

Code: 13A02602

B.Tech IV Year I Semester (R13) Supplementary Examinations June 2017

POWER SYSTEM PROTECTION

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART - A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What is meant by "relay setting"?
 - (b) What is static relay?
 - (c) List out the common types of power transformer faults.
 - (d) List out abnormal condition that likely to occur.
 - (e) What type of relay is suitable for radial feeders?
 - (f) What is the significance of "bus coupler" in bus bar arrangement?
 - (g) What is arc interruption in circuit breakers?
 - (h) What is resistance switching?
 - (i) What is earthing screen?
 - (j) What is meant by surge absorber?

PART - B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

- 2 (a) With the help of neat diagram, explain principle of static differential relay.
(b) What are the advantages and disadvantages of microprocessor based relays?

OR

- 3 Explain the working principle of electromagnetic induction type relays. What is the use of shading ring?

UNIT - II

- 4 (a) What are common types of generator faults?
(b) A 3-phase, 20 MVA, 11 kV, star connected generator is protected by the current balancing system of protection. If the ratio of CT'S is 1200/5, the minimum operating current of the relay is 0.75A and the neutral earthing resistance is $6\ \Omega$, calculate the percentage of each phase of stator winding which is unprotected against earth faults when the machine is operating at normal voltage.

OR

- 5 Discuss the different transformer faults. What are the various protection schemes available for transformers?

UNIT - III

- 6 Explain carrier current protection scheme with block diagram and neat sketches. Discuss how phase comparison scheme can be used to protect feeder from both ends.

OR

- 7 Write short notes on:
- (a) Bus-bar arrangement.
 - (b) Time graded protection of feeders.

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UNIT - IV

- 8 Explain current chopping phenomenon associated with oil circuit breaker and explain the working of an oil circuit breaker with the help of suitable circuit diagrams.

OR

- 9 Write short notes on:
- (a) Resistance switching.
 - (b) Circuit breaker ratings.

UNIT - V

- 10 (a) What is lightning? Describe the mechanism of lightning discharge.
(b) What are the harmful effects of lightning?

OR

- 11 Explain clearly why lightning arresters are used. Describe any type of oxide film arresters with a neat sketch and explain its underlying features. Name other types of lightning arresters used nowadays in protecting equipment and overhead lines.

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