Roll No.:.....

National Institute of Technology, Delhi

Name of the Examination: B. Tech.

Branch : Electrical & Electronics Engg. Semester : 6th

Title of the Course : Switch Gear and Protection Course Code : EEL 352

Time: 1.5 Hours Maximum Marks: 25

Note : 1. Answer all the questions.

2. Each question carries 5 marks.

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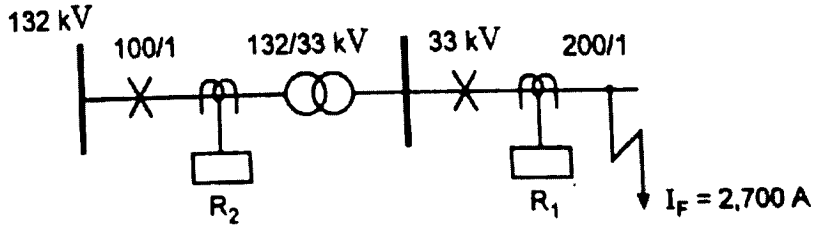
1. In a 220 kV system, the reactance and capacitance up to the location of circuit breaker is 12 ohms and 0.05 microfarad, respectively. A resistance of 800 ohms is connected across the contacts of the circuit breaker. Determine (a) natural frequency of oscillations, (b) damped frequency of oscillation, (c) critical value of resistance which will give no transient oscillations.

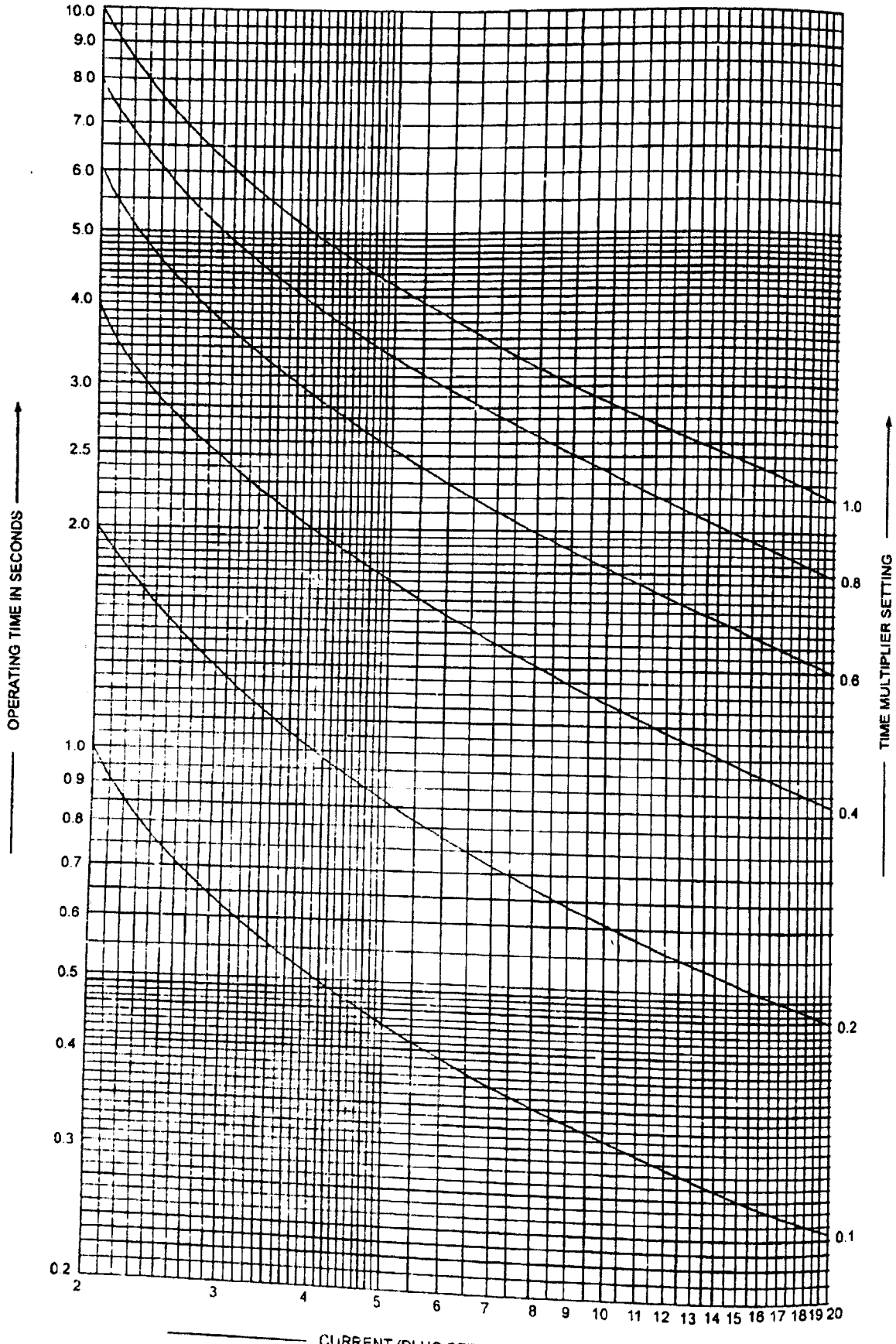
2. A 50 Hz overhead line has line to earth capacitance of 1.2μF. It is desired to use earth fault neutralizer. Determine the reactance to neutralize the capacitance of (i) 100% of the length of the line (ii) 90% of length of the line and (iii) 80% of length of the line

3. Explain the various methods of arc extinction in a circuit breaker.

4. Classify the different faults which occur in power systems. Which of them are more frequent & why?

5. It is given that fault current level at 33kV side is 2700A; CT ratio at 33kV side is 200:1 and 132KV side is 100:1. If both the relays R1 and R2 are set for 125% plug setting determine the operating time for both the relays when the time graded margin of 0.5 sec is given and TMS for relay R1 is 0.15. Calculate the TMS of relay R2. Use graph given in next page for calculations.





Current-Time Characteristics of