Reg. No.												

Question Paper Code	11735

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Second Semester

Electrical and Electronics Engineering

(Common to Electronics and Instrumentation Engineering & Instrumentation and Control Engineering)

20EEPC201 - ELECTRIC CIRCUIT ANALYSIS

(Regulations2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

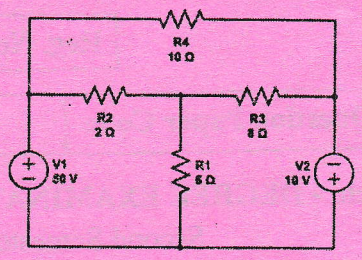
Answer ALL Questions

		Marks, K-Level, CO
1.	Define Ohm's Law.	2,K1,CO1
2.	The resistance of 1.5 Ω and 3.5 Ω are connected in parallel and this parallel combination is connected in series with a resistance of 1.95 Ω. Find the equivalent resistance value.	2,K1,CO1
3.	Relate the Norton's equivalent circuit from Thevenin's equivalent circuit.	2,K2,CO2
4.	Define Maximum power transfer theorem.	2,K1,CO2
5.	What is the time constant for series RL and RC circuits?	2,K1,CO3
6.	Compare between transient response and steady state response of a circuit.	2,K2,CO3
7.	Define self and mutual inductance of a coil.	2,K1,CO4
8.	Compare the properties of series and parallel resonant circuits.	2,K2,CO4
9.	Compare star and delta connected system.	2,K2,CO5
10.	Outline power and power factor in three phase circuits.	2,K2,CO6

PART - B (5 × 13 = 65 Marks)

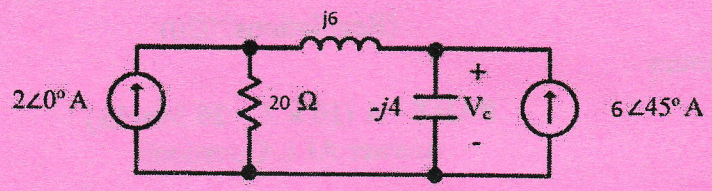
Answer ALL Questions

11.	a)	(i) Show the expressions for resistors connected in series and parallel.	6,K1,CO1
		(ii) Two 50 ohms resistors are connected in series. When a resistor R is connected across one of them, the total circuit resistance is 60 ohms. Find the value of R. If the supply voltage across the above circuit is 60V, find the current passing through individual resistance.	7,K1,CO1
		OR	
	b)	(i) Explain Kirchoff's current and voltage laws.	6,K2,CO1
		(ii) Outline the expression for star connected resistances in terms of delta connected resistances.	7,K2,CO1
12.	a)	Identify the mesh current for the given circuit.	13,K3,CO2



OR

b) Use Nodal Voltage method and identify node voltage and the power dissipated in the 20 Ω resistance for the given circuit *13,K3,CO2*



13. a) Explain about Reciprocity and Millman theorem with neat diagram. *13,K2,CO3*

OR

b) Explain about Thevenin's and Norton's theorem with neat diagram. *13,K2,CO3*

14. a) (i) For a series RLC circuit, select the condition for resonance. *6,K2,CO4*

(ii) Explain the frequency response, quality factor and bandwidth of series RLC Circuit. *7,K2,CO4*

OR

b) Show the transient response of series R-L-C circuit with DC input using Laplace transform. *13,K2,CO4*

15. a) Explain the method of measuring power in a three phase system with balanced and unbalanced load conditions. *13,K2,CO5*

OR

b) Three impedances Z_1= (17.32+j10), Z_2= (20+j34.64) and Z_3= (0-j10) ohms are delta connected to a 400V, three phase system. Find the phase currents, line currents, and total power consumed by the load. *13,K3,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) (i) Analyze the frequency response of a single tuned circuit and give its applications. *7,K3,CO6*

(ii) Illustrate the mutual inductance and the coupling coefficient of the transformer. *8,K3,CO6*

OR

b) Analyze the power and line currents using phasor diagram for the unbalanced delta connected load consisting of Z_{RY} = (5+j4), Z_{YB} = (6- j4) and Z_{BR} =(10+j12) ohms. Assume the phase sequence to be RYB, E=240 volts. *15,K3,CO6*