PVP 23

Code: 23EE3301

II B.Tech - I Semester – Regular Examinations - DECEMBER 2024

ELECTRICAL CIRCUIT ANALYSIS - II
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

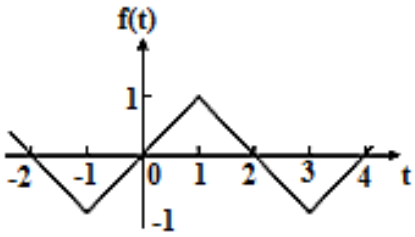
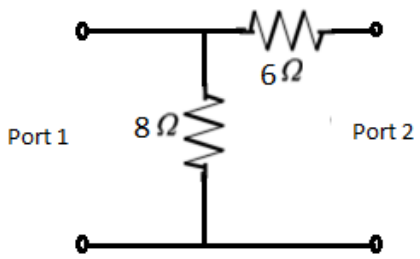
Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

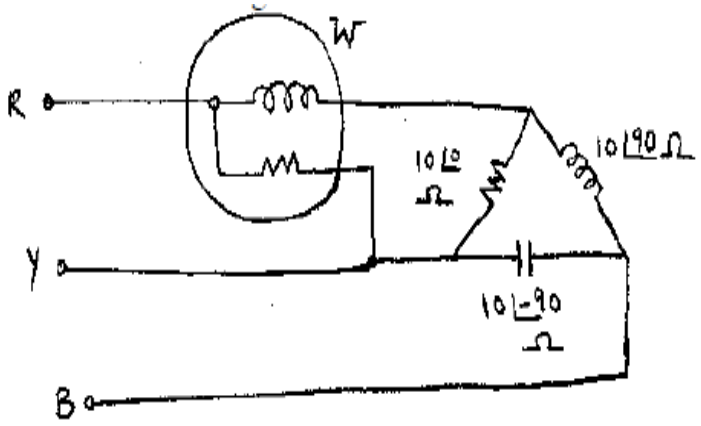
BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1. a)	State any two applications of Laplace transform.	L2	CO1
b)	Mention the properties of Laplace transform.	L2	CO1
c)	Express the condition for reciprocity and symmetry in a two port Z - parameter representation.	L3	CO2
d)	What are called Admittance parameters?	L1	CO2
e)	Draw the transient growth and decay curves for an L −R circuit.	L2	CO3
f)	List the properties of RLC Series circuit.	L1	CO3
g)	Explain the difference between “balanced” and “unbalanced” load.	L2	CO4
h)	Why three phase systems are preferred over single-phase systems for the transmission of power?	L2	CO4
i)	Differentiate low pass and High pass filter.	L2	CO5
j)	What do you mean by Passive filter?	L2	CO5

PART – B

			BL	CO	Max. Marks
UNIT-I					
2		Calculate the Fourier series for the function shown in figure 1.  Figure (1)	L3	CO1	10 M
OR					
3	a)	Find the Laplace transform of $e^{-at}u(t)$.	L3	CO1	5 M
	b)	Determine the Inverse Laplace transform of $\frac{6\,(S+2)}{(S+1)(S+3)(S+4)}$	L3	CO1	5 M
UNIT-II					
4		The Z-parameters of a two- port network is Z_{11}=15Ω, Z_{12}=Z_{21}=6Ω and Z_{22}=24Ω. Determine ABCD parameters.	L3	CO2	10 M
OR					
5		For the network shown in the figure 2, determine ABCD parameters and using these parameters calculate impedance parameters.  Figure (2)	L3	CO2	10 M

		UNIT-III			
6		Derive the expression for the current in a series RL circuit (R = 10Ω, L = 10 mH) excited by a sinusoidal voltage of 100V, 50 Hz if the supply is connected at t = 0. Assume zero initial conditions.	L3	CO3	10 M
		OR			
7	a)	What is the condition for the response of a series RLC circuit excited by DC supply to have critically damped response?	L3	CO3	5 M
	b)	Draw the time response of inductor current in a series RL circuit excited by DC supply (step response).	L3	CO3	5 M
		UNIT-IV			
8		An unbalanced connected load is connected across a balanced 3 phase RYB 440V supply. Find the wattmeter reading connected in the circuit shown in figure 3.  figure (3)	L3	CO4	10 M
		OR			

9		A balanced three phase three wire system has a Y-connected load. Each phase contains three loads in parallel: -j 100 Ω, 100 Ω and 50 + j50 Ω. Assume positive phase sequence with V_{ab} = 400volts. Find (i) V_{an} (ii) I_a A (iii) The power factor of the load (iv) The total power drawn by the load	L3	CO4	10 M
		UNIT-V			
10		Write a Short note on : i. Constant k Low pass filter ii. Constant k High pass filter	L2	CO5	10 M
		OR			
11	a)	Design a constant k low pass T Section filter having cut off frequency of 4khz and normal characteristic impedence of 500Ω.	L3	CO5	6 M
	b)	Calculate the cut-off frequency of active high pass filter circuit using a 330kΩ resistor and 100pF capacitor.	L3	CO5	4 M