

T.E. Electrical I - sem

Protection & Switchgear

(3 Hours)

QP Code : 3275

[Total marks: 80]

- N.B:- (1) Question 1 is compulsory
(2) Solve any **three** questions from remaining **five** questions
(3) Figures to the right indicate **full** marks

- 1 Attempt the following
 - a) State different ratings of circuit breakers. (5)
 - b) What do you understand by protected zone and overlapping of protection zone in power system. (5)
 - c) Explain time grading and current grading used in protection system. (5)
 - d) Explain properties of SF₆ gas that make it suitable for arc quenching. (5)
- 2 (a) What are the different types of fuse available. Explain the constructional detail of HRC fuse with its advantages over other types. (10)
(b) Explain working principle of induction type of relays. Explain IDMT characteristics. (10)
- 3 (a) What are the different types of distance relays. Differentiate them with the help of their characteristics. (10)
(b) Explain construction and working of air circuit breaker. (10)
- 4 (a) What are the different kinds of fault that can occur in Induction motor. Explain motor protection against single phasing. (10)
(b) Explain Vacuum circuit breaker with its ratings. (10)
- 5 (a) Explain the differential protection given to delta star power transformer. (10)
(b) Explain REF protection for alternator. How 100% winding is protected in an alternator. (10)
- 6 Write short notes on
 - (a) PLCC protection (10)
 - (b) Types of isolators and their ratings. (10)