2019-20
EXM/P/09/00

Sanjay Ghodawat University, Kolhapur

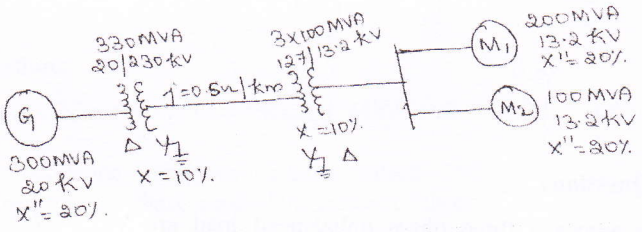
Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

Year and Program 2019-20, B.Tech. | **School: Technology** | **Department: TY Electrical and Electronics Engineering**

Course Code EET303 | **Course Title: Power System Analysis** | **Semester – V**

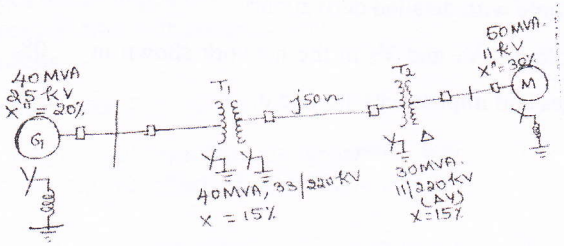
Day and Date: Thursday 21/11/19 | **End Semester Examination (ESE)** | **Max Marks: 100** 10.30am to 1.30pm

Q.1	**Answer all the Questions**	Marks	Bloom's Level	CO
a)	Draw the Reactance diagram using the Generator values as base values	07	L2	01



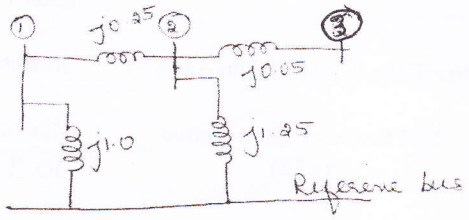
(OR)

a)	Draw the reactance diagram for the power system shown in Figure. Use a base of 100 MVA, 220 kV in 50 ohm line. The ratings of the Generator, Motor and Transformer are given below	07	L2	01



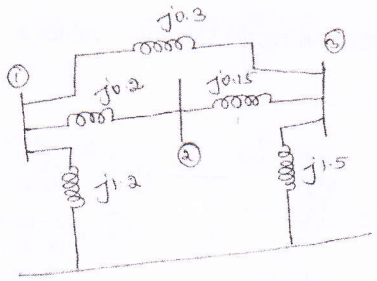
ESE

b) Determine Z_{Bus} for the system whose reactance diagram is shown below — 08 L2 01



(OR)

b) Determine Z_{Bus} for the system whose reactance diagram is shown below — 08 L2 01



Q.2 **Answer all the Questions**

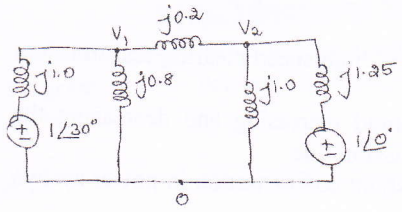
a) The voltage across a three phase unbalanced load are $V_a = 300\angle 20^\circ V$, $V_b = 360\angle 90^\circ V$ and $V_c = 500\angle -140^\circ V$. Determine the symmetrical components of voltages. — 07 L2 03

(OR)

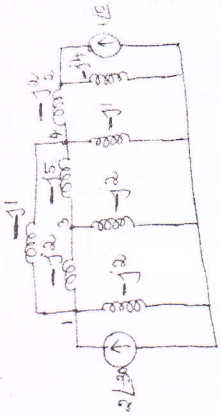
a) Analyze the line to line and Double line to ground fault. Conclude the outcome with detailed derivation? — 07 L2 02

b) Solve the node voltages V_1 and V_2 in the network shown in below. The voltages and impedances are in p.u. — 08 L3 01

ESE



(OR)

b) 

Determine the admittance matrix of the system whose reactance diagram are shown here. The current and admittance are given in p.u. Determine the reduced bus admittance matrix after eliminating node -3. ?

08 L3 01

Q3 **Answer Any two Questions**

a) 1. Derive the $Z_{p.u.New}$ from old and new values of MVA and kV.? 08 L4 01
2. Derive the reactance diagram representation of transformer from the per phase equivalent circuit of three phase transformer

b) 1. Expalin the concept of positive, negative and zero sequence components effect in unsymmetrical system? 08 L2 03
2. Detail the different types of fault and possiblitites?

c) 1. Explain line to ground fault ? 08 L2 03
2. Write the short notes on one conductor and two conductor open fault?

d) 1. Classify the types of bus in power system 08 L2 03
2. Differentiate types of fault with specifications?

Q4 **Answer Any two Questions**

a) Detail different stability issues? 09 L4 04

b) Draw the vector diagram of synchronous generator with inductive load and explain the effect of rotor angle stability issues? 09 L5 04

(c) Analyze the concept of equal area criterian in the generator through two feeder to the grid? 09 L4 04

ESE

Q5	**Answer Any two Questions**				
	a)	Analyze the concept behind high speed clearing and transient stablity issues	09	L4	04
	b)	Compare the concept behind increasing and decreasing the reactance effect in transmission line	09	L5	04
	c)	Summarize the effect of shunt compensation in power system with detailed diagram	`09	L2	04
Q6	**Answer any three Question**				
	a)	Solve Swing equation	06	L3	04
	b)	Detail the motoring and generating mode of synchronous machine with variation of rotor angle, load and input torque?	06	L2	04
	c)	Explain the concept of unstability	06	L2	04
	d)	Derive the equation of synchronous machine tranasmission system power equation and draw the power versus load angle characteristics. Based on the explain the equal area criterian concept in the unloaded synchronous generator	06	L3	04

ESE