

Roll No.

--	--	--	--	--	--	--

### B.Tech End Semester Examination-2024

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

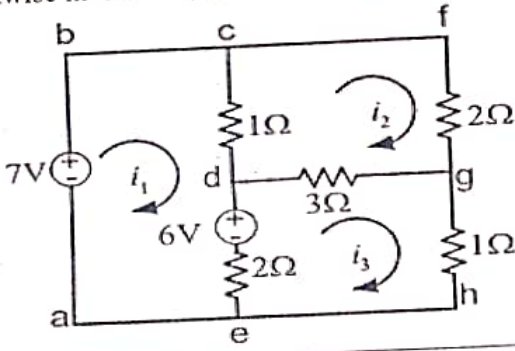
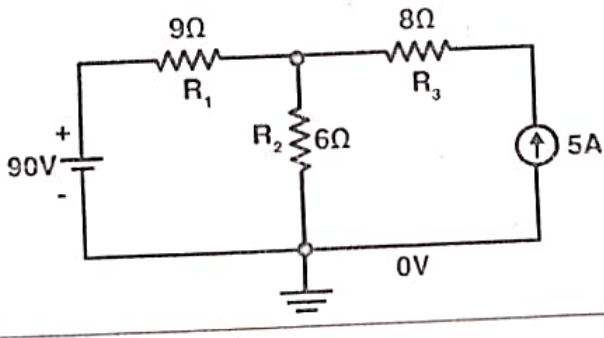
Semester: II  
Course Code: TEE-201

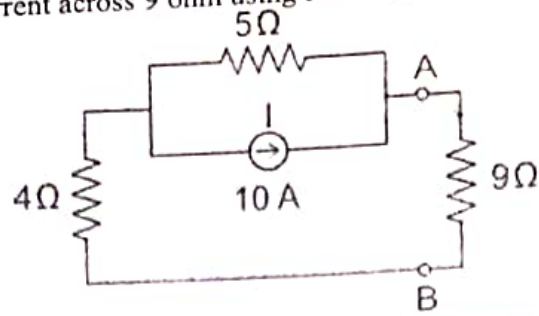
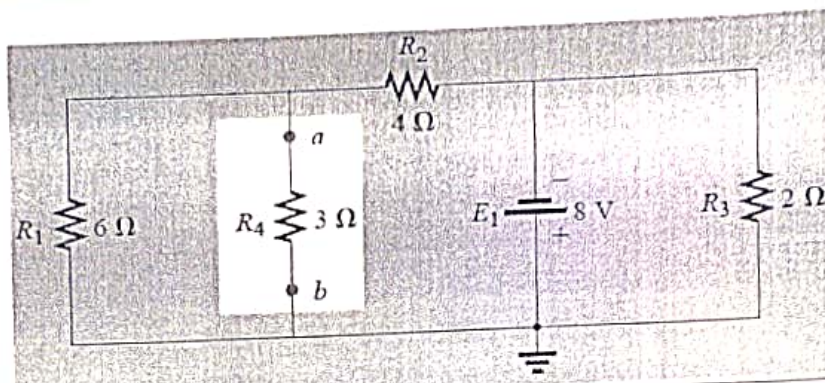
Time: 3:00 Hrs

Maximum Marks: 100

#### Note:

- All questions are compulsory.
- Answer any two sub questions among a, b and c in each main question.
- Total marks in each main question are twenty.
- Each question carries 10 marks.

Q1	(10 * 2 = 20 marks)	
a)	<p>Using mesh analysis, Find the value of the currents <math>i_1</math>, <math>i_2</math> and <math>i_3</math> flowing clockwise in the first, second and third mesh respectively.</p> 	CO1
b)	<p>Calculate Current in 6 ohm using nodal analysis.</p> 	

c)	<p>Calculate current across 9 ohm using Norton's theorem.</p> 	
(10 * 2 = 20 marks)		
Q2		
a)	<p>Calculate the current through the load resistance (<math>R_4</math>) = 3 <math>\Omega</math> using Thevenin's theorem.</p> 	CO2
b)	<p>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?</p>	
c)	<p>Explain power factor with its significance in AC.</p>	
(10 * 2 = 20 marks)		
Q3		
a)	<p>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</p>	CO2
b)	<p>A circuit consists of a coil of resistance 100 ohm and inductance 1H in series with capacitor of 1 <math>\mu</math>F. calculate  i) Resonant frequency  ii) Current at resonant frequency  iii) Voltage across each element when the supply voltage is 50v.</p>	
c)	<p>Explain with the help of diagram what you understand by in phase, lagging and leading as applied to sinusoidal quantities.</p>	
(10 * 2 = 20 marks)		
Q4		
a)	<p>Explain the working of MCB in detail.</p>	CO3
b)	<p>Write short notes on following:  i) Earthing</p>	

	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	