

Total No. of Questions :10]

SEAT No. :

P3790

[5561]-191

[Total No. of Pages :2

B.E. (Electrical)

SWITCHGEAR AND PROTECTION

(2012 Course) (Semester-II) (403147)

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) Black figures to the right indicate full marks.
- 4) Use of electronic pocket calculator is allowed.
- 5) Assume suitable data, if necessary.

- Q1)** a) Explain essential qualities of protective relaying. [6]
b) Explain the following terms w.r.t. circuit breaker switching [4]
i) Restriking voltage
ii) R.R.R.V.

OR

- Q2)** a) For a 132 kV system, the reactance and capacitance up to the location of circuit is breaker is 3 ohms and 0.015 μ F respectively. Calculate the following: [6]
i) The frequency of transient oscillations
ii) The maximum value of restriking voltage across the contacts of circuit breaker
iii) The maximum value of RRRV
b) Write a short note on current chopping . [4]

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

OR

- Q4)** a) Discuss advantages & disadvantages of SF6 circuit breakers. [6]
b) Draw & Explain trip circuit of circuit breaker. [4]

- Q5)** a) Discuss the merits and demerits of a static relay. [8]
b) Compare gap type and gapless type lightning arresters. [8]

OR

P.T.O.

- 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 protection of transformer against magnetising inrush current. [10]
b) A 3 phase 12kV 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 1Amp. 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. [8]

OR

- Q8)** a) Explain with neat diagram single phase preventer in case of 3 phase induction motor. [8]
b) Explain the abnormal conditions like unbalance loading, over speeding and loss of prime mover in case of alternator. [10]
- Q9)** a) Draw block diagram of PLCC scheme. Explain various components in it. [8]
b) Explain how CT ratio is selected for differential protection of bus bar. [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]

