TE ELEC Sem V 'C' scheme Winter 2025

13/11/25

Duration : 03 hrs **Maximum Marks = 80**

NOTE
1. Question No 1 is Compulsory.
2. Attempt any three questions out of the remaining five questions.
3. Assume the suitable data if necessary and justify the same.

Question no.	Question	Marks
Q.1 A	Explain the terms short circuit MVA and symmetrical fault.	05
Q.1 B	Describe the volt time curve as required for insulation coordination studies in power system with an example	05
Q.1 C	Discuss in brief the significance of tower footing resistance	05
Q.1 D	Describe the working principle of lightning arrester. Explain any arrester in detail.	05
Q.2 A	Illustrate the short circuit of a synchronous machine at no load condition.	10
Q.2 B	Build the Z-bus for the 3 Bus network in which elements are connected as Bus 1-Bus 2: j0.2; Bus 1-Bus 2: j0.4; Bus 1-Bus3: j0.35 Bus 2-Bus 3: j0.25. (Assume Bus 3 as a reference bus)	10
Q.3 A	Explain and draw the zero sequence networks for following types of connections of a three phase transformer i) Delta-Delta ii) Delta-Star(ungrounded) iii) Delta-Star(Grounded) iv) Star(Grounded)- Star(Grounded) v) Star(ungrounded)- Star(ungrounded)	10
Q.3 B	Derive the equation for fault current and sequence network for single line to ground fault. State the various assumptions in derivation.	10
Q.4 A	A star connected balanced load of 10ohm each has the following voltages across its terminals Vab=200V, Vbc=220V and Vca=180V.Calculate the symmetrical components of line and phase voltages. From the symmetrical components of line voltages determine the line current.	10
Q.4 B	Describe the generation of voltage and current travelling waves on a short circuited line with figure and equations.	10

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Q.5 A	Explain the principle of lightning phenomenon and protection against lightning with respect to the power system.	**10**
Q.5 B	Discuss the advantages and disadvantages of Corona	**10**
Q.6 A	Describe the Z-bus formulation.	**10**
Q.6 B	Explain the following (i) critical disruptive voltage and visual disruptive voltage (ii) transient recovery voltage	**10**

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