

Total No. of Questions : 10]

SEAT No. :

P2298

[Total No. of Pages : 3

[5254]-632

B.E. (Electrical)

SWITCHGEAR & PROTECTION

(2012 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q. No.1 or 2, Q.No.3 or 4, Q. No.5 or 6, Q. No.7 or 8, Q. No.9 or 10
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Use of electronic pocket calculator is allowed.
- 5) Assume suitable data, if necessary.

- Q1)** a) What are essential qualities of protective relaying. [6]
- b) Write a short note on current chopping. [4]

OR

- Q2)** a) Explain the following terms w.r.t. circuit breaker. [6]
- i) Restriking voltage.
 - ii) R.R.R.V.
 - iii) Recovery voltage
- b) An instantaneous value of magnetizing current of 5.5 A in a 132 kV transmission line having line to ground capacitance of 0.015 μ F and inductance of 5 H is required to be interrupted. Determine [4]
- (i) the voltage across the contacts of circuit breaker at the time of current interruption.
 - (ii) the resistance to be inserted in the contacts in order to avoid restriking voltage.

P.T.O.

- Q3)** a) Explain construction and working of vacuum circuit breaker. [6]
b) Explain the term resistance switching. [4]

OR

- Q4)** a) Explain current graded overcurrent protection scheme. [4]
b) Explain puffer type SF6 circuit breaker. [6]

- Q5)** a) Compare static relays with electromechanical relays with respect to construction, working principle, advantages and limitations. [8]
b) Compare gap type and gapless type lightning arresters. [8]

OR

- Q6)** a) Write a short note on : [8]
i) Anti-Aliasing filter.
ii) Sampling theorem.
b) With suitable diagram explain construction and working of Rod-gap arrester. [8]

- Q7)** a) Explain the phenomenon of overfluxing in the transformer and protection used against it. [9]
b) A 3 phase 12 kV alternator winding is required to be protected against earth faults. The 80% of winding is protected against earth faults by a relay having pick up current of 1 Amp. The CT has a ratio of 1000/5. Calculate resistance to be connected between neutral and ground. If resistance of 10 ohms is connected between neutral to ground, how much percentage of winding is protected against earth fault. [9]

OR

- Q8)** a) Explain protection against single phasing in 3 phase induction motor. [9]
b) Explain the abnormal conditions like unbalance loading, overspeeding and loss of prime mover in case of alternator. [9]

- Q9)** a) Explain the step distance protection scheme for transmission line. Also draw the neat sketch for the same. [8]
- b) Explain the need of high impedance relay for differential protection of busbar. [8]

OR

- Q10)**a) Write a short note on Wide Area Measurement System (WAM). [8]
- b) Explain how reactance relay is used for distance protection. Derive its torque equation. Draw its characteristics on R-X diagram. [8]

