B.Tech End Semester Examination-2024

Name of the course: B.Tech
Name of the Paper: Basic Electrical Engineering

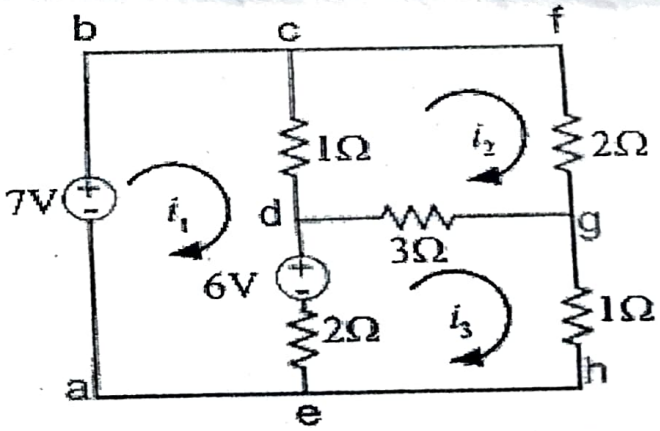
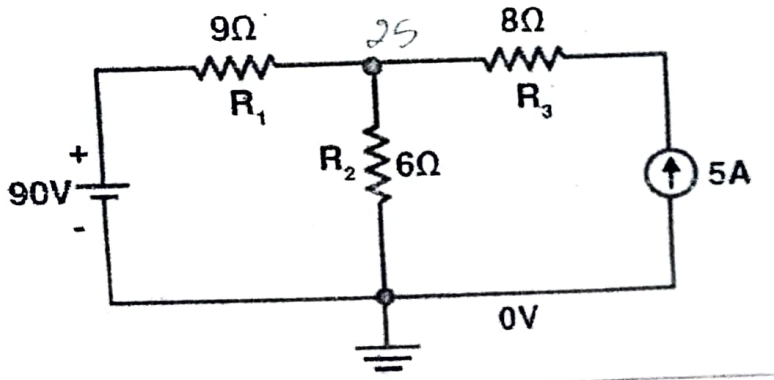
Semester: II
Course Code: TEE-201

Time: 3:00 Hrs

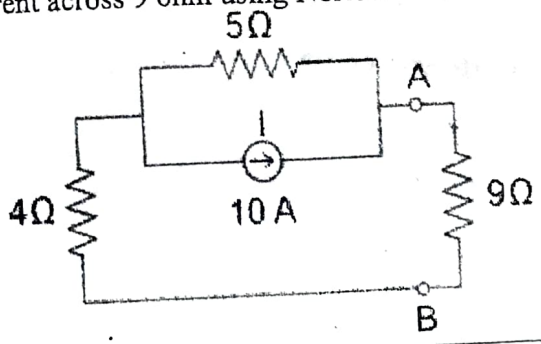
Maximum Marks: 100

Note:

(i) All questions are compulsory.
(ii) Answer any two sub questions among a, b and c in each main question.
(iii) Total marks in each main question are twenty.
(iv) Each question carries 10 marks.

Q1		(10 * 2= 20 marks)	
a)	Using mesh analysis, Find the value of the currents I_1, I_2 and I_3 flowing clockwise in the first, second and third mesh respectively. 		CO1
b)	Calculate Current in 6 ohm using nodal analysis. 		

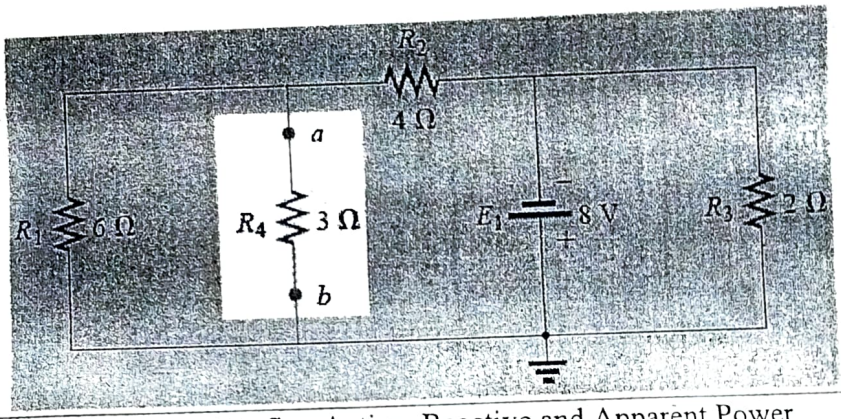
c) Calculate current across 9 ohm using Norton's theorem.



(10 * 2= 20 marks)

Q2

a) Calculate the current through the load resistance (R_4) = 3 Ω using Thevenin's theorem.



CO2

b) i) What is power? Define Active, Reactive and Apparent Power with Power triangle.
ii) A motor draws 5 A when supplied from a 110 V AC supply. The power factor is 0.8 lagging. What is the power consumed by the motor?

c) Explain power factor with its significance in AC.

(10 * 2= 20 marks)

Q3

a) A capacitor and 50-ohm resistances are connected in series to an alternating current supply. The voltage across the capacitor is 200 V RMS and across the resistor is 150 V RMS. Determine:
i) RMS value of supply voltage
ii) Peak value of the voltage across capacitor assuming sine wave

CO2

b) A circuit consists of a coil of resistance 100 ohm and inductance 1H in series with capacitor of 1 μF. calculate
i) Resonant frequency
ii) Current at resonant frequency
iii) Voltage across each element when the supply voltage is 50v.

c) Explain with the help of diagram what you understand by in phase, lagging and leading as applied to sinusoidal quantities.

(10 * 2= 20 marks)

Q4

a) Explain the working of MCB in detail.

CO3

b) Write short notes on following:
i) Earthing

	ii) SFU iii) DPDT switch iv) Conduit wiring	
c)	Define Batteries, type and characteristics of batteries, also differentiate between primary and secondary batteries.	
Q5	(10 * 2= 20 marks)	
a)	A 4-pole wave Connected DC generator has 220 coils of 10 turns each. The speed is 400 rpm. If the machine has a useful flux of 0.05 Wb, find the generated EMF.	CO4, CO5
b)	Design and explain a circuit to control single lamp load from two locations.	
c)	Define following: i) Faraday's law ii) Slip iii) Fleming's left-hand rule iv) Rotating magnetic field	