CODE No.: 19BT20201 SVEC-19

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-19) Regular Examinations, December - 2020

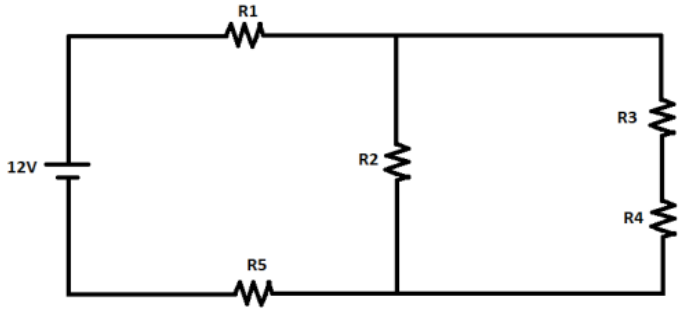
ELECTRIC CIRCUITS

[Electrical and Electronics Engineering]

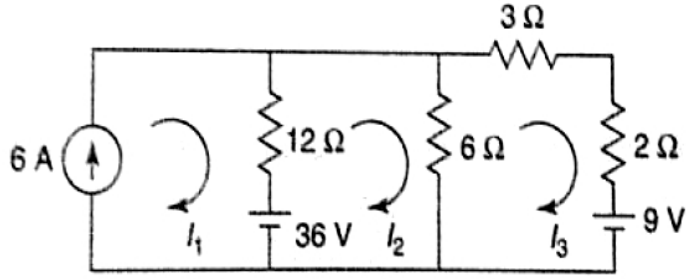
Time: 3 hours **Max. Marks: 60**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1.	a)	What is the total equivalent resistance of the circuit across 12V Source? Given that R1=5Ω, R2=3Ω, R3=1Ω, R4=2Ω, R5=2Ω.  	6 Marks	L3	CO1	PO2
	b)	Give the details of Source Transformation technique with an example.	6 Marks	L3	CO1	PO3

(OR)

2.	a)	Explain clearly about Star-delta and delta-Star transformation.	6 Marks	L3	CO1	PO3
	b)	Find the Voltage drop across the 2 Ω resistor.  	6 Marks	L3	CO1	PO2

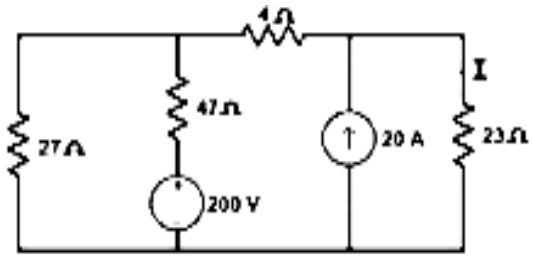
UNIT-II

3.	a)	Determine the DC response of RL and RC circuit and sketch the voltage transients.	6 Marks	L2	CO2	PO1
	b)	Derive the expression for bandwidth of series resonating circuit and its relation with Q.	6 Marks	L1	CO2	PO1

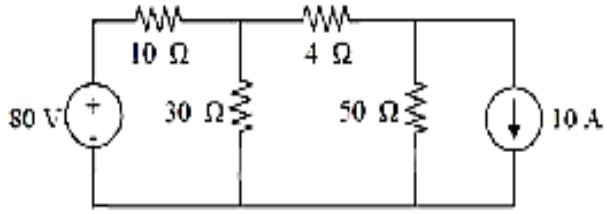
(OR)

4.	a)	In a series RLC circuit with variable capacitance, the current is at maximum value with capacitance of 20 μF and the current reduces to 0.707 times the maximum value with a capacitance of 30 μF. Find the values of R and L. What is the bandwidth of the circuit if supply voltage is V(t)=20 sin(6280t) volts?	6 Marks	L2	CO2	PO1
	b)	Elucidate measurement of power and power factor of a balanced 3 phase load with neat sketch using two Wattmeter method.	6 Marks	L2	CO2	PO1

UNIT-III

5.	a)	Compute the current in 23 Ohm resistor using super position theorem for the circuit shown. 	6 Marks	L2	CO3	PO1
	b)	State and explain Thevenin's theorem with an example.	6 Marks	L2	CO3	PO3

(OR)

6.	a)	Verify the Tellegen's theorem for the circuit shown. 	6 Marks	L1	CO3	PO2
	b)	Explain duality in electrical engineering. State the steps followed in finding the dual of a network.	6 Marks	L3	CO3	PO3

UNIT-IV

7.	a)	i) What is mutual inductance? How it is related with the self-inductance of coils. ii) What is the equivalent inductance if inductor L1 = 5H and L2= 15 H are connected in parallel with opposing mutual inductance M= 5H?	6 Marks	L1	CO4	PO2
	b)	Derive the expression of the coefficient of coupling for the coupled circuit.	6 Marks	L2	CO4	PO2

(OR)

8.	a)	Define and explain self and mutual inductance.	6 Marks	L2	CO4	PO4
	b)	Write the comparison between series resonance and parallel resonance.	6 Marks	L2	CO4	PO4

UNIT-V

9.	a)	Design a constant **K**-high pass filter and explain its design procedure in detail.	6 Marks	L2	CO4	PO2
	b)	Explain the classification of pass band and stop band in detail.	6 Marks	L3	CO4	PO3

(OR)

10.	a)	Derive necessary expressions for m-derived high pass filter.	6 Marks	L3	CO4	PO4
	b)	Design a band elimination filter and explain its design procedure in detail.	6 Marks	L2	CO4	PO1

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