Code: 13A02602

SS

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)

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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 Ω, 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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