

Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P80

APR - 18/BE/Insem. - 38

B.E. (Electrical)

SWITCHGEAR & PROTECTION

(2012 Pattern) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.*
- 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) Explain briefly classification of relays based on construction. **[6]**

b) Discuss the causes of faults & its effects in power system. **[4]**

OR

Q2) a) Explain following terms related to Induction relays **[6]**

i) Current setting

ii) PSM

iii) Time setting

b) With neat diagram explain 'Protective Zones'. **[4]**

Q3) a) In a 400 kV system, the reactance & capacitance of the transmission line upto fault point is 8Ω & $0.025 \mu\text{F}$ (microfarad) respectively. **[6]**

Calculate:-

i) Frequency of oscillations

ii) Max. value of restriking voltage

iii) Max. value of RRRV.

b) Explain high resistance interruption principle in case of circuit breakers. **[4]**

OR

P.T.O.

- Q4)** a) Explain why arc takes place while switching a high voltage circuit breaker. [6]
b) Define resistance switching in circuit breaker. State the expression for damped frequency of oscillations. [4]

- Q5)** a) With neat diagram explain construction & working of vacuum circuit breaker. [8]
b) Define making capacity of circuit breaker. [2]

OR

- Q6)** a) Explain briefly physical & chemical properties of SF₆ gas (sulphur hexa fluoride gas) [6]
b) A VCB is rated as 3 phase, 1500A, 2000MVA, 33kV, 1 second. Determine its breaking current, making current, STC and rated normal current. [4]

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