R 2008

B.E/ B.Tech (FULL TIME) DEGREE EXAMINATION NOV/DEC 2012

Electrical and Electronics Engineering

EE 9306 PROTECTION AND SWITCHGEAR

V SEMESTER

Time: 3 Hrs **Answer all Questions** **Max. Marks: 100**

Part –A (10 X 2 = 20)

1) Give % distribution of faults in Various Elements of Power system.

2) Classify the Protective relays based on their function

3) What are the merits of Induction cup construction over induction disc construction?

4) What are the advantages of static relays over electromagnetic relays?

5) An 11 kV, 200MVA alternator is provided with differential protection. The % of winding to be protected against phase to ground fault is 85 %.The relay is set to operate when there is 20% out of balance current. Determine the value of the resistance to be placed in the neutral to ground connection.

6) What are the causes for the unbalanced conditions in stator currents of an alternator?

7) What is Arc Voltage?

8) What are the parameters influence the arc resistance?

9) List out the important components common to most of the circuit breaker?

10) What is the function of an explosion pot in an oil circuit breaker?

Part –B (5 X 16 = 80)

11) a)i) Describe the Zero Current Interruption related theories.[8]

ii) Discuss the following phenomenon of CB {8]

i) Resistance switching
ii)Restriking voltage

12) a)Explain the different zones of protection and essential qualities of protection.[8+8]

(OR)

12) b)Discuss about the various design consideration factors for proper Earthing. Explain the various types of Grounding system.[8+8]

13) a)Describe the construction and principle of operation of various types of an induction disc relay.[16]

(OR)

13) b)i) Describe various over current protective schemes.[6]

ii) Prove the duality of comparators.[5]

iii) Explain the operating characteristics of Electromagnetic Reactance Relay .[5]

14) a)i)Explain with neat diagram about the protection of Stator against inter turn faults of an alternator.[8]

ii) Describe the following [8]
i)Protection against Pole slipping
ii) Back up protection
iii)Protection against vibration and distortion of rotor
iv) Protection against motoring

(OR)

14) b)Describe the working principle of percentage differential protection for Transformer. Also explain the construction and working principle of Buchholz Relay.[8+8]

15) a)The constructional details and operation of a SF6 Circuit breaker. Mention its advantages and disadvantages.

(OR)

15) b)Discuss the principle of operation of an air blast circuit breaker. What are the advantages and disadvantages of using air as the arc quenching medium?

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