CMR TECHNICAL CAMPUS
UGC AUTONOMOUS
B.Tech. I Semester, Question Bank
Department of H&S

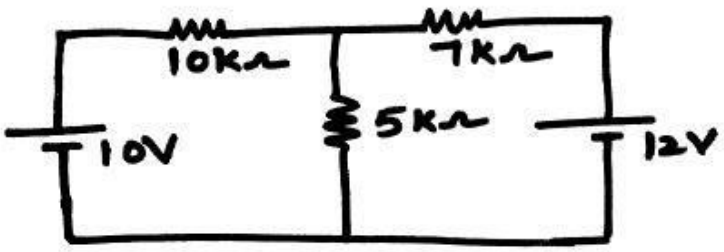
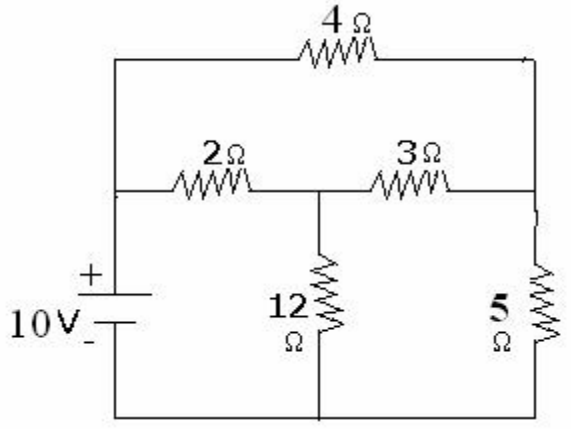
Subject:Basic Electrical and Electronics Engineering
Academic Year:-2024-25 **Semester:-I/II**
Subject Code:22EC104ES/22EC204ES

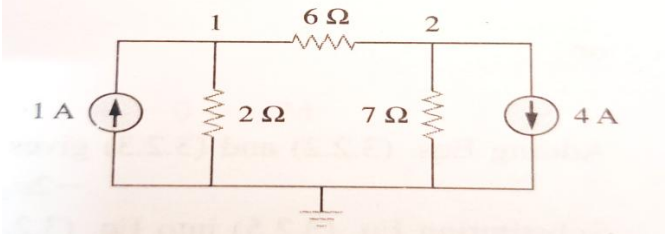
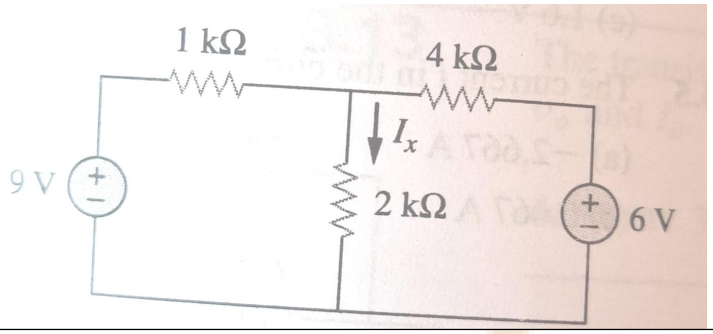
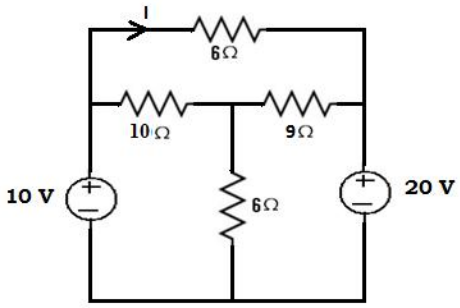
PART -A

Q. No	Question	Marks	BL	CO	Unit no
1	Define ohm's law and write its limitations.	2 M	L1	CO1	I
2	Define Active and Passive elements	2 M	L1	CO1	I
3	When 3 capacitors are connected in parallel, find the equivalent capacitance value.	2 M	L2	CO1	I
4	Demonstrate current division principle.	2 M	L2	CO1	I
5	Explain Source transformation technique.	2 M	L2	CO1	I
6	Define Linear and Non-Linear elements.	2 M	L1	CO1	I
7	Define i)Instantaneous value ii)Peak value,	2 M	L1	CO2	II
8	Justify why practically series LC combination is NOT Possible.	2 M	L2	CO2	II
9	Justify among all the periodic waves why sine wave is used to represent A.C quantities.	2 M	L2	CO2	II
10	Define power factor. What are the causes for low power factor?	2 M	L1	CO2	II
11	Define i)Apparent power, ii) Active power iii) Reactive power.	2 M	L1	CO2	II
12	Define the Average value of a sinusoidal quantity.	2 M	L1	CO2	II
13	Justify why transformer is rated in KVA not in KW.	2 M	L2	CO3	III
14	Differentiate Core type and Shell type transformers.	2M	L1	CO3	III
15	Justify why transformer should not operate with DC supply.	2 M	L2	CO3	III
	UPTO MID-I				
16	State Fleming's Left Hand Rule.	2 M	L1	CO3	III
17	Explain the significance of "BACK EMF" DC motors.	2M	L2	CO3	III
18	Define Slip speed, Slip and Rotor current frequency.	2M	L1	CO3	III
19	Define Static and Dynamic resistances of diode.	2M	L1	CO4	IV
20	Define Ripple factor. What is the use of filter in rectifier circuit.	2M	L1	CO4	IV
21	List the applications of diode.	2M	L1	CO4	IV
22	What is Peak Inverse Voltage in Center tap FWR?	2M	L1	CO4	IV
23	Draw the V-I Characteristics of Zener diode.	2M	L1	CO4	IV

24	Define Transformer Utilization Factor of Rectifier.	2M	L1	CO4	IV
25	Draw the V-I characteristics of SCR.	2M	L1	CO5	V
26	Show how α and β are related to each other.	2M	L1	CO5	V
27	Define current amplification factor for different transistor configurations.	2M	L1	CO5	V
28	Explain the different types of operating regions of transistor.	2M	L1	CO5	V
29	What is amplifying?	2M	L1	CO5	V
30	What is the basic condition of a transistor to operate.	2M	L1	CO5	V

PART-B

Q. No	Question	Marks	BL	CO	Unit no
1	Analyse the V-I relationship between R L C Parameters.	4 M	L4	CO1	I
2	State and explain Kirchoff's laws.	4 M	L2	CO1	I
3	Explain about different types of Energy sources.	4 M	L2	CO1	I
4	Using loop analysis, determine the current through the 5kΩ resistor for the circuit in figure 	4 M	L3	CO1	I
5	Find the current supplied by the source usingstar to delta transformation. 	4 M	L3	CO1	I
6	Find the node voltages using nodal Analysis.	4 M	L3	CO1	I

					
7	Develop the relations to transform Star to Delta and Delta to Star connections.	8 M	L4	CO1	I
8	For the network shown below find Ix using loop Analysis and Nodal Analysis. 	8 M	L3	CO1	I
9	Using mesh analysis and Nodal Analysis find the current 'I' in the circuit shown in figure 	8 M	L3	CO1	I
10	Derive the expression for Average value, RMS value of an alternating sinusoidal current wave form.	4 M	L3	CO2	II
11	A resistance of 30Ω, and a capacitance of 200μF are connected in series across a 230V, 50Hz supply. Find (i) Current (ii) Phase angle iii) Voltage across each element. iv) Active and Reactive power	4 M	L2	CO2	II
12	Explain in detail about series RC circuit with sinusoidal excitation.	4 M	L3	CO2	II
13	A circuit consists of a resistance of 100Ω, a capacitance of 200 μF and inductor of 0.05H all in series. If supply of 230V, 50Hz is applied to the ends of circuit. Calculate i) Current ii) voltage across each element iii) Phase angle iv) power factor.	4 M	L2	CO2	II
14	Explain in detail about series RL circuit with sinusoidal excitation..	4 M	L2	CO2	II
15	Find the form factor and Peak factor for Half wave rectifier output	4 M	L2	CO2	II
16	Derive expression for relation between phase and line voltages and currents of 3-phase balanced Star and Delta connections.	8 M	L3	CO2	II

17	Explain in detail about series RLC circuit with sinusoidal excitation.	8 M	L3	CO2	II
18	Find the form factor and Peak factor for Sawtooth wave and Square waveform.	8 M	L3	CO2	II
19	Explain the construction and working of single phase transformer.	4M	L1	C03	III
20	Derive the EMF equation of single phase transformer.	4M	L3	C03	III
21	Explain the different types of losses that occurs in transformer.	4M	L2	C03	III
22	Define Efficiency and derive the condition for maximum efficiency in transformer.	4M	L3	C03	III
23	Draw the equivalent circuit of transformer referred to i) Primary and ii) secondary. And write expression for Impedance	4M	L1	C03	III
	UPTO MID-I				
24	Three phase induction motor is wound for 6-poles and is supplied from a 50HZ supply. Find i)The synchronous speed ii) The speed of the motor when the slip is 3% iii) The rotor frequency when the speed of the rotor is 900 rpm	4M	L2	C03	III
25	Derive the Torque equation of DC Motor.	4M	L2	C03	III
26	. Explain the construction and working of DC Motor.	4M	L4	C03	III
27	Explain the construction parts and working of single loop dc generator.	4M	L3	C03	III
28	Explain the construction and working of three phase induction motor.	4M	L4	C03	III
29	Explain the construction and working of Half wave Rectifier.	4M	L2	C04	IV
30	With neat diagram explain the V-I characteristics of Zener diode. Explain how the Zener diode will acts as a voltage regulator.	4M	L2	C04	IV
31	With neat diagram Explain the V-I characteristics of PN Junction diode.	4M	L2	C04	IV
32	A crystal diode having internal resistance $r_f = 20\Omega$ is used for half-wave rectification. If the applied voltage v = 100sin ω t and load resistance $R_L = 900\ \Omega$, find :(i) Im, Idc, Irms (ii) A.C. power input and D.C power output (iii) d.c. output voltage (iv) efficiency of rectification.	4M	L2	C04	IV
33	A full-wave rectifier uses two diodes, the internal resistance of each diode may be assumed constant at 10 Ω. The transformer r.m.s. secondary voltage from center tap to each end of secondary is 50 V and load resistance is 1KΩ. Find (i) the mean load current (ii) the r.m.s. value of load current (iii) PIV and TUF iv) Ripple factor.	4M	L4	C04	IV
34	Explain the construction and working of center-Tap full wave Rectifier.	4M	L2	C04	IV

35	Explain the construction and working of Half wave Rectifier? Derive the expression for i)Ripple factor ii)rectification efficiency iii) PIV iv) TUF.	8M	L3	C04	IV
36	Explain the construction and working of center-Tap full wave Rectifier.Derive the expression for i)Ripple factor ii)rectification efficiency iii) PIV iv) TUF.	8M	L3	C04	IV
37	Explain the construction and working of Bridge Rectifier.Derive the expression for i)Ripple factor ii)rectification efficiency iii) PIV iv) TUF.	8M	L3	C04	IV
38	Explain the working of PNP Transistor.	4M	L2	C05	V
39	Explain the working of NPN Transistor.	4M	L2	C05	V
40	Compare CB, CE and CC configurations of transistor.	4M	L2	C05	V
41	Explain how the transistor acts as an amplifier.	4M	L2	C05	V
42	Explain the input characteristics of a transistor in CB configuration.	4M	L2	C05	V
43	Explain the input characteristics of a transistor in CC configuration.	4M	L3	C05	V
44	Explain the input and output characteristics of a transistor in CB configuration.	8M	L3	C05	V
45	Explain the input and output characteristics of a transistor in CE configuration.	8M	L3	C05	V
46	With the help of V-I characteristics describe the working principle of SCR.	8M	L3	C05	V

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