



K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BENGALURU-560109

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

SESSION: 2021-2022 (EVEN SEMESTER)

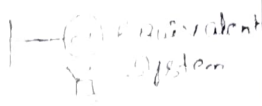
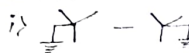


ASSIGNMENT-2

Batch	2019
Year/Semester/Section	III/VI/A
Course Code/Title	18EE62/Power System Analysis-I
Name of the Course Incharge	Tejaswini G V

Assignment No: 2  
Date of Issue: 1/6/2022

Total marks:15  
Date of Submission:15/6/2022

Sl. No.	Assignment Questions	K Level	CO	Marks
1.	A 25MVA, 13.2kV synchronous generator is connected to a synchronous motor of same rating. Both have a transient reactance of 15%. The line connecting them has a reactance of 10% on the machine base. The motor is drawing a power of 18MW at 0.8 pf lead, at 12.9kV, when a short circuit occurs at its terminals, <b>find</b> the subtransient currents in the motor, generator and at fault points.	Applying K3	CO2	1
2.	A three phase, 5MVA, 6.6kV alternator with reactance of 8% is connected to a feeder of series impedance of $(0.12+j0.48)\Omega/\text{phase}/\text{km}$ . The transformer is rated at 3MVA, 6.6kV/33kV and has a series reactance of 5%. <b>Determine</b> the fault current supplied by the generator operating under no load with a voltage of 6.9kV, when a 3 phase symmetrical fault occurs at a point 15km along the feeder.	Applying K3	CO2	1
3.	A synchronous generator and synchronous motor 25MVA, 11kV and having 15% subtransient reactance are connected through transformers and transmission lines as shown in figure. Transformers are rated 25MVA, 11/66kV and 66/11kV respectively, with leakage reactance of 10%each. The line has the reactance of 10% on the base of 25MVA, 66kV motor is drawing 15MW with 0.8pf leading and terminal voltage of motor is 10.6kV, when a symmetrical 3 phase fault occurs at its terminal. <b>Determine</b> the subtransient current in generator, motor and fault current.	Applying K3	CO2	1

9.	<p>A 250 MVA, 11kV, 3 phase generator is connected to a large system through a transformer and a line as shown in fig below.</p>  <p>Generator: <math>X_1 = X_2 = 0.15</math> p.u, <math>X_0 = 0.1</math> p.u, Transformer: <math>X_1 = X_2 = X_0 = 0.12</math> p.u, Line: <math>X_1 = X_2 = 0.25</math> p.u, <math>X_0 = 0.75</math> p.u. Equivalent system: <math>X_1 = X_2 = X_0 = 0.15</math> p.u, <b>Obtain</b> the sequence network diagrams for the system and indicate all per unit values.</p>	Applying K3	CO3	2
10.	<p><b>Obtain</b> the zero sequence impedance networks of a transformer for the following connections.</p> <p>i)  ii)  iii) </p>	Applying K3	CO3	2

  
Course Incharge

  
Head of the Department