

## **SEMESTER-V**

### **MICROPROCESSOR AND INTERFACING (EE 5109)**

8085:- Architecture, introduction, Pin function, Internal Organization.

8085 Programming:- Instruction sets, Introduction , Programming algorithm , Instruction timing

8085 interrupts, 8085 Interfacing with memory, 8085 Interfacing with I/O, I/O ports, DMA and Interrupt controller chips, Introduction to 8085, application to control and instrumentation.

Introduction to 8086:- Architecture, Pin Configurations, Instruction set.

### **POWER SYSTEM-II (EE 5110)**

Introduction to control area and power grid operation and its advantages

Single line representation, p.u. system.

Economics of power system

Symmetrical components , Measurement of zero, positive, and negative sequence current and voltage and symmetrical faults, unsymmetrical faults, symmetrical three phase faults of synchronous machine, short ckt current and reactance of synchronous machine.

Power systems stability and its analysis, load flow analysis and load flow modeling, load frequency control, automatic voltage regulator, optimal power flow.

### **INSTRUMENTATION-II (EE 5111)**

#### **POWER SYSTEM MEASUREMENT-**

Dynamics of instruments, Measurement of cable faults and earth resistance.

#### **TRANSDUCER-**

Types and classification, selection, strain gauge, inductive and capacitive,

Piezoelectric and hall effect transducers, temperature transducers, optical transducers,

Special purpose transducers.

Shaft angle encoder, digital displacement transducers,

Measurement of velocity, Acceleration, force, flow of liquids, liquid levels, digital temperature measurement.

Basic concepts for smart sensors and their application,

Wave analysis, wave analyzer,

Display and recording devices, vector voltmeter, frequency meter, universal counter and its uses, q-meter.

Data acquisition system, Analog and digital signal conditioning and its instrumentation scheme. AC and DC telemetry, signal filtering, Averaging, signal correlation and coding power measurement at high frequency.

## **ELECTRICAL MACHINE-II (EE 5112)**

### **SYNCHRONOUS MACHINE :-**

Construction and types of windings, generators and motors operations, Armature reaction, phasor diagram, Salient pole machine, Two axis theory, d-q model, Voltage regulation, operation of synchronous machine as infinite bus, parallel operation of synchronous generator, Synchronization, Starting of synchronous motor, V- curves, torque angle characteristics and hunting, Dynamics of synchronous machine,

Single phase Motors - induction type, Double revolving field theory, equivalent Ckt. Characteristics & starting of single phase motor, shaded pole machine, synchronous type, Hysteresis motor, Reluctance motor, Stepper motor, Special electric motors-Switched reluctance motor, PMBLdc motor, tachometer, Two phase control motor, Synchro.

Applications: Hoisting Systems like Cranes, Electric Shovels, Conveyor, Transport System, Drilling operations etc.

## **E.M.F (PH 5104)**

Gauss's Law , potential Functions Poission's and Laplaces Equations, Electrostatic Uniqueness Theorem, Ampere's Law, Magnetic scalar and Vector Potential.

Introduction of Electromagnetic radiation, Plane wave propagation in isotropic, and anisotropic media Skin effect, e.m. Impedance, energy density.

Reflection and refraction of plane waves, surface Impedance, Transmission line Theory, VSWR, RF and UHF Transmission Lines, UHF lines as circuit elements, Quarter wave Impedance, Inverting Transformer, single stub matching. Guided waves, waves between parallel planes, TM and TE / TEM waves, Rectangular, spherical wave guide Earth ionosphere as a resonant cavity

PROPAGATION: - Different modes of radio wave propagation, ionospheric Propagation, MUF, Critical frequency, skip distance, dust propagation, tropospheric propagation.

ANTENNA: - General solution of Maxwell's Equation, Expression for E and H in term of potentials, Retarded potentials, Antenna Definition, Function of as Antenna, properties of an Antenna, Antenna parameters, Basic Antenna Elements, Radiation Mechanics, Radiation fields of an Alternating current Element (Or Oscillating Electric Dipole), radiation from half wave Dipole. Basic of small circular-loop Antenna, Monopole Antenna, Horn antenna, parabolic reflector.