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Question Paper Code : 60580

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2026.

Sixth Semester

Electrical and Electronics Engineering

EE8602 — PROTECTION AND SWITCHGEAR

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the different zones of protection?
2. Distinguish between resistance grounding and reactance grounding.
3. A relay has a plug setting of 125% and is connected to a CT of ratio 400/5. If the fault current is 2000 A, calculate the Plug Setting Multiplier (PSM).
4. What is the function of an under-frequency relay?
5. Why should CT secondary never be open-circuited?
6. Identify the faults that occur in generators and say how they can be prevented.
7. Give the advantages of static relays over electromagnetic relays.
8. Outline the zone protection in transmission lines.
9. Why is AC circuit breaking easier than DC circuit breaking?
10. How does an MCB differ from an MCCB?

PART B — (5 × 13 = 65 marks)

11. (a) Discuss comprehensively the nature, causes, and effects of faults in power systems. (13)

Or

- (b) Explain the principles and need for protective schemes in power systems. (13)

12. (a) Derive the torque equation of a relay and explain its significance. (13)

Or

- (b) List the different types of overcurrent relays and explain the construction and working of any one method with their characteristics. (13)

13. (a) Explain in detail the construction, working, and applications of CT and PT in protection schemes. (13)

Or

- (b) Explain in detail the protection schemes employed for power transformers with diagrams. (13)

14. (a) Describe the block schematic of a numerical relay and explain its operation. Also list its benefits and limitations. (10+3)

Or

- (b) Explain the distance protection of transmission lines, including impedance, reactance, and mho relay characteristics. (13)

15. (a) Describe switching phenomena such as current chopping, resistance switching, and capacitive current interruption. (13)

Or

- (b) Compare air blast, oil, SF₆, and vacuum circuit breakers. (13)

PART C — (1 × 15 = 15 marks)

16. (a) (i) With the help of an R-X diagram, explain MHO relay characteristics and discuss how reach settings are determined for distance protection. (10)

- (ii) Explain the problems in differential protection and how they are overcome. (5)

Or

- (b) Discuss the working principles of amplitude and phase comparators and their applications in relay synthesis. (15)