Total No. of Questions :10]

P3790

SEAT No. :

[Total No. of Pages :2

[5561]-191

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 0.015µF 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 in rush 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]**

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