

# Chandigarh Engineering College/COE Landran, Mohali

Department of Applied Sciences

## MST-1

**Subject Name and Code: BEE (BTEE-101-18)**

**1<sup>st</sup> Year / 1<sup>st</sup> Semester**

**Time: 1 hr**

**Name:**

**Max Marks: 24**

**Roll No.**

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**Date of Exam: 11/12/2020**

*Note: Section A is compulsory. Attempt any two questions from section B and section C.*

**Course Outcomes: Student will be able to**

CO1: differentiate circuits based on their composition, terminology and their mathematical analysis.

CO2: analyze the behavior of electrical circuits based on alternating currents as their power supply; solve AC circuits and their mathematical analysis.

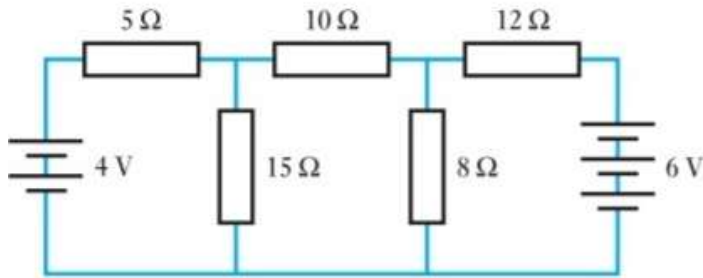
CO3: understand the basic magnetic circuit; construction as well as working principle of transformer.

CO4: study the working principles of various electrical machines such as three- phase induction motor, single phase induction motor, dc motor and synchronous generator.

CO5: understand the components of low voltage electrical installations.

Section A (8 Marks)	Marks Distribution	Relevance to CO no.
Q1:-State Superposition Theorem.	2	(CO 1)
Q2:- Draw the Power triangle and define various types of power.	1+1	(CO 2)
Q3:-Differentiate between ideal and practical voltage sources.	2	(CO 1)
Q4:- Instantaneous current is given by the relation $i = 30 \sin 314t$ . Find the average and r.m.s. value of a.c.	1+1	(CO 2)
Section B (8 Marks)		
Q5:- What are transients? Discuss the voltage response of RL series circuit.	1+3	(CO 1)
Q6:- A resistance of $20\Omega$ and capacitor of $212.2\mu F$ capacitance are connected in series across a 250V, 50Hz supply. Calculate: <div style="margin-left: 40px;">                     i. Impedance of the circuit                      ii. Current flowing through the circuit                      iii. Power factor and phase angle                      iv. Power consumed in the circuit                 </div>	1+1+1+1	(CO 2)

Q7:-By using Thevenin's Theorem, find current  $10\Omega$  resistor of network as shown in figure below



4

(CO 1)

### Section C (8 Marks)

Q8:- Derive the relation between phase and line voltages and currents for a balanced 3 phase – Star connected system.

2+2

(CO 2)

Q9:- Explain RLC series circuits. What happens when RLC series circuit is at resonance?

2+2

(CO 2)

Q10:- Find the current through  $10\Omega$  resistance across A-B terminals for the circuit shown in figure using Norton's theorem.

4

(CO 1)

