R07

Code: R7320205

B.Tech III Year II Semester (R07) Supplementary Examinations December/January 2015/2016
SWITCH GEAR & PROTECTION
(Electrical and Electronics Engineering)
(For 2008 regular admitted batch only)

Time: 3 hours   Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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1   For a 132 kV system, the reactance and capacitance up to the location of circuit breaker is 5 ohms and 0.02 μF respectively. A resistance of 500 ohms is connected across the break of the circuit breaker. Determine: (i) Natural frequency of oscillation.
                 (ii) Damped frequency of oscillation.
                 (iii) Critical value of resistance

2   (a)   Explain the performance of Minimum oil circuit breaker.
    (b)   Describe the principle of operation of SF_6 circuit breaker.

3   (a)   Explain the applications of Percentage differential relays.
    (b)   Explain Primary protection and Back-up protection.

4   (a)   What is restricted earth-fault protection for generators?
    (b)   A 500 kVA, 6.6 kV star connected alternator has a synchronous reactance of 2 ohms/phase and negligible resistance. The differential relay operates, if the out of balance current through it exceeds 30% of the normal full load current of the alternator. If the star point of the alternator is earthed through a resistance of 6.5 ohms. What percentage of the stator winding is left unprotected?

5   Describe with a neat sketch, the operation of Buchholz relay.

6   (a)   Explain over current protection of feeder.
    (b)   Explain scheme of protection for ring main.

7   (a)   Discuss about effectively grounded system and ungrounded system.
    (b)   A 132 kV, 3-phase, 50 Hz, 100 km long transmission line has a capacitance of 0.012 µF per km per phase. Determine the inductive reactance and kVA rating of the arc suppression coil suitable for this line.

8   Describe the construction and principle of operation of Valve type and Zinc oxide lightning arrester.

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