Total No. of Questions : 8]

SEAT No. :

PE-2205

[Total No. of Pages : 2

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B.E. (Electrical Engineering)

SWITCHGEAR AND PROTECTION

(2019 Pattern) (Semester - VIII) (403148)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if necessary.***
5) ***Use of a non-programmable calculator is allowed.***

Q1) a) Explain the following ratings of the circuit breaker. **[4]**

i) Making Capacity

ii) Symmetrical Breaking capacity

b) Explain the Vacuum Circuit breaker with a neat diagram. **[6]**

c) A 22 KV, 600MVA, 5 sec circuit breaker suddenly closes on occurring of fault. Determine **[8]**

i) The symmetrical breaking current

ii) The asymmetrical breaking current assuming 50% DC component

iii) The short time current rating

iv) The peak making current

OR

Q2) a) Explain with a neat diagram puffer type SF6 circuit breaker. **[6]**

b) Describe the following concerned with the circuit breaker **[4]**

i) short time current

ii) asymmetrical breaking capacity

c) A Vacuum circuit breaker is rated as 3 phase,1600 A, 2000 MVA, 33 KV, 1 second. Determine **[8]**

i) Beaking current

ii) Making current

iii) STC

iv) Rated normal current

P.T.O.

Q3) a) Discuss three demerits of Static Relay. **[3]**

b) Explain the Nyquist's criterion and sampling theorem. **[6]**

c) Explain Numerical Relay with its block diagram and state its application. **[8]**

OR

Q4) a) Draw block diagram of Static Relay. **[3]**

b) Explain Antialising Filter. **[6]**

c) Describe PMU with its block diagram. **[8]**

Q5) a) i) Enlist the faults occurring in the alternator. **[4]**

ii) What do you mean by incipient faults in case of transformer.

b) Explain the single phasing problem associated with 3-phase Induction Motor and hence suggest suitable protection scheme for it. **[6]**

c) Explain the following abnormal condition with its protection schemes. **[8]**

i) Loss of prime mover

ii) Loss of Excitation

OR

Q6) a) State abnormal conditions occurring in the Induction motor. **[4]**

b) With a neat diagram describe the protection scheme for magnetizing inrush protection for the transformer. **[6]**

c) Explain the transverse percentage differential protection scheme for synchronous generators. **[8]**

Q7) a) Describe the impedance relay for distance protection. **[3]**

b) Explain the effect of Arc resistance on **[6]**

i) Impedance relay

ii) MHO relay

c) With neat diagram explain three stepped distance protection scheme. **[8]**

OR

Q8) a) What do you mean by term Directional and Non - Directional overcurrent relay. **[3]**

b) Explain the effect of Power swing on **[6]**

i) Reactance relay

ii) MHO relay

c) State advantages and disadvantages of PLCC. **[8]**