PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 26 – 12- 2025   **Time:** 1.00pm to 04.00pm

School: SOE	**Program:** B.Tech
Course Code: EEE2002	**Course Name:** Electrical Circuit Analysis
Semester: MK	**Max Marks**: 100 **Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	24	24	26	26	-

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

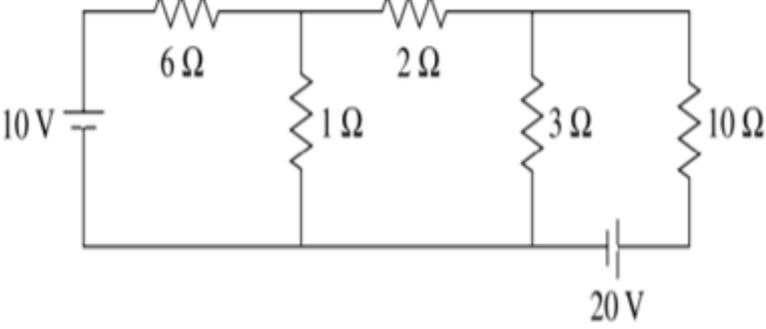**Answer ALL the Questions. Each question carries 2marks.**   **10Q x 2M=20M**

1.	In the network shown below, the power absorbed by 4Ω resistor is 100W. Find Vs.	2 Marks	L3	CO1
2.	Find RAB in the given network.	2 Marks	L3	CO1

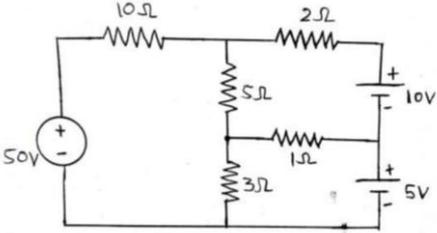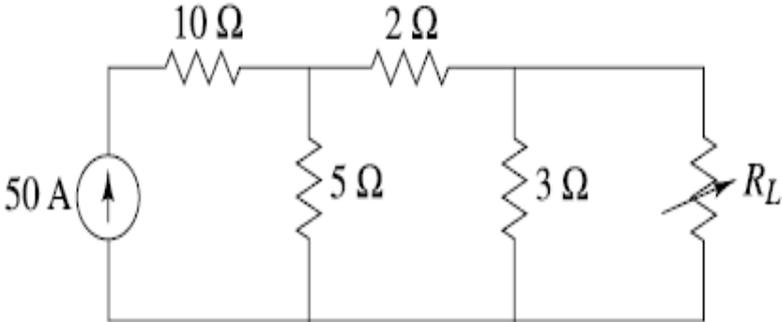| 3.	Thevenin's theorem provides a technique by which the fixed part of the circuit is replaced by an equivalent circuit. While applying Thevenin's theorem (Ideal Case) across load resistance it is replaced by ___to find the ___and independent sources are turned off while finding___	2 Marks	L2	CO2
4.	Write the condition for maximum power transfer in DC circuits.	2 Marks	L1	CO2
5.	A coil of resistance 3 Ω and inductance 100 mH is connected in series with a 100 µF capacitor across a 220 V, 50 Hz supply. Calculate (i) Impedance of the circuit	2 Marks	L3	CO3
6.	A series resonating circuit has R=1 kΩ, half power frequencies of 10 kHz and 90 kHz. Determine the bandwidth and the resonant frequency.	2 Marks	L3	CO3
7.	Draw the phasor diagram of RL circuit.	2 Marks	L1	CO3
8.	Write two important purposes of star-delta transformation.	2 Marks	L2	CO4
9.	Define power factor and draw power triangle	2 Marks	L1	CO4
10.	Define Z-parameters and list the conditions for reciprocity and symmetry.	2 Marks	L1	CO4

Part B

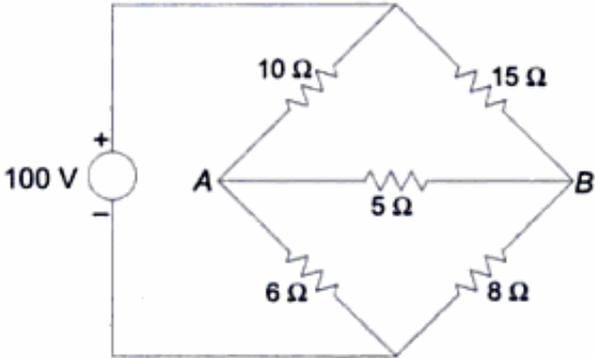### Answer the Questions.　　　　　　　　　　　Total Marks 80M

11.	a.	Kirchhoff's Voltage Law, or KVL, states that "in any closed loop network, the total voltage around the loop is equal to the sum of all the voltage drops within the same loop," which is also equal to zero. In other words, the algebraic sum of all voltages within the loop must be equal to zero. a) Identify the unknown quantities that could be computed from the given data[4M] b) Compute the unknown parameter [16M]	20 Marks	L3	CO1
		Or			

12.	a.	Compute the current passing through all the resistors for the circuit below.	20 Marks	L3	CO1

13.	a.	In some applications, the purpose of a circuit is to provide maximum power to a load. Some examples include stereo amplifiers, Radio transmitters, and Communications equipment. Our question is: If you have the following system used in those examples, compute the value of load RL that should be connected to the system so that the load receives the maximum power that the system can deliver?	20 Marks	L3	CO2

Or

14.	a.	Compute the current in 5Ω resistor using Thevenin's theorem.	20 Marks	L3	CO2

15.	a.	A series RLC circuit consists of R=100 Ω, L = 0.02 H and C = 0.02 µF. Calculate the frequency of resonance. A variable frequency, sinusoidal voltage of constant RMS value of 50 V is applied to the circuit. Find the frequency at which the voltage across L and	20 Marks	L3	CO3

		C is maximum. Also calculate voltages across L and C at frequency of resonance and maximum current in the circuit.			
		Or			
16.	**a.**	In the network the switch is moved from the position 1 to 2 at t = 0, the steady state condition having been established in the position 1. Determine i(t) for t > 0 using Laplace transforms.	**20 Marks**	**L3**	**CO3**

17.	**a.**	In a delta-connected, three-phase system, the line current is equal to 1.73 times the phase current Also the line voltage is equal to the phase voltage. In this type of system, three equal delta connected load of impedance (8 - j 6) ohm per phase is connected to a 3 phase 230 V, 50 Hz supply. a. Identify the unknown parameters that could be computed from the given data. b. Compute the unknown parameters.	**20 Marks**	**L3**	**CO4**
		Or			
18.	**a.**	In the circuit given below a. Identify the two port network parameters that could be computed. b. Compute any 5 parameters by framing the two-port network equations	**20 Marks**	**L3**	**CO4**