Department of Computer Science & Engineering
School of Engineering Sciences & technology
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Odd Semester Examination 2022 – Backlog

Time: 3 Hrs **Marks: 75**
Subject Name: Basic Electrical Engineering **Subject Code: BTCSE 103**
Note: Please do proper numbering of Attempted Questions.

CO1 Understand the working of basic elements of physics and simple theorems to solve network consisting of these elements.

CO2 Use of basic elements in a network consisting of sinusoidal potential and their impact on their response.

CO3 To understand the magnetic field and how it behaves around the transformer.

CO4 To understand different types of electrical machines

CO5 To understand the working of different types of electrical devices

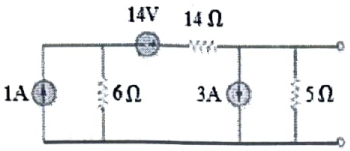
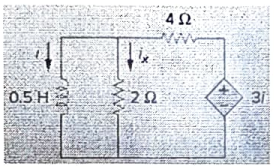
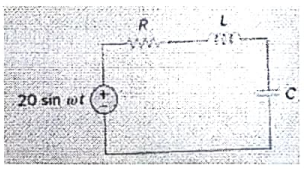
Section A

Note: All the Questions are Compulsory. Each question carry equal marks **[7 x 5 marks = 35 marks]**

Q.No	Question	CO	BL
Q1.	With help of suitable mathematical derivations, prove the following statement: "under steady state condition, capacitor acts as open circuit"	CO1	L2
Q2.	For the given voltage and current values, find the instantaneous and average power $v(t) = 120\cos(377t + 45°)V$ $i(t) = 10\cos(377t - 10°)V$	CO2	L3
Q3.	Differentiate between different types of magnetic materials in detail	CO3	L1
Q4.	With the help of a suitable curve, explain the characteristics of Torque-Slip for a single Phase Induction Motor	CO4	L2
Q5.	Consider any example of your choice and explain the concept of KCL & KVL with mathematical expressions.	CO1	L2
Q6.	Explain with the help of a suitable circuit diagram the relationship between Delta-Wye transformations of a source?	CO3	L4
Q7.	Write a short note on any two of the followings: a) Duty Ratio Control b) Switch Fuse Unit (SFU) c) types of Cables and Wires	CO5	L1

Section B

Note: Attempt any four questions. Each question carry equal marks **[4 x 10 marks = 40 marks]**

Q. No	Question	CO	BL
Q1.	For the given circuti diagram, find the thevenin's and Norton's equivalent circuit across terminal 'a-b' 	CO1	L4 L5
Q2.	Derive the mathematical expression for growth and decay of current in a series RL circuit in the presence and absence of source respectively. Assuming that $i(0) = 10A$, calculate $i(t)$ and $i_x(t)$ in the circuit given below. 	CO2	L3 L5
Q3.	What is Resonance in a passive circuit? For a series and parallel RLC circuit, derive the expression for Resonance. What do you mean by half power frequencies? For the circuit given below, find resonant frequency, half power frequencies, quality factor, and Bandwidth 	CO2	L1 L4
Q4.	What is magnetic Hysteresis? With the help of a proper diagram, draw the hysteresis loop and explain all the regions of the loop.	CO3	L1 L2
Q5.	What are the different types of Losses in a transformers? Explain in detail. Derive the expression to prove the copper saving while using Auto-Transformer.	CO3	L1 L6
Q6.	With the help of a suitable diagram, explain the concept behind the generation of three phase voltage.	CO4	L2

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

CO-Course Outcomes