	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Winter Examination – 2022			
	Course: B. Tech.Branch : ElectricalS	emester : V		
	Subject Code & Name: BTEEC501 Power System Analysis			
	Max Marks: 60 Date:28/01/20023 Duration	on: 3 Hr.		
	 Instructions to the Students: All the questions are compulsory. The level of question/expected answer as per OBE or the Course Out which the question is based is mentioned in () in front of the question Use of non-programmable scientific calculators is allowed. Assume suitable data wherever necessary and mention it clearly. 	tcome (CO) on n.		
		(Level/CO)	Marks	
.1	Solve Any Two of the following.		12	
A)	Define per unit value. What are the advantages of per unit representation?	Understand	6	
B)	Two loads connected in parallel are supplied from a single phase 230V	Application	6	
	source. Load 1 draws active power of 200kW at a power factor of 0.8 lag-			
	ging. Load 2 draws 100kVAR at a power factor of 0.9 lag. Calculate:			
	a. Total complex power			
	b. Power factor of source			
C)	For the power system show in below figure. Choose 25KV as base voltage	Application	6	
	unit reactance diagram. $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			
<u>(2.2</u> (A)	Solve Any Two of the following. Determine the bus admittance matrix for four bus system shown in figure. Neglect the shunt capacitance of line.	Application	12	

	Bus Code	Line Impedances		
	1-2	j1		
	1-4	j0.2		
	2-3	j0.8		
	3-4	j0.4		
		TT 1 . 1		
B)	Write short note on types of buses in power flow problem.		Understand	6
C)	Explain the Gauss Seidel method	of load flow analysis.	Understand	6
Q. 3	Solve Any Two of the following.			12
A)	Explain different types of faults	s in a power system. Also explain the	Understand	6
	causes and effects of faults.			
B)	Derive the expression for transien	t current on a transmission line.	Application	6
C)	Derive the expressions of positiv	ve, negative and zero sequence voltage	Application	6
	components of given set of unbala	nce voltage phasors Va, Vb and Vc.		
Q.4	Solve Any Two of the following.			12
A)	The voltages of a three phase syst	Application	6	
	j400, Vc=200+j800.			
	Calculate the symmetrical compo			
B)	Define harmonics. Explain the car	uses and effects of harmonics in a power	Understand	6
	system.			
C)	What is load dispatch center? Explain the functions of load dispatch cen-		Understand	6
	ter.			
0.5	Solve Any Two of the following.			12
(A)	Draw a diagram showing interco	nnection of sequence network for single	Application	6
11)	line to ground fault. Derive the eq	uation for fault currents	rippiloution	Ū
	The to ground funct. Derive the eq	dation for fault currents.		
B)	An 11kV, 25MVA synchronous g	generator has positive, negative and zero	Application	6
	sequence reactances of j0.12, j0.1	2 and j0.08 pu respectively. The genera-		
	tor neutral is solidly grounded. A	line to ground fault occurs at the genera-		
	tor terminals. Determine the fault	current in per unit and in Ampere. As-		
	sume that the generator was unloa	ded before the fault.		
C)	Draw a diagram showing intercor	nnection of sequence network for line to	Application	6

line fault. Derive the equation for fault currents.	
*** End ***	

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