MALLA REDDY UNIVERSITY
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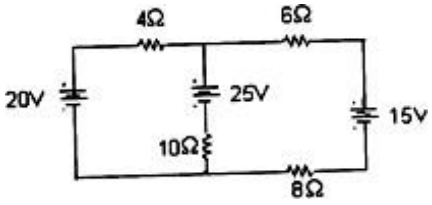
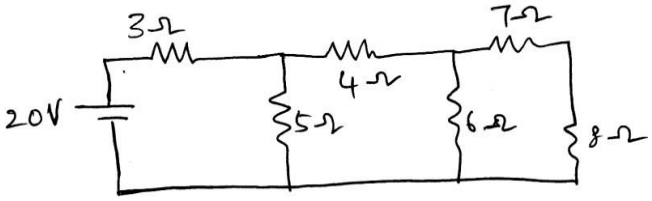
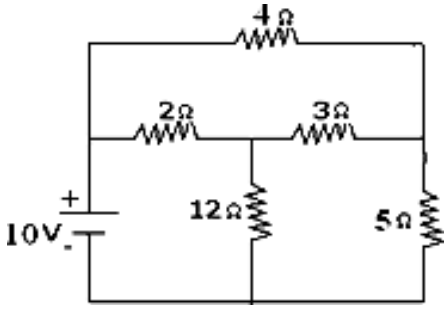
School of Engineering

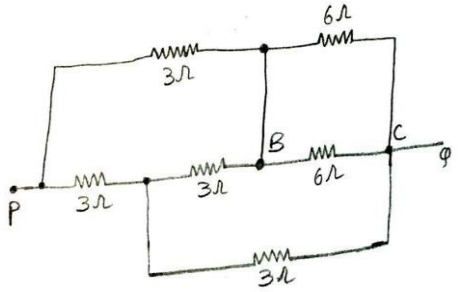
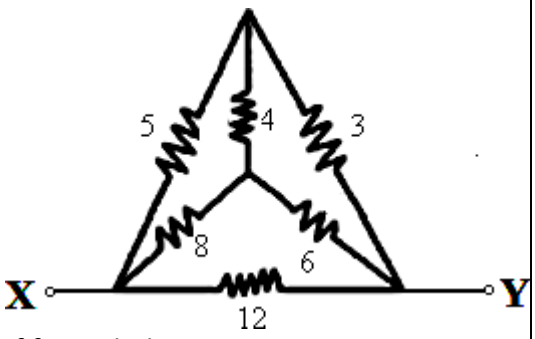
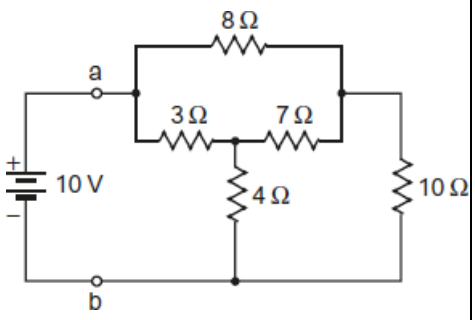
Question Bank

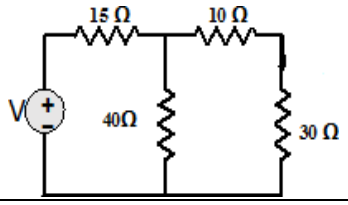
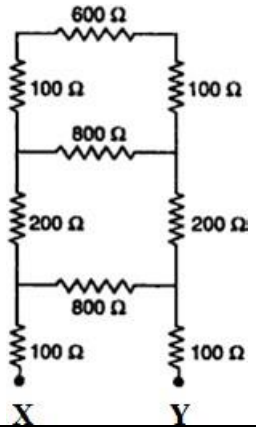
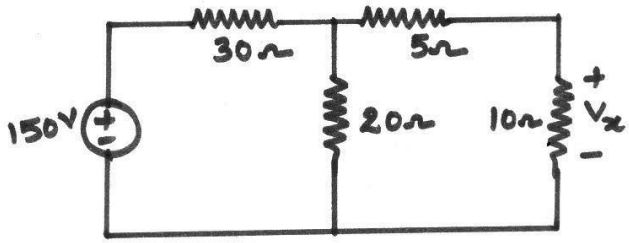
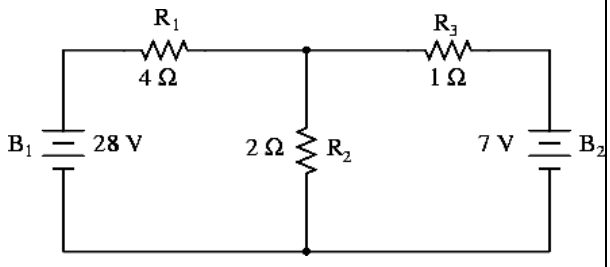
I Year B. Tech – I Semester – 2023-24

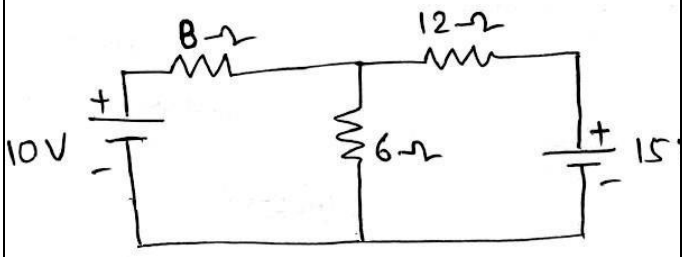
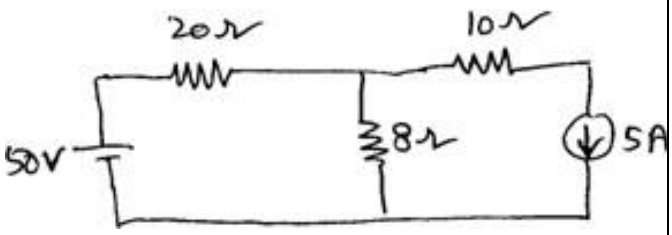
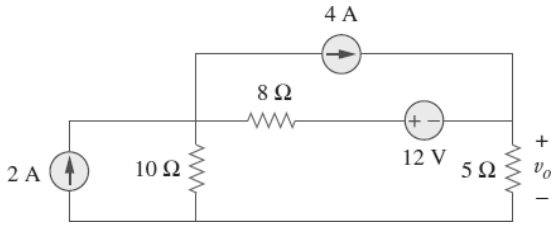
Basic Electrical And Electronics Engineering

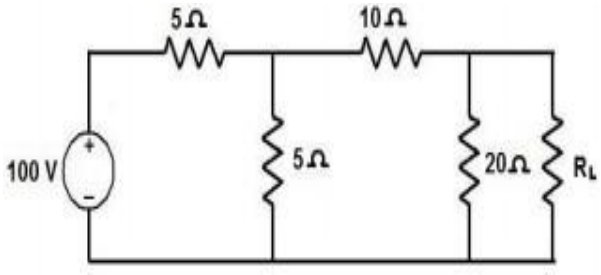
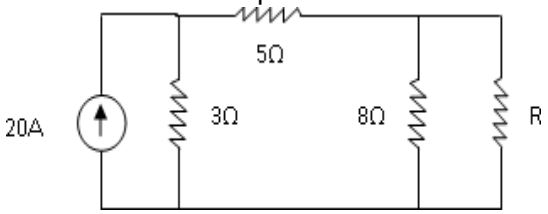
(MR23-1ES0101)

Q. No	Question	Course Outcome	Question Level	Marks	Section	Unit
1	a) State and explain Kirchhoff's laws. b) By applying Kirchhoff's law, find the power across each of the elements in the circuit as shown in the figure 	CO1	Easy	4 4	Section- I	1
2	a) Explain about different types of sources. b) Find the power dissipated in the 4Ω resistor of the following circuit shown below. Use mesh analysis. 	CO1	Medium	4 4	Section- I	1
3	Find the current supplied by 10V battery for the following network shown in figure by using mesh analysis. 	CO1	Complex	8	Section- I	1

4	Calculate the equivalent resistance across terminals P and Q for the network shown below. 	CO1	Complex	8	Section- I	1
5	a) Find the equivalent resistance across X, Y  terminals of figure below. b) b) Using delta to star transformation, determine the resistance between terminals a and b and the total power drawn from the supply in the circuit for the following figure. 	CO1	Medium	4 4	Section- I	1
6	Determine the current flowing through 15 Ω, 30 Ω and 40 Ω resistors if the applied DC voltage is 220 V. Also find power dissipated in 10 Ω resistor shown in figure.	CO1	Easy	8	Section- I	1

						
7	Three equal resistors each of R ohms are connected in delta. Derive the value of resistors in equivalent star.	CO1	Easy	8	Section- I	1
8	Find the equivalent resistance between two points x, y of figure shown below. 	CO1	Medium	8	Section- I	1
9	a) State and explain Thevenin's theorem. b)Calculate VX in the circuit shown in below figure. 	CO2	Easy	4 4	Section- II	2
10	Solve network shown in below Figure using Thevenin's equivalent circuit and find current through 2ohms resistor. 	CO2	Easy	8	Section- II	2

11	a) State and Explain Superposition theorem. b)Using superposition theorem, determine the current through 12-ohm resistor shown in following figure. 	CO2	Medium	4 4	Section- II	2
12	Using superposition theorem, find the current through the 8 Ω resistor, as shown in below figure. 	CO2	Complex	8	Section- II	2
13	Find vo using superposition theorem in the circuit shown in figure below. 	CO2	Complex	8	Section- II	2

14	Find the value of R_L so that maximum power is delivered to the load resistance and also find the maximum power delivered for the figure shown below. 	CO2	Medium	8	Section- II	2
15	In the circuit as shown in following figure , maximum power is absorbed by the resistance R. Compute the value of R and the value of maximum power consumed. 	CO2	Medium	8	Section- II	2
16	Define RMS value and Average value of an alternating quantity. Determine these values for a half wave rectified sine wave.	CO2	Easy	8	Section- II	2
17	a) Derive an emf equation of a single-phase transformer. b)A 30 KVA single phase transformer has 500 turns on primary and 60 turns on secondary winding. The primary is connected to 300 volt, 50Hz supply. Find the full load primary and secondary currents, secondary emf and the maximum flux in the core. Neglect leakage drop and no-load current.	CO3	Easy	4 4	Section- III	3
18	a) How a Single-phase transformer works? Explain. b)A 2200/220 V, 50Hz single phase transformer has emf per turn of approximately 10 V. Calculate a) the number of primary and secondary turns b) the cross-sectional area of the core if the maximum flux density is limited to 1.5 T.	CO3	Easy	4 4	Section- III	3
19	Explain working Principle and operation of DC motor.	CO3	Medium	8	Section- III	3

20	a)Derive EMF equation of DC generator. b)Derive the Torque equation of DC motor.	CO3	Easy	4 4	Sectio n- III	3
21	Explain the Constructional details of DC generator.	CO3	Medi um	8	Sectio n- III	3
22	Explain about the construction of single-phase Transformer.	CO3	Easy	8	Sectio n- III	3
23	a)Explain the applications of stepper motor in detail. b)Explain the applications of Induction motor in detail.	CO3	Comp lex	4 4	Sectio n- III	3
24	Explain the applications of B L D C motor in detail.	CO3	Easy	8	Sectio n- III	3
25	Illustrate the operation Zener diode and explain its V − I characteristics.	CO4	Easy	8	Sectio n- IV	4
26	Draw the forward and reverse characteristics of a p-n junction diode and explain them.	CO4	Medi um	8	Sectio n- IV	4
27	a)Explain the operation of Center-tapped full wave rectifier with relevant waveforms. b)Derive expression for ripple factor for a full wave rectifier.	CO4	Medi um	4 4	Sectio n- IV	4
28	Explain the operation of Half Wave Rectifier with necessary waveforms.	CO4	Easy	8	Sectio n- IV	4
29	Compare Half wave rectifier and Full wave rectifier in any four aspects.	CO4	Easy	8	Sectio n- IV	4
30	Explain the construction and principle of operation of NPN transistor with neat diagram.	CO4	Medi um	8	Sectio n- IV	4
31	Explain the construction and principle of operation of PNP transistor with neat diagram.	CO4	Medi um	8	Sectio n- IV	4
32	a)Explain the Classification of batteries for Electric Vehicle (Lithium-Ion) b)Explain the Applications of various batteries for Electric Vehicle (Lithium-Ion)	CO4	Comp lex	4 4	Sectio n- IV	4
33	Perform the following conversions $(476.64)_{10} = (\ )_2 = (\ )_8$	CO5	Easy	8	Sectio n- V	5
34	a) Convert $(946)_{10}$ into Hexadecimal. b) Find X for the following conversion $(367)_8=(x)_2$	CO5	Medi um	4 4	Sectio n- V	5
35	Solve for x for the following $(B9F.AE)_{16} = (x)_8 = (x)_{10}$	CO5	Medi um	8	Sectio n- V	5
36	Express the following numbers into decimal: $(10110.0101)_2$, $(16.5)_{16}$, $(26.24)_8$.	CO5	Medi um	8	Sectio n- V	5
37	Explain various number systems and their	CO5	Medi um	8	Sectio n- V	5

	conversion with examples for each.					
38	Explain about AND, OR, NOT, NAND, NOR and EX-OR gates in detail.	CO5	Medium	8	Section- V	5
39	a)Perform the following arithmetic using 2's complement method. i)101111-100110 ii) 111001-011010 b)Convert the given gray code number to equivalent binary 001001011110010.	CO5	Complex	4 4	Section- V	5
40	Convert the given Octal number $(61234.03)_8$ to Hexadecimal Number and Decimal Number.	CO5	Easy	8	Section- V	5