

Duration:- Three Hours

Total Marks : 80

**NOTE**

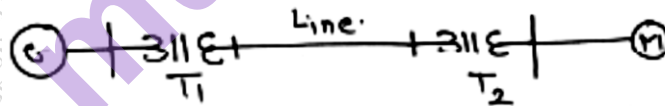
1. Question No 1 is Compulsory.
2. Solve any three out of the remaining.
3. Figure to the right side indicates marks.
4. Assume the suitable data and mention the same if required

Q No 1 Answer the following questions

- a. Discuss the role of bundle conductors in corona. [5]
- b. Explain the terms with respect to insulation level; BIL, FOW [5]
- c. Discuss the role of Z bus system in short circuit study [5]
- d. What are the various assumption in development of sequence network of transformer. [5]

QNO 2a Derive an equation for maximum value of short circuit current on a transmission line. State the various assumptions made. [10]

QNO 2b A synchronous generator and synchronous motor each rated at 25 MVA and 11KV having 15 % sub transient reactance are connected through transformer and line as shown. The transformer is rated for 25 MVA 11/66 KV and 66/11 KV with leakage reactance of 10%. The line has reactance of 10% on the base of 25 MVA and 66 KV. The motor is drawing 15 MW at 0.8 pf leading and terminal voltage is 10.6KV .when symmetrical three phase fault occurs at the terminal of motor. Find the sub transient current in generator, motor and fault. [10]



QNO 3a Discuss the Fortesque theorem for symmetrical component analysis [10]

QNO 3b A delta connected balanced resistive load is connected across an unbalanced three phase supply. where the current in line A is 10A at angle (30 degree) and current in line B is 15A at angle (-60degree). Find the symmetrical components of line currents also find the symmetrical components of delta currents. [10]

QNO 4a Derive the sequence network for one conductor and two conductor open condition from circuit conditions and symmetrical components. [10]

QNO 4b Discuss the operation of synchronous machine on loaded condition with waveform equation and equivalent circuit. [10]

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QNO 5a Derive the equation for fault current and sequence network for an line to line ground fault. State the various assumptions in calculation. [10]

QNO 5b Discuss the generation of voltage and current travelling waves on a short circuited line with figure and equations. [10]

QNO 6a Calculate the voltage and current rating of an arrester if it is placed at the end of line and at the junction of two, lines. Draw the equivalent circuit for the same. [10]

QNO 6b Discuss the generation and formation of corona ring and corona pulses in EHV lines. [10]

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