

Code No: R22A0206

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech II Semester Regular Examinations**POWER SYSTEM-II
(MODEL QUESTION PAPER)****Time: 3 hours****Max. Marks: 60****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 10 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

<u>PART-A (10 MARKS)</u>			
<u>(Write all answers of this PART at one place)</u>			
1	A	Compare AC and DC distribution systems?	[1M]
	B	Explain three phase 4-wire system	[1M]
	C	Define Power factor.	[1M]
	D	Discuss the importance of power factor correction	[1M]
	E	Define tree	[1M]
	F	Define cotree	[1M]
	G	Write down the formula for ZBUS an link is added between two buses	[1M]
	H	Write down the formula for ZBUS a branch is added between old bus and new bus.	[1M]
	I	Give the classification of Buses in Power System	[1M]
	J	Write the formula for SLFE Equation	[1M]
<u>PART-B (50 MARKS)</u>			
<u>SECTION-I</u>			
2	A	Explain method power factors referred to receiving end voltage for solving A.C distribution problems.	[5M]
	B	A single-phase AC distributor, AB 300 meters long is fed from A and is loaded as follows: a) 100 A at 0.707 pf lagging 200 m from point A. b) 200 A at 0.8 pf lagging 300 m from point A The load resistance and reactance of the distributor is 0.2 ohms and 0.1 ohm per kilometre. calculate the total voltage drop in the distributor. the load power factors refer to the voltage at the far end.	[5M]
OR			
3	A	Explain different busbar arrangements with neat sketch?	[5M]
	B	Below figure shows a single-phase line having resistance and reactance of 0.06 and 0.1 ohm/km. the length of section AB and BC are 1km each. The voltage at the farther end is 220V. find the voltage at sending end and phase angle difference between the voltage of two ends.	[5M]
<u>SECTION-II</u>			
4	A	Discuss the importance of voltage control in the modern power system.	[5M]
	B	What are the various methods of voltage control in a power system?	[5M]
OR			

5	A	Describe the off-load tap changing transformer method of voltage control. What are the limitations of the method ?	[5M]
	B	Explain with a neat sketch: (i) On-load tap-changing transformer (ii) Auto-transformer tap-changing	[5M]

SECTION-III

6	A	Find Y_{bus} for the given power system Network	[5M]																	
	<table border="1"> <thead> <tr> <th>Sending end</th> <th>Receiving end</th> <th>Reactance values in ohms</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>$j0.05$</td> </tr> <tr> <td>1</td> <td>2</td> <td>$j0.75$</td> </tr> <tr> <td>0</td> <td>2</td> <td>$j0.075$</td> </tr> <tr> <td>2</td> <td>3</td> <td>$j0.45$</td> </tr> <tr> <td>1</td> <td>3</td> <td>$j0.3$</td> </tr> </tbody> </table>		Sending end	Receiving end	Reactance values in ohms	0	1	$j0.05$	1	2	$j0.75$	0	2	$j0.075$	2	3	$j0.45$	1	3	$j0.3$
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6	B	Find Y_{bus} for the given power system Network	[5M]													
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OR

7	A	Build Y_{bus} matrix using by singular transformation. The branch impedances of the lines are as follows:	[5M]											
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7	B	Find the bus admittance matrix.	[5M]

SECTION-IV																					
8	A	Modify the expression for ZBUS an link is added between two buses	[5M]																		
	B	Modify the expression for ZBUS a branch is added between old bus and new bus.	[5M]																		
OR																					
9	A	Find ZBUS matrix for the network shown here by building algorithm.	[5M]																		
B	Modify the expression for ZBUS from a new bus to reference		[5M]																		
SECTION-V																					
10	A	Determine the voltage at the end of 1st iteration using GS method.	[10M]																		
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11	A	Compare different load flow techniques.	[5M]																		
	B	Derive the expression for static load flow equation	[5M]																		

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Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

PART-A (10 MARKS)			
(Write all answers of this PART at one place)			
1	A	Explain single phase 2-wire system.	[1M]
	B	Explain single phase 3-wire system.	[1M]
	C	What are the disadvantages of low power factor	[1M]
	D	What are the advantages of Series compensation?	[1M]
	E	What is the formula for Ybus by Singular Transformation Method	[1M]
	F	Define Primitive Network	[1M]
	G	Define Partial Network	[1M]
	H	Write the formula for ZBUS an element is added between two old buses.	[1M]
	I	What are unknown Quantities in PQ Bus	[1M]
	J	What are unknown Quantities in PV Bus	[1M]
PART-B (50 MARKS)			
SECTION-I			
2	A	Explain different busbar arrangements with neat sketch?	[10M]
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3	A	Explain method power factors referred to respective load voltages for solving A.C distribution problems.	[10M]
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	SECTION-III		
6	A	Find the bus admittance matrix.	[10M]
OR			
7	A	Build YBus matrix using by singular transformation method. The branch impedances of the lines are as follows:	[10M]

		Line	Series reactance		
		1-2	$j0.2$		
		2-3	$j0.1$		
		1-3	$j0.25$		
SECTION-IV					
8	A	Find ZBUS matrix for the network shown here by building algorithm.			[10M]
OR					
9	A	Modify the expression for ZBUS an element is added between two old buses.			[10M]
SECTION-V					
10	A	Draw the flowchart for GS method by considering PQ buses as well as PV buses			[10M]
OR					
11	A	Draw the flowchart for NR method by considering PQ buses as well as PV buses			[10M]
