ELECTRONICS ENGINEERING / ELECTRONICS AND COMMUNICATION ENGINEERING

(DIPLOMA STANDARD)

SUBJECT CODE: 337

UNIT – I: ELECTRONIC DEVICES AND CIRCUITS

Semiconductor– PN junction Diode – Zener diode - Rectifiers – Half wave, full wave and Bridge rectifier- Filters- Bipolar junction Transistors (BJT) – biasing - configuration –RC coupled amplifier - Field effect Transistors (FET) - Uni junction Transistor (UJT) – Transistor oscillators - SCR - DIAC - TRIAC – MOSFET – Opto electronic devices – LDR, LED, LCD, Opto coupler, Solar cell, Photo diode, Photo transistor – Diode clipper – Diode clamper – Voltage doubler, Multi vibrators -Astable, Monostable, Bistable – Schmitt trigger.

UNIT – II: ELECTRICAL CIRCUTS AND INSTRUMENTATION

DC Circuits – Network theorems – AC Circuits – Resonance – Transformers - D.C generators – D.C motors – Single phase induction motor – Types - Stepper motor – Universal motor – Measuring instruments- PMMC- Bridges – Cathode ray oscilloscope (CRO) – Digital storage oscilloscope (DSO)- Recorders - Transducers – Sensors – Test instruments.

UNIT – III:

(A).   C PROGRAMMING

Program, Algorithm & flow chart – Introduction to C – Variables, constants & data types – C operators – I/O statement – Branching, looping statements – Arrays and strings - Functions – Structures and Unions – Pointers- Dynamic memory management – File management & Preprocessors- C programming.

(B). COMPUTER HARDWARE AND NETWORK

Mother board components- Memory storage devices – I/O devices and interface – Maintenance and troubleshooting of desktop and laptops – Computer network devices and OSI layers – 802.x and TCP/IP protocols.

UNIT – IV: INDUSTRIAL ELECTRONICS

Thyristor family - SCR, IGBT, MOSFET, GTO –Trigger circuits- Commutation - Converters – Choppers – Inverters- Applications – HVDC transmission, SMPS, UPS – Programmable logic controller (PLC) – Numerical control system – CNC- Robotics.

UNIT – V: DIGITAL ELECTRONICS AND LINEAR INTEGRATED CIRCUITS

Number system- Boolean algebra- De-Morgan's theorems – Logic gates- Digital logic families- Combinational circuits – Arithmetic circuits, Encoder and decoder, Multiplexer, Demultiplexer, BCD adder, Parity checker and generator- Sequential circuits – Flip flops, Counters, Shift registers – Memory devices – Operational amplifier – IC 741 – Basic linear circuits – Op-amp applications – PLL & applications – A/D converters and D/A converters – IC 555 timer- applications- IC voltage regulators.

UNIT – VI

(A).COMMUNICATION ENGINEERING

Networks - Equalizer – Attenuator – Filters – Antennas – Propagation – Modulation – Amplitude modulation – AM transmitter, receiver – Frequency modulation – FM transmitter, receiver –Phase modulation- Pulse modulation – Audio system – Microphone, loud speaker, audio recording and reproduction –Video system.

(B). TELEVISION ENGINEERING

Television fundamentals- Mono chrome TV, Color TV – Camera tube– Picture tubes – Television transmitter – Television receiver – Advanced television systems.

UNIT – VII: ADVANCED COMMUNICATION SYSTEM AND DIGITAL COMMUNICATION

Radar and navigational aids – Telephone system – Facsimile communication system – Digital communication – Digital codes- Optical communication – Satellite communication – Microwave communication – Mobile communication (Qualitative treatment only) – Satellite multiple access techniques.

Basics of digital communication – Waveform coding techniques – Digital modulation techniques - Data communication codes – Data network.

UNIT – VIII: MICRO PROCESSOR AND MICRO CONTROLLER

Introduction to microprocessors - 8085 micro processor - Architecture – Instruction set – Addressing mode – Instruction cycle.

8051 microcontroller – Architecture – Instruction set – Assembler - Addressing modes - Programmes – I/O programming – Timer programming- Serial communication – Interrupts - IC 8255 - Peripheral interfacing techniques with 8051 – applications.

UNIT – IX: VERY LARGE SCALE INTEGRATED CIRCUIT

Combinational circuit design- combinational circuit building blocks – VHDL for combinational circuit- VHDL code – Sequential circuit design – Design steps- VHDL for sequential circuit – PLDS – PROM, PLA, PAL, CPLD –FPGA - ASIC - types.

UNIT – X: EMBEDDED SYSTEM

ARM processor architecture –Fundamentals- Instruction sets – Interrupts – Exceptions & modes – Simple programs – Cache mechanism – Concept of flushing and cleaning cache – Cache lockdown – Memory protection and management unit – Embedded OS – RTOS – Synchronization – Inter process communication.