SNS COLLEGE OF TECHNOLOGY

DEPARTMENT OF AIDS

Course Code & Name : **_23EET103 ELECTRIC CIRCUITS & ELECTRON DEVICES_**

Course Faculty   : Ms.RANJANI K

Question Bank

Unit I- Electrical circuits

	Part-A	BL	Company Name / GATE Year
1.	Define a conductor and explain its role in an electrical circuit.	L -1	GATE EE 2020
2.	What is Ohm's Law? State its limitations.	L -1	GATE EE 2021
3.	Differentiate between a resistor and an inductor in terms of their behaviour in a DC circuit.	L -2	GATE EE 2019
4.	State Kirchhoff's Current Law (KCL) and Voltage Law (KVL).	L -1	
5.	What is meant by a series circuit? Give an example.	L -1	GATE EE 2022
6.	Explain the difference between independent and dependent sources in electrical circuits.	L -2	Gk Power
7.	Define a sinusoidal waveform and its graphical representation.	L -1	GATE EE 2022
8.	What is the RMS value of an AC waveform? How is it different from the average value?	L -2	SIEMEN S
9.	Define power factor in an AC circuit.	L -1	Gk Power
10	What is apparent power? How does it relate to real and reactive power?	L -2	GATE EE 2022

	Part-B	BL	Company Name / GATE Year
1.	Explain the basic components of a DC circuit: conductor, resistor, inductor, and capacitor.	L-2	GATE EE 2021
2.	State and prove Kirchhoff's Laws with a suitable example circuit.	L-2	SIEMENS
3.	Describe in detail the series and parallel combination of resistors. Derive the expressions for equivalent resistance in both combinations.	L-3	GATE IN 2021

		BL	Company Name / GATE Year
4.	concept of power in AC circuits, Also explain real power, reactive power, apparent power and power factor with necessary expressions.	L-3	LECS
5.	Derive the expressions for RMS and average value of a sinusoidal waveform	L-3	GATE IN 2019
6.	Explain the basic components of a DC circuit: conductor, resistor, inductor, and capacitor.	L-2	GATE EE 2021
7.	State and prove Kirchhoff's Laws with a suitable example circuit.	L-2	SIEMENS
8.	Describe in detail the series and parallel combination of resistors. Derive the expressions for equivalent resistance in both combinations.	L-3	GATE IN 2021
9.	concept of power in AC circuits, Also explain real power, reactive power, apparent power and power factor with necessary expressions.	L-3	LECS
10.	Find the equivalent Resistance between the terminals A and B	L-3	
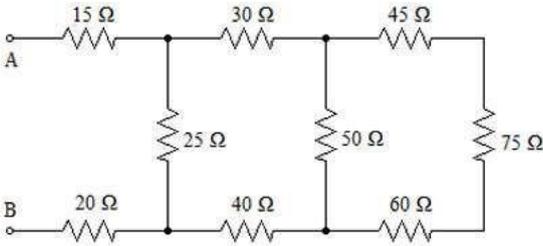
CASE BASED/APPLICATION BASED

	Part-C	BL	Company Name / GATE Year
1.	An electric vehicle's headlamp circuit uses a 12 V battery. Two 6 Ω lamps are connected in parallel. Determine the current drawn and power consumed by the system.	L-3	Gate 2017
2.	A robotic arm control circuit requires constant current operation. Explain how Ohm's law can be applied to design a current-limiting resistor for a 5 V, 500 mA servo.	L-3	ABB Robotics / FANUC
3.	A PCB trace behaves as a resistor of 0.05 Ω. If a current of 2 A passes through, calculate the voltage drop and discuss its impact on microcontroller performance.	L-4	Intel / Bosch Embedded Systems
4.	In a network containing 3 resistors (10 Ω, 15 Ω, 20 Ω) connected in series, find total resistance and current for a 30 V source. Discuss the impact if one resistor fails open.	L-4	GE Industrial / L&T Electricals
5.	A household appliance has a rating of 1000 W, 230 V, PF = 1. Compare its current and apparent power with an induction motor of same power but PF = 0.7.	L-4	Bosch