Electronics & Communication Engineering

DEGREE STANDARD

ELECTRONIC DEVICES CIRCUITS AND SYSTEMS

UNIT I
DEVICES AND CIRCUITS:
Diodes and Transistors - PN Point contact Zener, varactor, Tunnel, step recover - input and output characteristics of BJI, FET, UJT, Opto - electronic devices - Biasing and stabilisation of transistor circuts - analysis using h - parameters - calculation of gain, impedance and bandwidth .

UNIT II
AMPLIFIERS AND OSEILLATORS:
Design and analysis of RC, Dc coupled, Large signal amplifiers, Differential amplifier and tuned amplifiers - Oscillators - Critoria for oscillation, resonance type oscilators RC Phase shift wein bridge oscillators

UNIT III
RECTIFIERS AND POWER SUPPLIES:
Half wave, Full wave and Bridge rectifiers will all types of filters, regulated power supplies. SMPS.

UNIT IV
MULTIVIBRATORS AND A VESHAPING:
Astable, Bistable Monostable and submit trigger saw tooth generation using BJT and UJT clipping and clamping circuits using diodes and transistors.

UNIT V
LINEAR AND DIGITAL INTEGRATED CIRCUITS:
IC fabrication techniques OPAMPS and its applications A/D and D/A converters, PILL. Wave form generators Voltage regulators, IC Power amplifiers.

UNIT VI
DIGITAL CIRCUITS:
Switching algebra, Number systems, Logic gates and circuits, Minimization techniques, Logic families, shift registers, Counters, Multiplexersi Dimultiplexers, semiconductor Memories, LSI, VLSI.

UNIT VII
MICROPROCESSORS:
8 and 16 bit microprocessors and their architecture, Instruction set , Peripherals and Interfacing Microcontrollers Microprocessor based system design.

UNIT VIII
COMPUTER SYSTEMS:
Data representation, Elements of high level programming languages (Pascal and C) Data Structures, Computer architecture, processor design, control unit design, Memory organization , I/O system organisation.

UNIT IX
MEASUREMENTS AND INSTRUMENTATION:
Electrical transducers and their characteristics, measurement techniques, and related Instrumentation.

UNIT X
MICROWAVE DEVICES AND CIRCUITS:
Microwave devices sehotky, PIN diodes, Gunn diodes. Microwave aplifiers and oscillators. Microwaves components microwave measurements.

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PAPER II

COMMUNICATION ENGINEERING
UNIT I
AM/FM TRANSMITTERS AND RECEIVERS: AMPLITUDE, FREQUENCY AND PHASE MODULATIONS:
Definitions and equations, modulation, index -Frequency spectrum of AM/FM signals, modulators and demodulators - Diode detecter, slope detector, Balanced slope detector foster seely discriminator Ratio detector. Transmitters: Allocation of frequency for various services, High power transmitter, Aerial coupling. Receiver: Superbeter odyne, SSB and FM receivers noise considerations. Digital communication: PCM, TDM and FDM.

UNIT II
TRANSMISSIONLINES, ANTENNAS AND WAVE PROBAGATION:
Transmission lines and Wave guides:
Characteristic impedance of transmission lines, standing waves - matching using smith chart- rectangular and circular wave guides - resorators, isolatored circulators and direction couplors.
Antennas: Isotropic radiator, dipole, vertical antenna, resonant and non-resonant antennas - arrays - VHF, UHF, Microwave antennas - radiations pattern for the above antennas. Wave propagation:
Ground wave, surface wave, HF and LOS propagation.

UNIT III
ANALOG AND DIGITAL SIGNAL PROCESSING:
Signals and systems:
Introduction - Vector space - concepts - Representation of signals - Linear time invariant systems - discrete time signals and discrete time systems.
Analog Signal Processing:
Circuit and Network Theorems, Four Terminal Networks - I, II, Lattice, Bridge - T networks, Equalizers, wave filters, Attenuators.
Digital:
Linear shift invariant systems - DFT and FFT - FIR and IIR and digitel filters - Design methods, FFT - Wiener and matched filters applications.

UNIT IV
TELEVISION:
Television systems and standards: CCIR standards, NTSC, PAL, SECAM system Black and White transmission - scanning, blanking and synchroaising pulses. Monochrome Reception: Common, Video and Sound Circuits, Synchronizing circuits vertical deflection circuits, horizontal deflection circuits.
Colour Transmission and Reception: Colorimetry, Generation of RGB signals, compatibility with monochroms TV and with band width, PAL encoding techniques, PAL decoders, colour TV picture tubes, Remote Tuning of TV Receivers.

UNIT V
RADAR SYSTEMS:
Radar equations - range, minimum detectable signal, rader cross section, PRF and range ambiguities, Propogation effects and system losses. Types: CW, doppler, FM-CW, MTI, and pulse doppler Radar. Tracking techniques, conical and monopoles, Tracking-in range and tracking in doppler. Radar Transmitter & Receiver: Radar Transmitter source and Modulators, Radar antennas Radar receivers, Duplexers and Displays.

UNIT VI
SATELLITE COMMUNICATION:
Orbit and Launch: Equation of Motion, tracking and orbit determination, satellite launches, satellite performance, station keeping, system Co-ordination and control.

UNIT VII
COMMUNICATION SYSTEMS:

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Satellite sub-system, FSS, BSS, Multiple axes techniques. FDMA, TDMA and CDMA. Earth station configuration, Tracking and receiver sub-systems.

UNIT VIII
FIBRE OPTIC COMMUNICATION:
Optical fibres, optical loss, Modes and configuration, Fibre materials, attenuation, signal distortion. Optical sources - LED, LASERS, Modulation and reliability considerations, Fibre to Fibre joint, splicing techniques. Optical receivers, Photo diodes, Photo detectors.

UNIT IX
INFORMATION THEORY AND CODING:
Information measure, properties of various entropies, Noiseless coding, Kraft-Mcmillan inequality, Huffman's method of coding, coding Theorem. Noisy coding, classification of channels and their calculation, Decoding schemes. Correlation receiver, matched filter, Wiener filter, linear estimation. Testing of hypothesis, Parameter estimation.

UNIT X
TELEPHONY, COMMUNICATION SWITCHING AND ACOUSTICS:
Telephony: Telephone hand sets, transmitters and receivers, telephone traffic variation, busy hours, lost calls, dialing methods, various signalling systems. Communication Switching: Simplex, duplex and quadruplex working receivers, dialing methods, Digital Switching - circuit switching, packet switching, message switching, numbering plans Routing methods, signalling types, traffic measurements, EPABX modem.Acoustics: Microphone, different types - Loud speakers, different types - parameters - speech - hearing sound level meter - studio acoustics - sabine Formula - Reverbration time, stereo - effect.