



VIT

Vellore Institute of Technology

Vellore - 632014, Tamil Nadu, India
SCHOOL OF ELECTRICAL ENGINEERING
FALL SEMESTER 2024-2025
CAT-1

A1 + TAI

Programme: B. Tech	Branch: Common to all branches except SENSE	Course code: BEEE102L
Course Name: Basic Electrical and Electronics Engineering		Date: 25/08/2024
Class Nbr: VL2024250106418, 6419, 6420, 6421, 6422, 6440, 6441, 6442, 6444, 6445, 6524, 6647, 6670, 7060, 7067, 9161	Max Marks: 50	Duration: 90 mins
Faculty name(s): Vanishree. J, Raghunathan T, Satyajit Das, Washima Tasnin, Rajesh kumar Lenka, Saravana kumar R, Jakeer Hussain, Venkataramana Kasi, Gokulakrishnan G, Mukul Chankaya, Brisilla R M, Mageshvaran R, Geethanjali P, Mrutunjaya Panda, Raju J, Udhayanan S		

General instruction(s): 1. Answer ALL Questions (5*10=50)

S.No	Questions	Marks
1.	Solve for voltage V_0 using mesh analysis for the circuit in Fig. 1	10
2.	Use superposition to find the current i for the circuit in Fig. 2. Calculate the power delivered to 3Ω resistor.	10

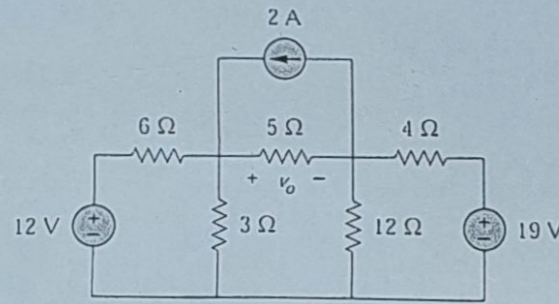


Fig. 1

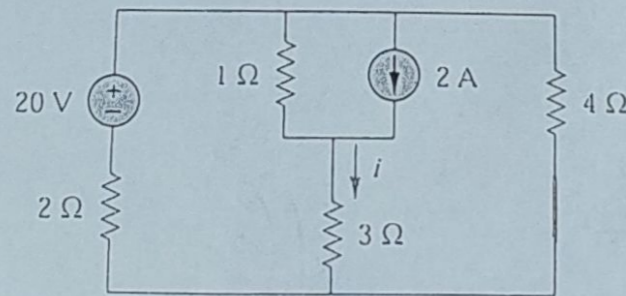


Fig. 2

3. Find the value of R for which maximum power is dissipated for the circuit in Fig. 3. Calculate the value of maximum power.

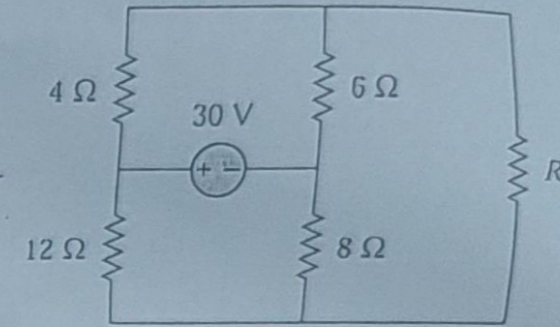


Fig. 3

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4. A voltage $v(t) = 100\sin(314t + 20^\circ)$ is applied to a series RL circuit having $R = 10\Omega$, $L = 15\text{ mH}$ as shown in Fig. 4. Calculate:

- Current $i(t)$
- Voltage drop across the resistor
- Power factor
- Active power consumed by the circuit
- Reactive power delivered by the inductor

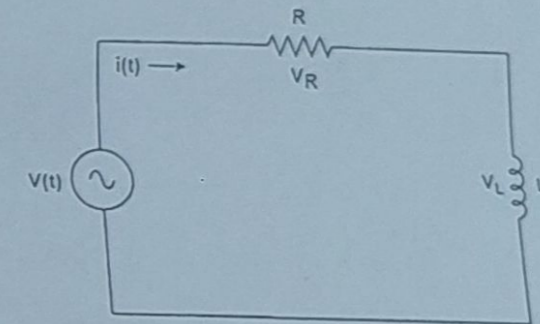


Fig. 4

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5. For the circuit shown in Fig. 5, the source voltage of 230V, 50Hz is supplied.

- Calculate total impedance Z and current i
- Calculate V_R , V_L and V_C
- Calculate circuit power factor

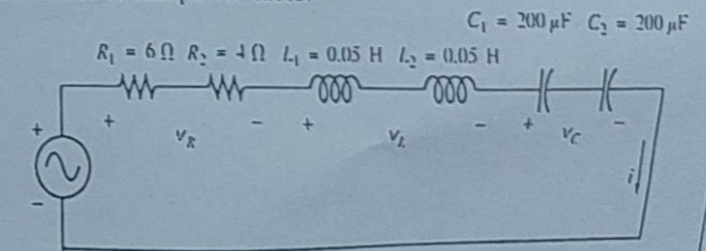


Fig. 5

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