

17PS11E1 - ELECTRICAL DISTRIBUTION SYSTEMS (EDS)

Instruction/week: 4 hrs.

Max. Sessional marks: 40

Univ. Exam: 3 hrs.

Univ. Exam marks: 60

UNIT – I

INTRODUCTION : Introduction to Distribution Systems – Classification of loads (Residential, Commercial, agricultural and Industrial) and their characteristics – An overview of the role of computers in distribution system planning, load modeling (impedance type and motor based loads) and characteristics – coincidence factor – contribution factor and loss factor.

UNIT – II

DESIGN OF DISTRIBUTION NETWORKS: Distribution feeders and substations – design considerations of distribution feeders – Radial and loop types of primary feeders – voltage levels – feeder loading – Basic Design practices of the Secondary Distribution System – Distribution System Practices – High voltage and low voltage distribution systems and their salient features different types of HVDs.

Location of Substations – Rating of Distribution Substations – Service area with ‘n’ primary feeders. Benefits derived through optimal location of substations.

UNIT – III

DISTRIBUTION SYSTEM ANALYSIS :Voltage drop and power loss calculation – Derivation for voltage drop and power loss in lines – Manual Methods of Solution for Radial Networks - 3 ϕ balanced primary lines.

UNIT – IV

PROTECTIVE DEVICES AND CO-ORDINATION: Objectives of Distribution system protection, Types of common faults and procedure for fault calculations – Protective Devices – Principles of Operation of Fuses – Circuit Breakers – Co-ordination of protective devices – General co-ordination procedure.

UNIT – V

COMPENSATION FOR POWER FACTOR IMPROVEMENT AND VOLTAGE CONTROL– Capacitive compensation for power factor control – Different types of power capacitors – Shunt and Series capacitors – effect of shunt capacitors (fixed and switched) – Power factor correction – capacitor allocation – Economic justification – Procedure to determine the best capacitor location – equipment for voltage control – effect of series capacitor – effect of AVB / AVR, line drop compensation.

TEXTBOOKS:

1. “Electrical Power Distribution System Engineering” by TuranGonen, Mc-Graw Hill book Company.
2. “Electric Power Distribution” by A.S.Pabla, Tata Mc-Graw Hill Publication Company 4th Edition

REFERENCES:

1. “Electric power distribution and automation” by Dr.S.Sivanagaraju, Dr.V.Sankar