Please check that this question paper contains___09___ questions and ___02___ printed pages within first ten

[Total No. of Questions:09]
Uni. Roll No. .....

MORNING
15 MAR 2021

[Total No. of Pages:02]

Program: B.Tech. (Batch 2018 onward)
Semester: 1st
Name of Subject: Basic Electrical Engineering
Subject Code: ESC-101
Paper ID:15929

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts Aand B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) Explain Kirchhoff's Law.
b) Give comparison between Auto Transformer and Two winding Transformer.
c) What are Electrical Measuring Instruments?
d) A Voltage is represented by sine wave and has a maximum value of 100 V. Evaluate its R.M.S value and Average value of voltage.
e) Define Ampere Hour efficiency of a battery?
f) A 50Hz,Four pole,3 Φinduction motor has rotor current frequency of 2Hz. Determine a) Slip b) Speed of motor.

Part – B **[Marks: 04 each]**

Q2. Explain construction and working of permanent magnet moving coil instrument. Give its merits and demerits.

Q3. Define Switchgears.Explain the different component used in LT Switchgear.

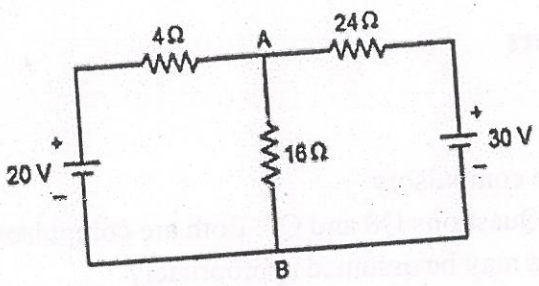
Q4. With the help of power triangle explain various types of power in AC circuits.

P.T.O.

Q5. Describe the working principle of transformer and drive E.M.F equation of transformer.

Q6. Why induction motor need starter? Explain any one starting method of three phase induction motor in detail.

Q7. State Norton's Theorem and determine the current flowing through 16-ohm resistor of network shown in the figure.



Part – C **[Marks: 12 each]**

Q8. Derive all the necessary equations for converting a Delta into an equivalent Star network and also a star into an equivalent delta network.

OR

A) Derive an expression for Impedance, Current, Power and power factor for RLC series circuit when AC voltage is applied and draw the phasor diagram.

B) A circuit consists of a resistor of 9 Ω resistance, 6 Ω inductive reactance and 9 Ω capacitive reactance in series across a 240 V, 50 Hz supply. Calculate the circuit current and its phase angle.

Q9. What are the various losses in transformer? Derive the condition that efficiency at a given terminal voltage and load power factor is the maximum if full load losses are equal to the iron losses in the transformer.

OR

Explain the construction and working principle of three phase induction motor. Discuss the various speed control method of three phase induction motor.

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