

Total No. of Questions : 6]

SEAT No. :

P213

[Total No. of Pages : 2

BE/INSEM/APR-542
B.E. (Electrical)
403147 : SWITCHGEAR & PROTECTION
(2015 Pattern) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q3 or Q.4, and Q5. or Q.6.*
- 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) Write a short note on 'Zones of Protection' [4]

b) The time-current characteristics of an overcurrent relay for TMS=1 is as given below. [6]

PSM	2	3	5	7	10	13	15	18	20
Operating time	10	6.8	4.4	3.4	2.8	2.5	2.4	2.3	2.2

If current plug setting is adjusted to 50% and the time multiplier is adjusted to 0.75, Calculate the time of operation of relay when the fault current is 3000 A and the relay is connected to a CT ratio 400/5.

OR

Q2) a) Draw and explain the trip circuit breaker. [4]

b) What are the essential qualities of protective relaying? Explain in details.[6]

Q3) a) Explain the concept of current chopping with neat waveform. [4]

b) Explain high and low resistance interruption principle of circuit breaker.[6]

OR

P.T.O.

- Q4)** a) Explain the resistance switching in case of circuit breaker. [4]
b) Derive the equation for restriking voltage and rate of rise of restriking voltage (RRRV) [6]

- Q5)** a) Explain the following terms with respect to circuit breaker. [4]
i) Breaking capacity
ii) Making capacity
b) Explain construction and working of Air circuit breaker. [6]

OR

- Q6)** a) Explain what is autoreclosing in circuit breaker. [4]
b) With neat diagram explain the construction and working of puffer type SF₆ circuit breaker. [6]

