MEHP – 301(A) Transients in Power Systems

UNIT 1

Probability distributions of switching surge over voltages mathematical and numerical formulation, application of insulators to withstand switching surges, Data necessary ;for line insulation design influence of atmospheric condition.

UNIT 2

Probability of failure on An EHV transmission line: method of calculating the probability of failure, calculation by integration accuracy of statistical methods in insulation, evaluation of phase to phase methods of grading EHV cables based on statistical breakdown stress.

UNIT 3

Probability of failure of motor winding General aspects of insulation coordination basic requirements, effect of system design, philosophy of coordination, surge diverter selection, transformer insulation level.

UNIT 4

Surge phenomenon in the single layer coil, electrically and magnetically coupled coils surge phenomenon in transformers, core type and shall type transformer with multiplayer and disc winding.

UNIT 5

Modelling surge phenomenon in transformers: dimensional analysis and modeled phenomenon, Electro magnetic model, analysis of damping conversion factor for the cross section of the iron core design of electromagnetic model, accuracy in modeling, surge phenonmenon in transformers.

Reference Books:

1. Power System transients A statistical approach C S lndulkar, D P Kothari
2. Surge phenomena on Electrical Machines- Heller and Antonin V everka

MEHP – 302(A) Fuzzy Logic and Control

UNIT 1

THE MATHEMATICS OF FUZZY CONTROL:

Fuzzy sets, properties of fuzzy sets, operations in Fuzzy sets, Fuzzy relations, he extension principle.

UNIT 2

THEORY OF APPROXIMATE REASONING:

Linguistic variables, Fuzzy proportions, Fuzzy if then statements, inference rules, compositional rule of inference.

UNIT 3

.FUZZY KNOWLEDGE BASED CONTROLLER (FKBC)

Basic concept structure of FKBC, choice of membership functions, sealing factors, rules, fuzzyfication and defuzzyfication procedures simple applications of FKBC (washing machines, traffic regulation, lift control etc)

UNIT 4

NON LINE,AR FUZZY CONTROL:

FKBC as a linear transient element PID line FKBC, soliding mode FKBC, sugeno FKBC

UNIT 5

ADAPTIVE FUZZY CONTROL:

Process performance monitoring, adaption mechanisms, membership functions using gradient desent and performance criteria. Set organizing controller Model based controller.

Reference Books:

1. D.Driankar, H.Heliendoom, M.Reinfrank, An intro. to fuzzy control, Narosa
2. G..J. Klir and T A Folger, Fuzzy sets uncertinity and information PHI IEEE)
3. R Yaser and D P Filer essentials of fuzzy modeling and control John Wiley,
4. W Edruez, Fuzzy control and Fuzzy systems, John Wiley.