

Roll No.

Total Pages : 3

BT-6/M-20

36022

POWER SYSTEM ANALYSIS AND PROTECTION

Paper-EE-302-E

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt any *five* questions, selecting at least *one* question from each unit.

UNIT-I

1. (a) Explain the p.u system of analysing power system problems. Discuss the advantages of this method over the absolute method of analysis. 12
- (b) Draw a simple sketch to explain directional over current relay. 8
2. (a) Discuss the Buchholz relay for the power transformer protection. 10
- (b) Explain the operating principal of electromagnetic and static relay in detail. 10

UNIT-II

3. (a) Explain Arc voltage. Explain arc interruption in detail. 10

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- (b) What are the different types of air blast circuit breaker? Discuss their operating principal and area of application. Which type is less affected by current chopping? 10
4. (a) In a 132 kV system, the reactance per phase up to the location of the circuit breaker is 5 ohms and capacitance to earth is 0.03 μ F. Calculate (i) the maximum value of restriking voltage, (ii) the maximum value of RRRV, and (iii) the frequency of transient oscillation. 12
- (b) Explain oil circuit breaker in detail. 8

UNIT-III

5. (a) What are the various types of unsymmetrical faults occurs in power system explain with expression. 12
- (b) Discuss the performance of an ungrounded system during a line-to-ground fault. 8
6. (a) Explain current limiting reactor in detail. 10
- (b) Discuss the principal of symmetrical components. Derive the necessary equation to convert phase quantities into symmetrical components, and vice-versa. 10

UNIT-IV

7. (a) Describe the phenomenon of lightning and explain the term pilot streamer, stepped leader, return streamer, dark leader, cold lighting stroke and hot lighting stroke. 10

(b) Develop equivalent circuit for analysing behaviour of travelling waves at transition points on transmission lines. 10

8. (a) Discuss the application of equal area criterion for the system stability study when (i) A sudden increase in load takes place, and (ii) a short circuit on one of the parallel feeders takes place which is cleared after certain time. 12
- (b) Discuss the effect of neutral grounding on the stability of power system. 8
