Course Code: 23EE3T02

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

II-B.TechI-Semester Regular Examinations (BR23), November -2024

ELECTRICAL CIRCUIT ANALYSIS - II(EEE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B

*Answer **ALL** the question in **Part-AandPart-B***

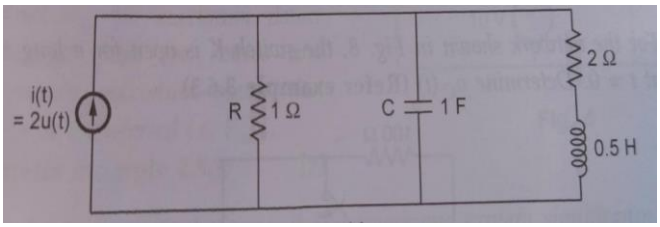
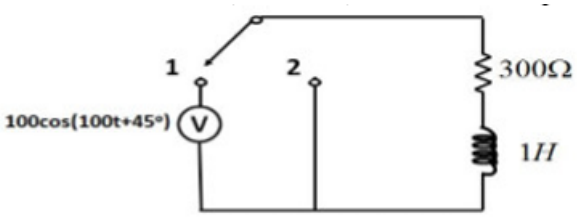
PART–A (10X2 = 20M)

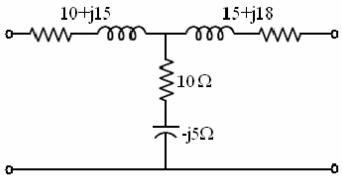
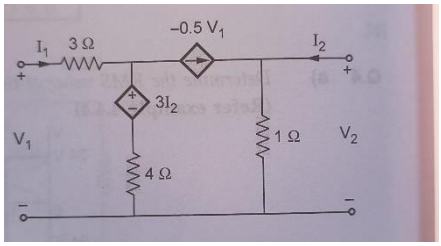
		Marks	CO	BL
1. a)	Define line current and phase voltage?	(2M)	CO1	BL1
b)	List effects of power factor on measurement of three phase power using two-watt meter method?	(2M)	CO1	BL1
c)	State the initial value theorem and final value theorem?	(2M)	CO2	BL2
d)	Find the Laplace transform of ramp function F(t) = t ?	(2M)	CO2	BL1
e)	Write the condition for symmetry in Z and Y parameters?	(2M)	CO3	BL1
f)	Write the condition for reciprocity in ABCD and h parameters?	(2M)	CO3	BL2
g)	What is effective value?	(2M)	CO4	BL1
h)	What is average value?	(2M)	CO4	BL1
i)	What is ideal filter? What is practical filter?	(2M)	CO5	BL1
j)	What are the uses of filters?	(2M)	CO5	BL1

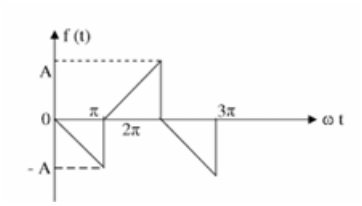
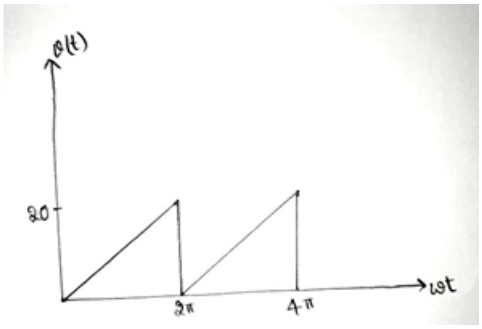
PART–B (5X10 = 50M)

2a.	Derive and explain the relationship between line voltage and phase voltage in the three-phase balanced star connected system	5(M)	CO1	BL3
b.	A balanced delta connected load of (12 + j9) ohm per phase is connected to a three phase, 400 V supply. Find (i) line current, (ii) phase current (iii) total power (iv) reactive power	5(M)	CO1	BL1
	(OR)			
3a.	Derive the expression for measurement of three phase power using two wattmeter method.	5(M)	CO1	BL3
b.	A 3-phase, 4-wire, 400 V, AC system supplies a star-connected load in which ZA = 10 ∠0° ohm, ZB =15 ∠30° ohm and ZC = 10∠–30° ohm. The phase sequence is ABC. Find currents and power absorbed.	5(M)	CO1	BL1

4a.	Derive the expression for i(t) and capacitor voltage VC(t) for series RC circuit at t =0. Also explain the time constant of RC circuit use Laplace method	5(M)	CO2	BL3
b.	Determine voltage across capacitor [Vc(t)] and current across the inductor for given circuit using Laplace method	5(M)	CO2	BL2

				
	(OR)			
5a.	For RL circuit shown in Fig. is operating in the sinusoidal steady state with the switch in position 1. The switch is moved to position 2. When the voltage source is v=100cos(100t+45). Derive the expression for current across inductor. 	5(M)	CO2	BL3
b.	Find the inverse Laplace of F(s) = $\frac{S^2+3}{(S^2+2S+5)(S+2)}$	5(M)	CO2	BL1

6a.	Two ports are connected in series, then derive the conditions for Z-parameters of overall series connection	5(M)	CO3	BL3
b.	For the two-port network given below (shown in Figure.2). Determine Y parameters.  Figure 2	5(M)	CO3	BL4
	(OR)			
7a.	Derive the Z parameters in terms of ABCD parameters.	5(M)	CO3	BL3
b.	Find the h- parameters of the network shown in below Figure 	5(M)	CO3	BL1

8a.	Derive the trigonometric form of Fourier series for the following wave form. 	5(M)	CO4	BL3
b.	Explain about the trigonometric form of Fourier series	5(M)	CO4	BL2
	(OR)			
9a.	Find the Fourier series for the given waveform 	5(M)	CO4	BL1
b.	Explain about Symmetry in Fourier Series?	5(M)	CO4	BL2

10a	Explain the classification of filters	5(M)	CO5	BL2
b.	Derive the expression low pass filter to have a cut-off at 796 Hz when terminated in a 600 ohms resistance, in both T and π configurations with neat diagram	5(M)	CO5	BL3
	(OR)			
11a	Explain Constant K filters.	5(M)	CO5	BL2
b.	Derive the expression for constant K-high pass filter T and π sections having cut-off at 5KHz and nominal characteristic impedance Ro=600 Ω with neat diagram	5(M)	CO5	BL3

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