

Total No. of Questions : 6]

SEAT No. :

P32

[Total No. of Pages : 2

APR-17/BE/Insem - 36
B.E. (Electrical)
SWITCHGEAR & PROTECTION

*Time :1 Hour]**[Max. Marks : 30**Instructions to the candidates:*

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

- Q1)** a) Explain the need of protective system. What are different causes of faults. Explain effects of faults. [6]
- b) With neat diagram explain the operating principle of distance relay. [4]

OR

- Q2)** a) Explain following terms in case of Induction relay. [6]
- i) Current setting
 - ii) Plug setting multiplier (PSM)
 - iii) Time setting & TSM
- b) Write short note on 'Zones of Protection'. [4]

- Q3)** a) A three phase alternator has line voltage as 11 kv. It is connected to a CB. The inductive reactance upto CB is $5\Omega/\text{phase}$. The distributed capacitance upto CB between phase & hectral is $0.01 \mu\text{F}$. Determine [6]
- i) Peak restriking voltage across the CB.
 - ii) Frequency & restriking voltage transients
 - iii) RRRV
- b) Explain low resistance Interruption principle in case of CB. [4]

OR

P.T.O.

- Q4)** a) Describe in detail the concept of Resistance switching associated with high voltage circuit breakers. [6]
- b) In a system of 132 kv, the circuit phase to ground capacitance is $0.01 \mu\text{f}$, the inductance is 6 H. Calculate the voltage appearing across the pole of a CB if a magnetizing current of 10 A is interrupted (instantaneous). Also calculate the value of resistance to be used across contact space to eliminate the restriking voltage. [4]
- Q5)** a) With neat diagram explain the construction and working of puffer type SF_6 CB. [8]
- b) Explain making capacity of CB. [2]

OR

- Q6)** a) With neat diagram explain the construction and working of vacuum circuit breaker. [8]
- b) Explain short time current rating of CB. [2]

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