05/06/2025 TE ELECTRICAL SEM-V C-SCHEME EPS-II QP CODE: 10086752

Duration – 3 Hours **Total Marks - 80**

N.B.: - (1) Question No.**1** is compulsory.
(2) **Attempt** any **Three** questions out of the remaining **five** questions.
(3) Assume suitable data if necessary and justify the same.

Q 1. Answer **all questions**.

A) Discuss the role of bundle conductors in corona **05**

B) A travelling wave when reaches the end of open circuited transmission line, determine the following: **05**
-Transmitted voltage and current
-Reflected voltage and current.

C) Illustrate zero sequence network of the transformer for following conditions. **05**
(i) Primary winding star connected with neutral isolated and secondary winding Star connected with neutral grounded
(ii) Primary winding delta connected and secondary winding delta connected

D) Explain the selection of circuit breaker for power system protection **05**

Q 2 a) Derive the equation for fault current when fault occurs between line and ground of a three phase transmission line. Also draw interconnection of sequence network for the same fault **10**

Q 2 b) The line currents in a 3-phase supply to an unbalanced load are respectively Ia = 10 + j20, Ib = 12– j10 and Ic = – 3 – j5 amperes. The phase sequence is abc. Determine the sequence components of currents. **10**

Q 3 a) Summarize different algorithms of Z_{bus} formulation. **10**

Q 3 b) A 30 MVA, 11 kV generator has $Z_1=Z_2=j0.2pu$, $Z_0=j0.05$ pu. A line-to-line fault occurs on the generator terminals. Calculate the fault current. Assume that the generator neutral is solidly grounded and that the generator is operating at no load and at rated voltage at the occurrence of the fault. **10**

Q 4 a) Illustrate the short circuit of synchronous machine at no load condition. **10**

Q 4 b) Discuss the phase shift of symmetrical components in star delta transformer **10**

Q 5 a) Why Insulation Coordination is required? Explain the following: **10**
1. Surge Reactor 2. Surge Capacitor 3. Lightning Rod

Q 5 b) Discuss the generation of Voltage and current travelling waves on a short circuited line with figure and equations **10**

Q 6 a) Discuss the generation and formation of corona rings and corona pulses in EHV lines. **10**

Q 6 b) What is arcing ground? Explain its effect on the performance of a power system. **10**
