G 1690 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2016

Eighth Semester

Branch : Electrical and Electronics Engineering

EE 010 802—SWITCH GEAR AND PROTECTION (EE)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. What are the components of fault clearing time of circuit breaker ?
2. Discuss the measure taken in induction relays to minimise over run of the disc.
3. What is a multifunction numerical relay ?
4. What is field suppression of an alternator and how is it achieved ?
5. What is tower footing resistance and write its importance ?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Discuss the methods of arc interruption in circuit-breaker.
7. Explain different types of attracted armature relays.
8. Discuss the operating principle of rectifier bridge phase comparator.
9. Explain protection of transformer against magnetising in rush current.
10. Explain the causes for switching over voltages.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. Explain the construction, working and types of air blast circuit breaker.

Or

12. Explain about types, selection and rating of circuit breakers.

Turn over

13. (a) Compare the time current characteristics of inverse, very inverse and extremely inverse over current relays.

(6 marks)

(b) An earth fault starting relay has a setting of 30 % and a current rating of 5A. It is connected to a CT of ratio 500 : 5. Calculate the pick up current in the primary for which the earth fault relay operates.

(6 marks)

Or

14. (a) How is distance protection superior to over current protection for the protection of transmission lines ?

(6 marks)

(b) An over current relay of current rating 5A and setting 150 % is connected to the secondary of CT of ratio 400/5. Calculate the current in the lines for which relay pick up.

(6 marks)

15. Explain the working of a static differential relay. List the merits and demerits of static relay.

Or

16. With block diagram and flow-chart explain the operation of reactance relay using microprocessor.

17. (a) Explain percentage differential protection for star delta transformer. (6 marks)

(b) A 11 kV, 100 MVA generator is provided with differential protection. The percentage of the generator winding to be protected against phase to ground fault is 80 %. The relay is set to operate when there is 15 % out of balance current. Determine the value of resistance to be placed in the neutral to ground connection.

(6 marks)

Or

18. (a) Discuss stator interturn protection of modern alternator. (6 marks)

(b) A three-phase 132 kV/33 kV, star-delta power transformer is protected by differential protection scheme. Determine the ratio of CT's on the HV side of the transformer, if that on the LV side is 300/5. How are the CT secondaries connected ?

(6 marks)

19. Explain about the reflection and refraction of voltage and current waves at line terminations.

Or

20. Write short notes on the following :—

(a) Surge Arrestor. (6 marks)

(b) Volt time characteristics and BIL. (6 marks)

[5 × 12 = 60 marks]