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10EE62

Sixth Semester B.E. Degree Examination, June/July 2018
Switchgear and Protection

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Define and explain the following terms related to fuse i) Fusing factor ii) Prospective current iii) Cut-off current. (08 Marks)
- b. Explain with a neat sketch the construction and working of H.R.C fuse with tripping device. (07 Marks)
- c. Write short notes on Isolating switch and load breaking switch. (05 Marks)
- 2 a. Explain in detail the theories which explain the arc extension phenomenon. (10 Marks)
- b. Write a note on interruption of capacitive current. (06 Marks)
- c. Calculate the RRRV of 132kV circuit breaker with neutral earthed. S.C data as follows: Broken current is symmetrical; restriking voltage has frequency 20KHz, p.f. 0.15. Assume fault is also earthed. (04 Marks)
- 3 a. With a neat sketch, explain in brief, the working principle of Axial and cross blast air circuit breakers. (10 Marks)
- b. With neat sketch explain the working and construction of Non-puffer type SF₆ Breaker. (10 Marks)
- 4 a. Write a note on: i) Unit testing ii) Synthetic testing. (10 Marks)
- b. Briefly explain the classification of surge Arrester, and explain the principle of operation of a typical surge diverter. (10 Marks)

PART – B

- 5 a. Discuss the essential qualities of protective relaying. (10 Marks)
- b. With neat diagram, explain the working principle of Non-directional induction type over current Relay. (10 Marks)
- 6 a. With a neat sketch and vector diagram, explain how a negative phase sequence relay is employed for protection of electrical power system. (10 Marks)
- b. Explain the construction and working, principle of MHO Relay. (10 Marks)
- 7 a. With neat diagram, explain the restricted earth fault protection of Generator. (07 Marks)
- b. Explain the rotor earth fault protection of generators. (07 Marks)
- c. A 6,600V 3-phase tube alternator has a maximum continuous rating of 2,000kW at 0.8p.f and its reactor is 12.5%. It is equipped with merz price circulating current protection which is not set to operate at fault current not less than 200 Amperes. Find what value of the neutral earthing leaves 10% of the winding unprotected. (06 Marks)
- 8 a. With a neat sketch explain the merz price protection for $\gamma - D$ transformer. (08 Marks)
- b. With a neat sketch, explain the working of single phase preventer used for induction motor. (08 Marks)
- c. Write a short note on phase reversal protection in Induction motor. (04 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any remaining of blank pages, appeal to evaluator and for questions written up 4+8 = 50 will be treated as malpractice