

6E7143	Roll No. _____	Total No. of Pages : 2
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B.Tech. VI-Sem. (Main/Back) Examination, April/May - 2026 Electrical and Electronics Engineering 6EX4-03 Power System Protection EE, EX		

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of Seven questions from Part B and Three questions out of Five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory.

(10×2=20)

1. Explain modeling of CT and PT with standards.
2. A transformer has CT ratios of 1000/5 on primary and 500/5 on secondary. Calculate whether differential protection will operate for a fault current of 500 A on secondary side.
3. Explain the concept of reach in protective relays.
4. Explain Plug Setting Multiplier (PSM) and Time Multiplier Setting (TMS). How does it affect relay operation.
5. Define directional relay and explain its need.
6. What is aliasing and how can it be avoided?
7. What is restraining coil in differential relay and why is it used?
8. Why are digital relays faster than electromechanical relays?
9. Distinguish between reliability and selectivity in protection systems.
10. What is zone protection in distance relays?

PART - B
(Analytical / Problem Solving Questions)

Attempt any Five questions.

(5×4=20)

- ~~1.~~ Explain generator protection schemes in detail. Discuss stator and rotor fault protection methods.
- ~~2.~~ Explain the concept of digital protection and its advantages.
- ~~3.~~ Explain out-of-step protection in power systems.
4. A feeder is protected by an overcurrent relay with plug setting of 150% and CT ratio of 200/5. The relay current setting is 4 A. Calculate the fault current at which the relay operates.
- ~~5.~~ Explain relay testing methods and procedures in protection systems.
6. Discuss relay coordination in radial and ring main systems with suitable diagrams.
- ~~7.~~ Describe distance protection of transmission lines with characteristics.

PART - C
(Descriptive / Analytical / Problem Solving / Design Questions)

Attempt any Three questions.

(3×10=30)

1. Discuss the working and classification of circuit breakers used in protection. Compare different types of circuit breakers.
 - ~~2.~~ Describe overcurrent protection. Discuss time-current characteristics of overcurrent relays.
 - ~~3.~~ Explain computer-aided protection schemes.
 - ~~4.~~ Describe under-frequency and under-voltage protection schemes.
 5. Describe busbar protection schemes. Compare different busbar arrangements and their protection requirements.
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