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Question Paper Code : 73512

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Seventh Semester

Electrical and Electronics Engineering

EE 2402/EE 72/10133 EE 702 — PROTECTION AND SWITCHGEAR

(Regulations 2008/2010)

(Common to PTEE 2402 - Protection and Switchgear for B.E. (Part-Time) Sixth Semester - EEE – Regulations 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the effects of power system faults.

2. Enumerate the significance of backup protection.

3. What are the necessary conditions for two alternating fluxes acting on a common rotor

   (a) to produce some torque

   (b) to produce maximum torque.

4. List out the merits of static relays.

5. What are the short comings of differential protection scheme as applied to power transformer?

6. Enumerate the protection schemes given to a synchronous generator.

7. Give the two methods of arc interruption.

8. What is RRRV?

9. List out the tests performed on SF_6 and vacuum circuit breaker

10. Explain how to arrive at the rating of a circuit breaker.

PART B — (5 × 16 = 80 marks)

11. (a) Explain :

(i) Insulation co-ordination. (8)

(ii) Surge absorber. (8)

Or

(b) Discuss in detail about Peterson Coil? List the protective functions performed by this device. (16)

12. (a) Describe the operating principles and characteristics of impedance and mho relays. (16)

Or

(b) Explain the operation of

(i) Negative sequence relay

(ii) Static relay. (8 + 8)

13. (a) (i) Describe the construction and working of bucholz relay. (10)

(ii) Discuss the time graded over current protection for parallel feeders. (6)

Or

(b) (i) Explain with the neat diagram the application of Merz-price circulating current principle for protection of alternator. (12)

(ii) What is the role of instrument transformer in protective schemes? (4)

14. (a) Discuss the recovery rate theory and energy balance theory of arc interruption in a circuit breaker. (16)

Or

(b) (i) Explain the phenomenon of current chopping in a circuit breaker. What measures are taken to reduce it? (8)

(ii) Discuss the problem associated with the interruptions of low inductive current and the fault occurs nearer to the substation. (8)

15. (a) Explain the construction, operating principle and application of Minimum oil circuit breakers.

Or

(b) Describe the construction, operating principle and application of a SF_6 circuit breaker.

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