Enrollment No:

FACULTY OF ENGINEERING

B.E. Sem - I Mid Semester Examination Winter-2024

Subject Name: Basic Electrical Engineering
Subject Code: 2010204101 **Date: 23-10-2024**
Total Marks: 40 **Time: 1:30-3:00pm**

Instructions:
1. Attempt any FOUR questions out of FIVE questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1	**Answer the following.**	
(A)	Define: Current, Voltage, Active Element, Passive Element.	(2)
(B)	Explain kirchhoff's current law and voltage law.	(3)
(C)	Using Thevenin's theorem, calculate the current in 5 ohm resistor in Fig. 2.	(5)
Q.2	**Answer the following.**	
(A)	Find the equivalent resistance R_{AB} for following circuit Fig. 1.	(2)
(B)	Give statement of ohm's law and give its limitations.	(3)
(C)	Explain the method of transforming a delta connected resistive network to star network (Delta to star transformation).	(5)
Q.3	**Answer the following.**	
(A)	What is power factor? Enlist the methods of power factor improvement.	(2)
(B)	Give comparison between AC & DC quantities.	(3)
(C)	Calculate the resonant frequency, current at resonance, voltage across inductor and capacitor, Quality factor, and bandwidth for a given RLC series circuit.	(5)
Q.4	**Answer the following.**	
(A)	Define the following terms in connection with A.C. waveforms: (i) Frequency (ii) Time period.	(2)
(B)	Define Apparent power, Active power, and Reactive power in AC circuits.	(3)
(C)	Determine line current and power absorbed when 3 coils (6Ω and 8Ω inductive reactance) are connected in star and delta across 440V, 3-phase supply.	(5)
Q.5	**Answer the following.**	
(A)	Draw Impedance triangle and Power triangle for single-phase R-L series circuit.	(2)
(B)	Give comparison of series and parallel circuit.	(3)

(C)	An alternating current i is given by i = 141.4 sin 314t A. Find the a) frequency b) time period c) RMS value of current d) Average value of current e) Form factor f) the value of current at time t = 2ms.	(5)

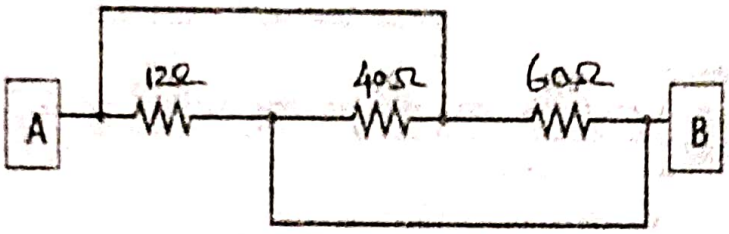

Figure 1

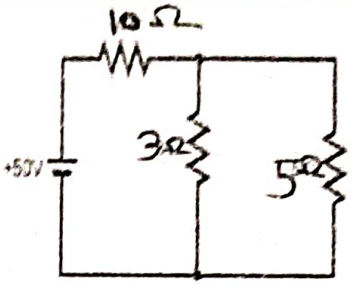

Figure 2

**********Best of Luck**********