Central University of Haryana
Term End Examination March 2023
B.Tech. Programmes
Branch: Civil Engineering, Computer Science Engineering

Course Code: BT EE 103A **Max Time: 3 Hours**
Course Title: Basic Electrical Engineering **Max Marks: 70**

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice (Each sub-question carries seven marks)

PART -I

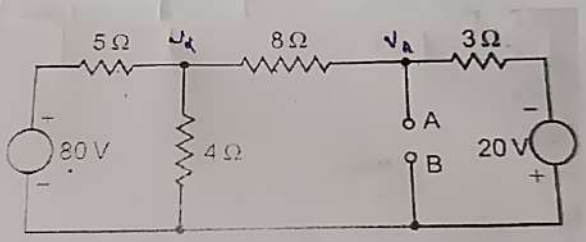
Q. No.1

(a) Define form factor.
(b) State and draw power triangle.
(c) State superposition theorem.
(d) State most important application of Thevenin's theorem.
(e) What do you mean by exciting resistance and exciting reactance?
(f) Why is a commutator needed in dc motor?
(g) Define ampere-hour efficiency of a battery.

PART –II

Q. No.2

a) Obtain Thevenin's equivalent circuit at AB, in the given network



$V_x\left(\frac{1}{5}+\frac{1}{4}+\frac{1}{8}\right)-V_B\left(\frac{1}{8}\right)=16$

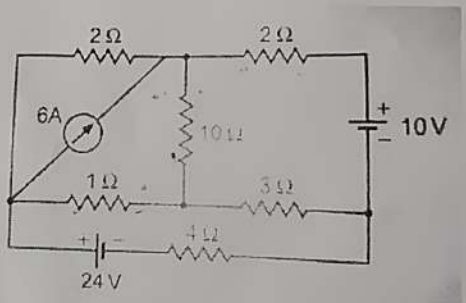
$V_x\left(\frac{8+10+5}{40}\right)-\frac{5V_B}{40}=16$

$23V_x-5V_B=640$

a) State and explain Norton's theorem and draw its equivalent circuit.

OR

Q. No.2 Determine the current in the 4 ohm resistance of the circuit shown in given network.



Q. No.3

a) When sinusoidal AC voltage is applied across a pure inductor, show that power consumed in the circuit is zero. Further, draw the phasor and wave diagram for voltage and current.

b) Derive the Time domain analysis of the first order series RL circuit.

OR

Q. No 3

a) Explain the behaviour of parallel R-L-C circuit with sinusoidal input.

b) Explain series resonance. Why it is called the voltage resonance?

Q. No.4 What are the various losses in a transformer? Where do they occur and how do they vary with load? How to minimize them and how to measure these losses? Explain in detail with digram.

OR

Q. No .4

a) Explain the construction and working of the single phase capacitor start Induction motor.

b) Draw and explain electrical and mechanical characteristics of the DC shunt and DC series motors.

Q. No.5 Write short note on following:

a) MCCB

b) Earthing

OR

Q. No.5 Explain the working, characteristics, advantages and applications of nickel-iron alkaline cell.