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Question Paper Code : 60516

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Electrical and Electronics Engineering

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

(Regulations 2008/2010)

(Common to PTEE 2402/10133 EE 702 — Protection and Switchgear for
B.E. (Part-Time) – Sixth Semester – Regulations 2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the role of protection relay in a modern power system?
2. What is meant by pick-up current?
3. In what way a distance relay is superior to over current protection for protection of transmission lines?
4. Where is negative phase sequence relay employed?
5. What are the different types of zones of protection?
6. Write the inference of resistance switching.
7. List out the various methods of arc interruption.
8. How do you classify the circuit breakers?
9. What are the advantages of SF₆ Circuit Breaker?
10. What are the different types of testing in Circuit breakers?

PART B — (5 × 16 = 80 marks)

11. (a) (i) With neat block diagram, explain the construction and operating principle of electromagnetic relay. (8)
(ii) Describe the operation of over current relay with directional feature. (8)

Or

- (b) (i) Discuss the importance of the protective scheme employed against lightning and switching surges. (8)
(ii) Enumerate the basic ideas of insulation coordination. (8)
12. (a) (i) Explain with the help of neat diagram the construction and working of induction type directional power relay. (8)
(ii) Draw and explain the block diagram of a static relay and state its advantages. (8)

Or

- (b) What is universal torque equation? Using this equation derive the following operating characteristics.
(i) Impedance relay
(ii) Reactance relay
(iii) Mho relay. (16)
13. (a) Describe the types of protective schemes are employed for the Protection of field winding and loss excitation of alternator, (16)

Or

- (b) With aid of neat schematic diagram, describe the percentage differential protection scheme of a transformer. (16)
14. (a) Discuss in detail the different types of rating of circuit breaker bringing out clearly their physical significance.

Or

- (b) Explain the following terms in detail :
(i) Resistance switching
(ii) Current chopping
(iii) Interruption of capacitive current.
15. (a) With necessary diagrams explain the following :
(i) Vacuum Circuit breakers. (8)
(ii) Air blast C.B. (8)

Or

- (b) (i) Write the comparative merits and demerits of C.B. (8)
(ii) Give the reasons for using SF₆ in circuit breakers. (8)