

Roll no.

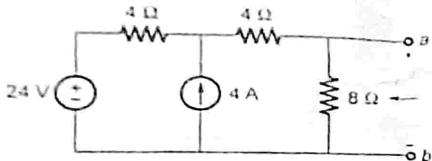
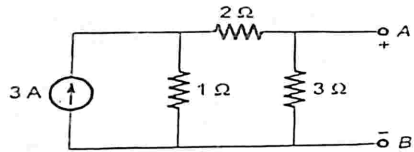
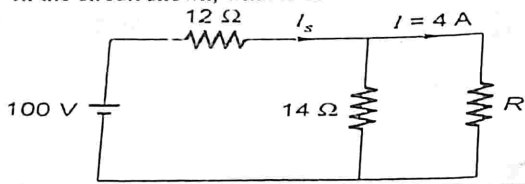
Sub Code: HEE-160

B.Tech- 1st Year  
Even Semester  
Minor - I: Session- 2025-2026  
Subject: Basic Electrical Engineering

Max. Marks: 20

Time: 2 Hr.

Note: Attempt ALL questions. Each question carries equal marks.

Q.1	Attempt any TWO parts of the following. (Unit -1 & Unit 2)	Marks	CO	BL	PO	PI Code
a.	State and explain "Maximum Power Transfer Theorem" for DC network. Also mention any two applications of Maximum Power Transfer Theorem.	4	2	1.2	1.5	1.3.1
b.	Applying Norton's Theorem, calculate equivalent current source ( $I_N$ ) and equivalent resistance $R_N$ across the terminals a and b.	4	2	1.2	1	1.3.1
c.						
c.	If a series RLC circuit resonates at 1.5kHz and consumes 100 watt from a 100 volts AC source operating at resonant frequency with a bandwidth of a 0.75Hz. Calculate the values of R, L, and Q-factor of the circuit.	4	3	1.2	1	1.3.1
Q.2	Attempt any TWO parts of the following. (Unit -1)					
a.	Explain the following: i. Bilateral and Unilateral Network ii. Lumped and Distributed Network	3	1	1.2	1	1.3.1
b.	Calculate the Thevenin's equivalent of the circuit that is $V_{th}$ and $R_{th}$ across the terminals A and B.	3	2	1.2	1	1.3.1
c.						
c.	In the circuit shown, what is the value of R will result in $I = 4A$ ?	3	2	1.2	1	1.3.1
						
Q.3	Attempt any TWO parts of the following. (Unit -2)					
a.	State and explain phasor diagrams for the series and parallel RLC circuit at resonance.	3	3	1.2	1	1.3.1
b.	A balanced load of 30 ohm per phase is connected in star across a 400V, 3-phase supply. Calculate the line current and total power consumed.	3	3	1.2	1	1.3.1
c.	In a series RLC Circuit, $R= 50\Omega$ , $L= 0.2H$ , and $C= 95\mu F$ . Find the resonant frequency ( $f_r$ ), quality factor (Q), Bandwidth (BW), lower cut-off frequency ( $f_l$ ), and upper cut-off frequency ( $f_u$ ).	3	3	1.2	1	1.3.1

BL - Bloom's Taxonomy Levels (1-Remembering, 2- Understanding, 3- Applying, 4- Analysing, 5- Evaluating, 6- Creating)

CO- Course Outcomes

PO- Programs Outcomes

PI Code- Performance Indicator Code