

17PS1205 - ADVANCED POWER SYSTEM PROTECTION

Instruction/week: 4 hrs.

Max. Sessional marks: 40

Univ. Exam: 3 hrs.

Univ. Exam marks: 60

UNIT - I

STATIC RELAYS : advantages of static relays – Basic construction of static relays – Level detectors – Replica impedance – mixing circuits – general equation for two input phase and amplitude comparators – Duality between amplitude and phase comparator.

UNIT - II

AMPLITUDE COMPARATORS: Circulating current type and opposed voltage type rectifier bridge comparators – Direct and Instantaneous comparators.

PHASE COMPARATORS: Coincidence circuit type block spike phase comparator , techniques to measure the period of coincidence – integrating type – Rectifier and vector product type phase comparators.

UNIT – III

STATIC OVER CURRENT RELAYS: Introduction – Instantaneous over current relay – Time over current relays – basic principles – Definite time and inverse definite time over current relay.

UNIT – IV

STATIC DIFFERENTIAL RELAY: Analysis of static differential relays –static relay schemes –Duo bias transformer differential protection – Harmonic restraint relay.

UNIT – V

MULTI – INPUT COMPARATORS: Conic section characteristics – Three input amplitude comparator – Hybrid comparator – switched distance schemes – Poly phase distance schemes – Phase fault scheme – Three phase scheme – combined and ground fault scheme.

MICROPROCESSOR BASED PROTECTIVE RELAYS: Introduction- Over current relays.

TEXTS BOOKS:

1. “Power Systems protection Static Relay” by T.S. Madhava Rao, Tata Mc Graw Hill Publishing Company Limited , Second Edition – 1998.
2. “Power System Protection and Switchgear” by Badri Ram and D.N. Vishwakarma, Tata McGraw Hill Publication Company Limited First –Edition – 1995.
3. “Power System Protection & Switchgear” by B.Ravindranath & M. Chander, New Age International Publication.

REFERENCES:

1. " Protective Relays , Theory & Practice (Vol.II) by A.R.Van C. Warrington , Chapman & Hall Edition , London
2. "Protective Relaying for Power Systems" by Horowitz ,, IEEE Press.