet Chat Solutions, Internet based Trainings.

**e-ROI, e-measurement, web site evaluation models
e-technology standards.**

Unit-V

Security on the Internet

Creating a Security Strategy, Cryptographic Tools, Applications of Cryptology, Privacy on the Internet, Fighting Virus and Hoax Virus Warnings, Conflicts in the Information Age, Client based Security, Server based Security

Imaging on the Internet

Image Business, Image Concepts, The FlashPix Format, QuickTime VR, VRML, Comparing Imaging Technologies, The future of imaging

Paying Via the Net

The Payment Business, Post-paid Payment Systems, Instant -paid Payment Systems, Pre-paid Payment Systems, Comparing Payment Technologies, The Future of Payment

Latest trends in e-Enterprise

References:

- David Whitely, (2002), e-Commerce Strategy, Technologies & Applications, Tata McGraw Hill Edition.
- Daniel Amor, The E-business Revolution, HP Professional Books.
- Faisal Haque, e-Enterprise, Cambridge University Press.
- Daneil Minoli, Emma Minoli (1999), Web Commerce Technology Handbook, Tata McGrwa Hill Edition.
- Napier, Judd, Rivers and Wagners, Creating a Winning e-Business, Vikas Pub. House.

PROGRAMME: B.E. Electronics and Communication, VII-Semester

Course: EC721 Neural Networks

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | THEORY PAPER |
|--------------------|--------------|-------------|-----------|--------------|
|--------------------|--------------|-------------|-----------|--------------|

| | | | | | | |
|--------------|-----------------|--------------------|---|---|---|--|
| Departmental | Neural Networks | EC721 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| Electives | | COMMON WITH | 3 | 1 | 2 | |
| DCO (E)-II | | IT, CS | | | | |

COURSE CONTENTS

Unit-I

Introduction

Structure and Function of a single neuron: Biological neuron, artificial neuron, definition of ANN, Taxonomy of neural net, Difference between ANN and human brain, characteristics and applications of ANN, single layer network, Perceptron training algorithm, Linear separability, Widro & Hebb's learning rule/Delta rule, ADALINE, MADALINE, AI v/s ANN.

Unit-II

Introduction of MLP problem with linear activation function, different activation functions, sigmoidal, linear thresholding, hyperbolic tangent function etc, Error back propagation algorithm, derivation of EBPA, momentum, limitation, characteristics and application of EBPA, case-study: NETTALK, two dimensional pattern recognition.

Unit-III

Counter propagation network, architecture, functioning in normal and training mode, characteristics of counter. Propagation network, Deterministic v/s statistical training, Boltzman training, Cauchy training, artificial specific heat method.

Unit-IV

Hopfield / Recurrent network, configuration, stability constraints, associative memory, characteristics, limitations and applications Hopfield v/s Boltzman machine.
Adaptive Resonance Theory: Architecture, classification, Implementation and training.

Unit-V

Optical neural network, advantages and disadvantages, vector matrix multiplies, electro-optical matrix multiplier, introduction to cognitron and neocognitron.

References:

- Hagan, Dernuth & Beale, Neural network design, Thomson learning (VP).
- Mehrotra, Mohan & Ranka, Elements of Artificial Neural Network, Penram.
- Philip D. Wasserman, Neural Computing, Van Nostrand Reinhold Pub.
- Judith E. Dayhoff, Neural Network Architecture, Van Nostrand Reinhold Pub.

PROGRAMME: B.E. Electronics and Communication, VII-Semester

Course: EC722 Satellite Communication

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | | | THEORY PAPER |
|--------------------|-------------------------|-------------|-----------|---|---|---|
| Departmental | Satellite Communication | EC722 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| Electives | | | 3 | 1 | 0 | |
| DCO (E)-II | | | | | | |

COURSE CONTENTS

Unit-I

Origin and brief history of satellite communication; Elements of a satellite communication link; Current status of satellite communication.

Orbital Mechanism and Launching of Satellite

Equation of orbit, Describing the orbit, Location the satellite in the orbit, Locating the satellite with respect to earth, Orbital elements, Look angle determination, Elevation and Azimuth calculation, Geostationary and other orbits, Orbital perturbations, Orbit determination, Mechanics of launching a synchronous satellite, Selecting a launch vehicle.

Unit-II

Space Craft

Satellite subsystems, Altitude and Orbit Control (AOCS), Telemetry, Tracking and Command (TT&C). Communication subsystems, Transponders, Spacecraft antennas, Frequency re-use antennas.

Unit-III

Satellite Channel and Link Design

Basic transmission theory, Noise temperature, Calculation of system noise temperature, Noise figure, G/T ratio of earth stations, Design of down links and uplinks using C/N ratio, FM improvement factor for multi-channel signals, Link Design for FDM/FM, TV signals and Digital Signals.

Unit-IV

Multiple Access Techniques

Frequency Division Multiple Access (FDMA), FDM/FM/FDMA, Time Division Multiple Access, Frame structure and synchronization, Code Division Multiple Access, Random Access.

Unit-V

Earth Station Technology

Earth station design, Basic antenna theory, antenna noise temperature; Tracking; Design of small earth station antennas, Low noise amplifiers, High power amplifiers, FDM and TDM systems.

Unit-VI

Operational Satellites

INTELSET, INMARSAT and INSAT systems, Applications of INSAT, Satellite Television Receivers, Direct Broadcast Satellites, Direct Reception System for television and other applications.

References:

- Pratt, T. & Bostian, C.W., "Satellite Telecommunication", John Wiley & Sons.
- Roddy, D., "Satellite Communication", Prentice Hall.

PROGRAMME: B.E. Electronics and Communication, VII-Semester

Course: EC720 Telematics

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | | | THEORY PAPER |
|---|--------------|-------------|-----------|---|---|---|
| | | | L | T | P | |
| Departmental Electives DCO (E)-II | Telematics | EC720 | 3 | 1 | 2 | Max.Marks-100 Min.Marks-35 Duration-3hrs. |

COURSE CONTENTS

Unit-I

Introduction and examples of telematics, Analog versus digital switching, Functional structure of digital exchange, exchange termination for analog and digital trunk lines and terminals, line coding, Digital private branch exchange, Rural exchange, Interference.

Unit-II

Basic elements of ISDN, Construction of ISDN, Modeling, Fundamental of ISDN architecture, ISDN services, Transmission technique, Protocols, synchronization and switching, Interface between EPABX and computer equipment, User network interference.

Unit-III

Introduction to digital telegraph transmission, Switch and forward telegraphy, Dumb and intelligent teleprinter, FAX transmission and reception, Electronic mail system.

Unit-IV

Elements of digital television, HDTV, videotext, teletext, mobile communication.

Unit-V

Signal compression techniques: MPEG, JPEG, compression algorithms etc.

References:

- Thiagrojan Vishwanathan, Telecomm. Switching Network.
- Bartee, ISDN.

- Stalling Williom, Data Communication.

**PROGRAMME: BE Electronics and Communication, VII-Semester
Course: EC704 Major Project (Planning and Literature Survey)**

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDITS-4C | | | PRACTICAL EXAMN. |
|----------------------------|---|-------------|------------|---|---|------------------|
| | | | L | T | P | |
| Departmental Core DC-20 | Major Project (Planning and Literature Survey) | EC704 | L | T | P | Nil |
| | | | 0 | 0 | 4 | |

COURSE GUIDELINES

The Major Project Work provides students an opportunity to do something on their own and under the supervision of a guide. Each student shall work on an approved project, which may involve fabrication, design or investigation of a technical problem that may take design, experimental or analytical character or combine element of these areas. The project work involves sufficient work so that students get acquainted with different aspects of manufacture, design or analysis. The students also have to keep in mind that in final semester they would be required to implement whatever has been planned in the Major Project in this semester. It is possible that a work, which involves greater efforts and time may be taken up at this stage and finally completed in final semester, but partial completion report should be submitted in this semester and also evaluated internally, at the end of the semester. At the end of semester, all students are required to submit a synopsis.

Course : EC705- Industrial Training

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDITS-4C | | | Practical examn |
|----------------------------|------------------------------------|-------------|------------|---|---|--|
| Departmental Core DC-21 | Industrial Training (Six Weeks) | EC705 | L | T | P | Max. Marks-50 Min. Marks-25 Duration-3 Hrs |
| | | | 0 | 0 | 0 | |

SCHEME OF STUDIES

Duration: 6 weeks after the VI semester in the summer break, Assessment in VII semester.

SCHEME OF EXAMINATION

For the assessment of industrial training undertaken by the students, following components are considered with their weightage.

(a) Term work

In Industry

| | Marks allotted |
|--|----------------|
| 1. Attendance and General Discipline | 05 |
| 2. Daily diary Maintenance | 05 |
| 3. Initiative and participative attitude during training | 05 |
| 4. Assessment of training by Industrial Supervisor/s | 15 |

| | |
|-------|----|
| TOTAL | 30 |
|-------|----|

(b) Practical/Oral Examination (Viva-Voce)

In Institution

| | Marks allotted |
|--|----------------|
| 1. Training Report | 20 |
| 2. Seminar and cross questioning (defense) | 30 |

| | |
|-------|----|
| TOTAL | 50 |
|-------|----|

Marks of various components in industry should be awarded to the students, in consultations with the Training and Placement Officer/Faculty of Institute, Who must establish contact with the supervisor/Authorities of the organisation where, students have taking training to award the marks for term work and I/c of training from Industry. During training students will prepare a first draft of training report in consultation with section in-charge. After training they will prepare final draft with the help of T.P.O./Faculty of the institute. Then they will present a seminar on their training and they will face viva-voce on training in the institute.

PROGRAMME: BE Electronics and Communication, VII semester
Course : EC705- Industrial Training

1.1 OBJECTIVE OF INDUSTRIAL TRAINING

The objective of undertaking industrial training is to provide work experience so that student's engineering knowledge is enhanced and employment prospects are improved. The student should take this course as a window to the real World of Work and should try to learn as much as possible from real life experiences by involving and interacting with industry staff. Industrial training also provides an opportunity to students to select an engineering problem and possibly an industry guide for their Major Project in final semester.

Industrial training of the students is essential to bridge the wide gap between the classroom and industrial environment. This will enrich their practical learning and they will be better equipped to integrate the practical experiences with the classroom learning process.

1.2 LEARNING THROUGH INDUSTRIAL TRAINING

During industrial training students must observe following to enrich their learning:

- Industrial environment and work culture.
- Organisational structure and inter personal communication.
- Machines/ equipment/ instruments - their working and specifications.
- Product development procedures and phases.
- Project planning, monitoring and control.
- Quality control and assurance.
- Maintenance system.
- Costing system.
- Stores and purchase systems.
- Layout of Computer/ EDP/MIS centres.

- Roles and responsibilities of different categories of personnel.
- Customer services.
- Problems related to various areas of Work etc.

Faculty and TPO are supposed to plan industrial training in such a manner that students get exposure on most of the above arena in the field (world of work).

Students are supposed to acquire the knowledge on above by -

1. Observation,
2. Interaction with officials at the workplace
3. Study of Literature at the workplace (e.g. User Manual, standards, maintenance schedules, etc.)
4. "Hand's on" experience
5. Undertaking / assisting project work.
6. Solving problems at the work place.
7. Presenting a seminar.
8. Participating in-group meeting/ discussion.
9. Gathering primary and secondary data/ information through various sources, Storage, retrieval and analysis of the gathered data.
10. Assisting officials and managers in their working.
11. Undertaking a short action research work.
12. Consulting current technical journals and periodicals in the library.
13. Discussions with peers.

PROGRAMME: BE Electronics and Communication, VII semester
Course : EC705- Industrial Training

1.3 GUIDANCE TO THE FACULTY/TPO FOR PLANNING AND IMPLEMENTING THE INDUSTRIAL TRAINING

The industrial training programme, which is spread to 6 weeks' duration, has to be designed in consultation with the authorities of the work place, keeping in view the need of the contents. Following are some of the salient points:

- Spelling out the objectives of the industrial training in behavioral terms and same is informed in advance to the 1) students, 2) authorities of the work place and 3) supervising faculty members.
- Discussing and preparing students for the training for which meetings with the students has to be planned.
- Meeting with industrial personnel and orienting them regarding the objective of the training and the expectations of the programme.
- Correspondence with the authorities of the work place.
- Orientation classes for students on how to make the training most beneficial - monitoring daily diary, writing weekly reports, how to interact with various categories of industrial personnel, how to behave and undertake responsibilities, how to gather information from the workplace, ethics etc.
- Guiding students to make individual plans (week wise/ day wise) to undertake industrial training
- Developing a system of maintaining training records, by teachers for every batch of students for convenient retrieval.
- Inviting industrial personnel to deliver lectures on some aspects of training.

1.4 ACTION PLAN FOR PLANNING STAGES AT THE INSTITUTION LEVEL

| S.No. | Activity | Commencing Week | Finishing week | Remarks |
|-------|--|-----------------|----------------|---------|
| 1. | Meeting with Principal | | | |
| 2. | Meeting with Colleagues | | | |
| 3. | Correspondence with work place (Industries concerned) | | | |
| 4. | Meeting with authorities of work place | | | |
| 5. | Orientation of students for industrial training | | | |
| 6. | Scrutinizing individual training plan of students | | | |
| 7. | Commencement of industrial training | | | |
| 8. | First monitoring of industrial training | | | |

- During training students will maintain a proper daily diary (format enclosed). Main purpose of daily diary is to inculcate the habit of systematic recording of learning experiences and events etc. Section in-charge of the industry is requested to sign the daily diary at the end of the week and offer his comments about the initiative and participative attitude of trainee during training. Details about how to write daily diary will be provided by the institute.
- Attendance record of each trainee may please be kept in the industry. Absence without permission may please be communicated to the concerned college.
- Monitoring visits will be made by training and placement officer/faculty in-charge for the group of students, of the College during training.

PROGRAMME: B.E. Electronics and Communication, VIII-Semester

Course: EC801 Advance Communication Systems

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-6C | | | THEORY PAPER |
|----------------------------|-------------------------------------|----------------|-----------|---|---|---|
| | | | L | T | P | |
| Departmental Core DC-22 | Advance Communication Systems | EC801 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | COMMON WITH | 3 | 1 | 2 | |
| | | EE, EX | | | | |

COURSE CONTENTS

Unit-I

Introduction to spread spectrum modulation, Direct sequence (DS) spread spectrum, Spread spectrum with code division multiple access (CDMA), Ranging, Frequency hopping (FH) spread spectrum, PN sequence generation, Acquisition and tracking of FH signal and DS signals.

Unit-II

Satellite communication: Introduction to satellite communication, Frequency allocation active/passive synchronous ,Non synchronous systems, Orbits satellite attitude, Transmission path, Path loss, noise consideration link analysis, Satellite systems effective isotropic radiated power, Multiple access methods, Earth stations, Tracking and servo system, Up-down converters, Example of satellite systems.

Unit-III

Digital switching systems: Introduction to electronics and digital exchanges, Hierarchy of switching offices, Common control push button dialing systems, Switching matrix multiple stage switching time division multiplexing time slot interchanging (TSI), Comparison of TSI with space switching, Space array for digital signals, Combined space and time switching. Principles of FAX.

Unit-IV

Mobile communication: Introduction to cellular mobile communication element of the cellular systems, Cell design, hand off techniques, Frequency Management.

Unit-V

Local access networks: Improvement in convention cables: XDSL, ADSL, Wireless local loop, Fiber in local loop, radio Trunking. ISDN: Architecture, Services and Protocols, ATM networks

List of Experiments :

1. Study of satellite C Band Receiver and their frequency allocation.
2. Study of TDM/FDM
3. Study of Switching matrix/Multiple stage switching
4. Study of EPBAX/FAX
5. Study of Wireless/Mobile communication mobilization technique
6. Study of ISDN and Protocols.

References:

- Radio Callins, Microwave communication.
- Gagldardi, Satellite communication.
- Thyggajan Vishwanathan, Digital switching systems.
- Lee, Cellular and mobile communication
- Karmile Fresher, Wireless digital communication.

PROGRAMME: B.E. Electronics and Communication, VIII-Semester

Course: EC802 Television & Radar Engg.

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-6C | | | THEORY PAPER |
|----------------------------|-----------------------------|------------------------|------------------|---|---|---|
| Departmental Core DC-23 | Television & Radar Engg. | EC802 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | <i>COMMON WITH</i> | 3 | 1 | 2 | |
| | | EX | | | | |

COURSE CONTENTS

Unit I

Television Engineering

Methods of scanning, Bandwidth calculations for video signal interlace scanning, Blanking, Synchronizing and equalizing pulses, Standard envelop of modulated video carrier, Negative modulation and positive modulation, Television camera tubes, The image orthicon, Videocon and plumbicon tubes.

Unit II

Television Transmitters and Receivers

Block diagram & working, Standards television channel, response characteristic of receiver video channel, Vestigial side band transmission, transmitting & receiving antennas, ALUN, diplexer, Sound accompanying picture signal, Service area of transmitter, Ghost images, inter carrier sound system, Automatic frequency control, Contrast control, Brightness, distortion & games.

Unit III

Colour Television

Three colour system, Luminance & chrominance signal colour TV camera, Block diagram & working of colour TV transmitter & receiver, Sub carrier modulation and subsequent demodulation of chrominance signals, Frequency interleaving, Compatibility and reverse compatibility, Shadow mask, Trinitron and In-line colour picture tubes, Colour burst, Video cassette, Recording and reproduction.

Unit IV

Introduction to RADAR

The radar range equation, block diagram and operation, Pulse Radar, Performance factors, Radar cross section of targets, Transmitter power, Pulse repetition frequency and range ambiguities, Antenna parameters, The dopler effect, CW radar, FM-CW radar, Altimeter, Moving target indicator (MTI) radar, Delay lines and cancellers.

Unit V

Line Tube Modulator

Hard tube modulator, The radar receiver, Superheterodyne receiver, AFC, Receiver noise, Noise figure, Effective noise temperature, Crystal mixers, Displays type A and PPI representations, Duplexer, Air craft landing system, Instrument landing system (ILS) ground controlled approach(GCA), Airport surveillance radar (ASR), Precision approach radar (PAR).

PROGRAMME: B.E. Electronics and Communication, VIII-Semester
Course: EC802 Television & Radar Engg.

List of Experiments:

1. Measurement of front porch, Back porch, H-syne pulse duration.
2. Composite video signal and modulation index measurement.
3. Study of test pattern generator
4. Horizontal & Vertical Sync. Separation circuit.
5. Demonstration of colour Television receiver
6. Study of EHT transformers
7. Yagi antenna & its radiation pattern
8. Various distortions & their corrections in Picture tube.

References:

- Gulati R.R., Modern TV Parctice.
- Skolnik, Radar Engineering.
- Dhake, T.V. & Video Engg., TMH.

PROGRAMME: B. E. Electronics and Communication, VIII-Semester

Course: EC803 VLSI Design

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-6C | | | THEORY PAPER |
|----------------------------|---------------------|--------------------|------------------|---|---|---|
| Departmental Core DC-24 | VLSI Design | EC803 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | | 3 | 1 | 2 | |

COURSE CONTENTS

Unit-I

Introduction to CMOS circuit, Circuit & System representation Behavioral representation, structural representation. Physical representation MOS transistor theory. NMOS and PMOS enhancement transistor. Threshold voltage, body effect. MOS device design equation. Basic DC equation, second order effects, MOS models.

Unit-II

The complementary CMOS inverter-DC character, Static load MOS inverters. The differential inverter. Tristate inverter. Bipolar devices, diodes, transistors, BICMOS inverters.

Unit-III

Review of silicon semiconductor technology and basic CMOS technology-n-well and p-well process. Interconnect and circuit Twin-tub process layout design rules and latch-up, latch-up triggering and prevention.

Unit-IV

Circuit characterization and performance estimation resistance and capacitance estimation, Switching characteristics, CMOS gate transistor sizing, power dissipation. Basic physical design of simple logic gates. CMOS logic structure.

Unit-V

CMOS design methods. Design strategies. Programmable logic, programmable logic structure, reprogrammable gate arrays. Existing programmable gate array. Algotonix, concurrent logic, sea of gate and gate array design VHDL as a tool.

References:

- Neil, H.E. Wasdte, Kamran Eshraghian, Principles of CMOS VLSI design, Pearson Education.
- Wyne Wolf, Modern VLSI Design-system on silicon, PHI.
- Phillip E. Allen and Douglas R holding, CMOS Analog Circuit Design, 2nd edition, Oxford University press.

ELECTIVES-VIII SEM

PROGRAMME: B.E. Electronics and Communication, VIII-Semester

Course: EC811 ATM Networks

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | | | THEORY PAPER |
|--|---------------------|------------------------------|------------------|---|---|---|
| Departmental Electives DCO (E)-III | ATM Networks | EC811 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | COMMON WITH IT, CS | 3 | 1 | 0 | |

COURSE CONTENTS

Unit-I

Introduction to ISDN, B-ISDN, B-ISDN services, ATM basics, ATM Services, Architecture of B-ISDN, virtual channel, Virtual path, ATM performance Parameters, Signaling techniques

Unit-II

ATM – performance Reference Model (PRM) layered architecture, relationship between ATM PRM and OSI reference model. Layer functions, User Network Interface (UNI), Physical layer of UNI, functions of transmission convergence sub layer, physical medium characteristic ATM layer cell headers of B-ISDN, UNI & NNI, ATM adaptation layer, operation and maintenance of B-ISDN UNI.

Unit-III

B-ISDN signaling, Meta signaling, ATM adaptation layer for signaling, signaling protocols, switches & cross connects.

Unit-IV

ATM transmission network, Cell transfer functions, transmission systems, network synchronization, B-ISDN local network Topology & Technology, trunk, network structure ATM network implementation and equipment's.

Unit-V

Evolutionary scenarios for B-ISDN fiber to the customer, integration of TV distribution, LAN's, Man's to B-ISDN, Voice delay & Eco problem, Tainting in B-ISDN, Telecommunication management networks, Gigabits LAN's, Optical switching ATM standardization.

References:

- **Rainer Handel, Huber & Schooder, ATM Network, Addison Wesley**
- David E Mc Dysan, Darren L Spohn, ATM Theory & application, McGraw Hill
- Tennenbaum, Computer Network
- ISDN William Stalling an Introduction Mc. Millan publishing Co. USA

PROGRAMME: B.E. Electronics and Communication, VIII-Semester

Course: EC810 Digital Image Processing

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | THEORY PAPER |
|--------------------|--------------|-------------|-----------|--------------|
|--------------------|--------------|-------------|-----------|--------------|

| | | | | | | |
|---|--------------------------|--------------------|---|---|---|--|
| Departmental Electives DCO (E)-III | Digital Image Processing | EC810 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | <i>COMMON WITH</i> | 3 | 1 | 0 | |
| | | <i>EI, EX</i> | | | | |

COURSE CONTENTS

Unit-I

Digital Image Processing

Elements of a Digital Image Processing system, Structure of the Human eye, Image formation and contrast sensitivity, Sampling and Quantization, Neighbours of a pixel, Distance measures, Photographic file structure and exposure, Filem characteristics, Linear scanner, Video camera, Image processing applications.

Unit-II

Image Transforms

Introduction to Fourier transform-DFT, Properties of two dimensional FT, Separability, Translation, Periodicity, Rotation, Average value, FFT algorithm, Walsh transform, Hadamard transform, Discrete Cosine transform.

Unit-III Image Enhancement

Definition, Spatial domain methods, Frequency domain methods, Histogram modification technique, Neighborhood averaging, Media filtering, Lowpass filtering, Averaging of multiple images, Image sharpening by differentiation and high pass filtering.

Unit-IV

Image Restoration

Definition, Degradation model, Discrete formulation, Circulant matrices, Block circulant matrices, Effect of diagonalization of circulant and block circulant matrices, Unconstrained and constrained restorations , Inverse filtering, Wiener filter, Restoration in spatial domain.

Unit-V

Image Encoding

Objective and subjective fidelity criteria, Basic encoding process, The mapping, The quantizer, The coder, Differential encoding, Contour encoding, Run length encoding, Image encoding relative to fidelity criterion, Differential pulse code modulation.

Unit-VI

Image Analysis and Computer Vision

Typical computer vision system, Image analysis techniques, Spatial feature extraction, Amplitude and Histogram features, Transform features, Edge detection, Gradient operators, Boundary extraction, Edge linking, Boundary representation, Boundary matching, Shape representation.

PROGRAMME: B.E. Electronics and Communication, VIII-Semester

Course: EC810 Digital Image Processing

References:

- Rafael, C. Gonzalez., and Paul, Wintz, “Digital Image Processing”, Addison-Wesley Publishing Company.
- Jain Anil K., “Fundamentals of Digital Image Processing”, Prentice Hall.
- Sosenfeld, and Kak, A.C., “Digital Image Processing”, Academic Press.
- William K. Pratt., “Digital Image Processing”, John Wiley and Sons.

PROGRAMME: B.E. Electronics and Communication, VIII-Semester

Course: EC812 Web Engineering

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-4C | THEORY PAPER |
|---------------------------|---------------------|--------------------|------------------|---------------------|
|---------------------------|---------------------|--------------------|------------------|---------------------|

| | | | | | | |
|--|-----------------|------------------------|---|---|---|---|
| Departmental Electives DCO (E)-III | Web Engineering | EC812 | L | T | P | Max.Marks-100 Min.Marks-35 Duration-3hrs. |
| | | COMMON WITH | | | | |
| | | IT, CS | 3 | 1 | 0 | |

COURSE CONTENTS

Unit-I

Introduction

Introduction – layering, DNS - encapsulation – de-multiplexing – client /server model – port numbers – standardization process – the Internet.
 Link layer: introduction – Ethernet and IEEE 802 encapsulation – trailer encapsulation –SLIP – PPP- Loop back interface – MTU.
 Internet protocol: introduction – IP header – IP routing – subnet addressing – subnet mask- special case of IP addresses – a subnet example.

Unit-II

Address resolution protocol

Introduction – an example – ARP cache – ARP packet format – ARP examples –Proxy ARP – ARP command.
 RARP: Introduction – RARP packet format – RARP examples – RARP server design.
 ICMP: Introduction – ICMP message types – ICMP address mask request and reply-ICMP timestamp request and reply- 4.4 BSD processing of ICMP Messages.

Unit-III

Ping program

Introduction – ping program – IP record route option – IP time stamp option.
 Trace route program: Introduction – trace route program operation – LAN output – WAN output- IP source routing option.
 IP routing: Introduction – routing principles – ICMP host – ICMP redirect errors
 Dynamic Routing protocols: introduction – dynamic routing – RIP- OSPF – BGP – CIDR.
 UDP: introduction – UDP header – UDP checksum – IP Fragmentation – UDP Server design.

Unit-IV

DNS

Introduction- basics – message format – simple example – pointer queries – resource records – caching – UDP
 TFTP: introduction –protocol – security. BOOTP: introduction – packet format – server design – through router.
 TCP: Introduction – services – headers – connection establishment and termination –timeout of connection establishment- maximum segment size- half –close – state transition diagram – reset segments – simultaneous open and close- options – server design.

Unit-V

SNMP

Introduction – protocol – structure of management information – object identifiers – management information base – instance identification.

Telnet: rlogin protocols – examples – telnet protocol and examples. FTP – protocol – examples – SMTP protocols – examples – NFS – TCP/IP Applications.

References:

- W. Richard Stevens, TCP/IP Illustrated Volume –I “The Protocols”, Addison Wesley Longman.
- Jaiswal .S, TCP\IP Principles, Architecture, Protocols And Implementation, First Edition, Galgotia Publications Pvt Ltd.

PROGRAMME: B.E. Electronics and Communication, VIII-Semester

Course: EC804 Major Project

| CATEGORY OF COURSE | COURSE TITLE | COURSE CODE | CREDIT-8C | | | PRACTICAL EXMN. |
|--------------------|--------------|-------------|-----------|---|---|-----------------|
| | | | L | T | P | |

COURSE GUIDELINES

The objectives of the course ‘Major Project’ are

- To provide students with a comprehensive experience for applying the knowledge gained so far by studying various courses.
- To develop an inquiring aptitude and build confidence among students by working on solutions of small industrial problems.
- To give students an opportunity to do some thing creative and to assimilate real life work situation in institution.
- To adapt students for latest developments and to handle independently new situations.
- To develop good expressions power and presentation abilities in students.

The focus of the Major Project is on preparing a working system or some design or understanding of a complex system using system analysis tools and submit it the same in the form of a write-up i.e. detail project report. The student should select some real life problems for their project and maintain

proper documentation of different stages of project such as need analysis, market analysis, concept evaluation, requirement specification, objectives, work plan, analysis, design, implementation and test plan. Each student is required to prepare a project report and present the same at the final examination with a demonstration of the working system (if any).

The faculty and student should work according to following schedule:

- i) Each student undertakes substantial and individual project in an approved area of the subject and supervised by a member of staff.
- ii) The student must submit outline and action plan for the project execution (time schedule) and the same be approved by the concerned faculty.
- iii) At all the steps of the project, students must submit a written report of the same