Total No. of Questions : 4]

SEAT No. :

PD-275

[Total No. of Pages : 2

[6411]-50
B.E. (Electrical) (Insem.)
SWITCHGEAR & PROTECTION
(2019 Pattern) (Semester - VIII) (403148)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

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

Q1) a) The current rating of an over-current relay is 5 A. The relay has a plug setting of 150% and a time setting of 0.4. C.T ratio is 400:5. Calculate the operating time of the relay for a fault current of 6000 A.

At Time Setting Multiplier =1, Operating time at various P.S.M are given as follows: **[7]**

P.S.M.	2	4	5	8	10	20
Operating time	10	5	4	3	2.8	2.4

b) Explain need of protective relaying? State and explain different types of faults in power system. **[8]**

OR

Q2) a) Derive the torque equation of induction type relay. **[7]**

b) What is Relay? Explain trip circuit of circuit breaker with neat diagram. **[8]**

Q3) a) With neat waveform explain **[7]**

i) Restriking volatage,

ii) Recovery voltage.

b) Discuss the theories of arc interruption. **[8]**

P.T.O.

OR

Q4) a) A 3phase, 50Hz, alternator has inductance of 3 mH/ph and capacitance of 0.025 microfarad/ph, the circuit breaker opens when RMS current is of 8000 Amp. Analyse and Determine. **[7]**

i) Frequency of oscillation

ii) Peak restriking voltage

iii) Maximum value of RRRV

b) Explain phenomenon of current interruption in AC circuit breaker. **[8]**