Code No: P21EET01

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE (AUTONOMOUS) II B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL - 2023 ELECTRICAL CIRCUIT ANALYSIS-II (EEE BRANCH)

Time: 3 hours

Max. Marks: 70

Answer all the questions from each UNIT (5X14=70M)

Q.N	Jo.	Questions	Marks	CO	KL
		UNIT-I			
1.	a) b)	Find the value of RL for maximum power transfer in the circuit of Fig. Find the maximum power. $\begin{array}{c}6\Omega & 3\Omega & 2\Omega & a\\ 12V & 12\Omega & 2A & R_{I}\\ 12V & 12\Omega & 2A & R_{I}\\ \end{array}$ Obtain the dual network for the following circuit. $\begin{array}{c}0&0\\0&0\\0&0\\0&0\\0&0\\0&0\\0&0\\0&0\\0&0\\0&0$	[7M]	1	
2.	a)	OR Draw incidence matrix and reduced incidence matrix for the given graph.	[7M]	1	
	b)	b c d State and explain compensation theorem with an example.	[7M]	1	
		UNIT-II			
3.	a)	Derive the relationship between phase and line voltages and currents in delta connected three phase system and also draw the phasor diagram.	[8M]	2	
	b)	Write the advantages of 3-\u03c6 circuits over 1-\u03c6 circuits	[6M]	2	
	1	OR	L	L	ļ
4.	a)	Three identical coils, each of resistance 100hm and inductance 42mH are connected (a) in star and (b) in delta to a 415V, 50 Hz, 3-phase supply. Determine the total power dissipated in each case.	[8M]	2	
	b)	Draw & explain the circuit diagram for two wattmeter methods for measurement of power in 3 phase systems.	[6M]	2	

UNIT-III5. a)Derive the Transient Response of series RLC-circuit with D.C excitation[7M]3b)Using classical method of solution of differential equations, find the value of Vc(t) for t>0 in the circuit shown in figure. Assume Vc(0-) = 9v.[7M]3Image: Second						
b) Using classical method of solution of differential equations, find the value of Vc(1) for t>0 in the circuit shown in figure. Assume Vc(0-) = 9v. IV + I + I + Vc(0) CR $IV + I + I + Vc(0)$ $IV + I + Vc(0)$ $IV + I + Vc(0)$ $IV + Vc(0)$ $IV + I + Vc(0)$ $IV +$			UNIT-III			
Vc(t) for t>0 in the circuit shown in figure. Assume Vc(0-) = 9v.Image: Assume Vc(0-) = 9v.Image: Image:	5.		*			
6.a)Derive the Transient Response of series RC-circuit with A.C excitation.[6M]3b)A series RC circuit consists of a resistor of 10Ω and capacitor of 0.1 F with a constant voltage of 20v, is applied to the circuit at t=0.0btain the current equation. Determine the voltage across the resistor and the capacitor.[8M]3UNIT-IV7.a)Explain about Quality factor and Band-width of Series resonance[7M]4b)In a parallel resonance circuit (Tank circuit) R=2Ω, L=1mH and C=10µF, Find the Resonant frequency, Dynamic impedance and Bandwidth[7M]4ORUNIT-IV8.A series RLC circuit has R=10Ω, L=0.5H and C=40µF. The applied voltage is 		b)	Vc(t) for t>0 in the circuit shown in figure. Assume Vc(0-) = 9v. t=0 $t=0$ $t=0$	[7M]	3	
$\begin{array}{ c c c c } \hline & & \\ \hline & & & \\ \hline & &$			OR			
Image: Constant voltage of 20v, is applied to the circuit at t=0.0btain the current equation. Determine the voltage across the resistor and the capacitor.Image: Constant voltage of 20v, is applied to the circuit at t=0.0btain the current equation. Determine the voltage across the resistor and the capacitor.7. a)Explain about Quality factor and Band-width of Series resonance[7M]4b)In a parallel resonance circuit (Tank circuit) R=2 Ω , L=1mH and C=10 μ F, [7M]4ORUNIT-IVORUNIT-IV ORUNIT-VORUNIT-V9.a)Obtain the transmission line parameters when the two transmission networks having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are connected in cascadeORORORImage: Number of a two-port network is shown in figure are, h11=1K, h12=0.003, h21= 100 and h22= 50 μ 05.Find V2and Z-parameters of the networkORImage: Number of the ABCD -parameters and derive the condition for symmetry and reciprocity.10.a)Explain about the ABCD -parameters and derive the condition for symmetry and reciprocity.	6.	a)	Derive the Transient Response of series RC-circuit with A.C excitation.	[6M]	3	
7.a)Explain about Quality factor and Band-width of Series resonance $[7M]$ 4b)In a parallel resonance circuit (Tank circuit) R=2 Ω , L=1mH and C=10 μ F, Find the Resonant frequency, Dynamic impedance and Bandwidth $[7M]$ 4OR8.A series RLC circuit has R=10 Ω , L=0.5H and C=40 μ F. The applied voltage is 100V. Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and lower Half power frequencies (d) Current at resonance & 		b)	constant voltage of 20v, is applied to the circuit at $t=0.0btain$ the current	[8M]	3	
b)In a parallel resonance circuit (Tank circuit) $R=2\Omega$, $L=1mH$ and $C=10\muF$, Find the Resonant frequency, Dynamic impedance and Bandwidth[7M]4OR8.A series RLC circuit has $R=10\Omega$, $L=0.5H$ and $C=40\muF$. The applied voltage is 100V. Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and lower Half power frequencies (d) Current at resonance & current at half power points (e) Voltage across inductance & voltage across capacitance at resonance.[14M]49.a)Obtain the transmission line parameters when the two transmission networks having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are connected in cascade[7M]5b)The hybrid parameters of a two-port network is shown in figure are, h11= 1K, h12=0.003, h21= 100 and h22= 50µ☉.Find V2and Z-parameters of the network[7M]5OR10.a)Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity.[7M]5			UNIT-IV			
Find the Resonant frequency, Dynamic impedance and BandwidthOR8.A series RLC circuit has R=10 Ω , L=0.5H and C=40 μ F. The applied voltage is 100V. Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and lower Half power frequencies (d) Current at resonance & current at half power points (e) Voltage across inductance & voltage across capacitance at resonance.[14M]4UNIT-V9.a)Obtain the transmission line parameters when the two transmission networks having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are connected in cascade[7M]5b)The hybrid parameters of a two-port network is shown in figure are, h11=1K, h12=0.003, h21= 100 and h22= 50 μ O.Find V2and Z-parameters of the network[7M]510.a)Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity.[7M]5	7.	a)	Explain about Quality factor and Band-width of Series resonance	[7M]	4	
8. A series RLC circuit has R=10Ω, L=0.5H and C=40µF. The applied voltage is 100V. Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and lower Half power frequencies (d) Current at resonance & current at half power points (e) Voltage across inductance & voltage across capacitance at resonance. [14M] 4 9. a) Obtain the transmission line parameters when the two transmission networks having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are connected in cascade [7M] 5 b) The hybrid parameters of a two-port network is shown in figure are, h11= 1K, h12=0.003, h21= 100 and h22= 50µ☉.Find V2and Z-parameters of the network [7M] 5 10. a) Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity. [7M] 5		b)		[7M]	4	
100V. Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and lower Half power frequencies (d) Current at resonance & current at half power points (e) Voltage across inductance & voltage across capacitance at resonance. 9. a) Obtain the transmission line parameters when the two transmission networks having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are connected in cascade [7M] 5 b) The hybrid parameters of a two-port network is shown in figure are, h11=1K, h12=0.003, h21= 100 and h22= 50µö5.Find V2and Z-parameters of the network [7M] 5 10. a) Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity. [7M] 5			OR	I		1
9. a) Obtain the transmission line parameters when the two transmission networks having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are connected in cascade [7M] 5 b) The hybrid parameters of a two-port network is shown in figure are, h11= 1K, h12=0.003, h21= 100 and h22= 50µ☉.Find V2and Z-parameters of the network [7M] 5 OR 10. a) Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity. [7M] 5	8.		100V. Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and lower Half power frequencies (d) Current at resonance & current at half power points (e) Voltage across inductance & voltage across	[14M]	4	
having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are connected in cascade Image: Connected in cascade b) The hybrid parameters of a two-port network is shown in figure are, h11=1K, h12=0.003, h21= 100 and h22= 50µ☉.Find V2and Z-parameters of the network [7M] 5 OR 10. a) Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity. [7M] 5						
h12=0.003, h21= 100 and h22= 50μ☉.Find V2and Z-parameters of the network OR 10. a) Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity.	9.	a)	having the transmission parameters A1, B1, C1, D1 and A2, B2, C2, D2 are	[7M]	5	
10. a) Explain about the ABCD –parameters and derive the condition for symmetry and reciprocity. [7M] 5		b)	h12=0.003, h21= 100 and h22= 50μ to Find V2and Z-parameters of the	[7M]	5	
and reciprocity.			OR			
b) Express Z parameters in terms of ABCD parameters & Y parameters [7M] 5	10.	a)		[7M]	5	
		b)	Express Z parameters in terms of ABCD parameters & Y parameters	[7M]	5	
