

Code No.: EE401ES

R20

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II-B.TECH-II-Semester End Examinations (Regular) - June- 2022
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(MECH)

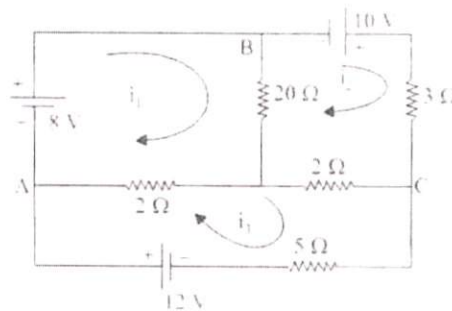
[Time: 3 Hours]

[Max. Marks: 70]

- Note:** 1. Answer any FIVE questions. Each question carries 14 marks.
2. All questions carry equal marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

5X14=70

1. a) i) State Ohm's Law and Kirchhoff's Current Law. [6M]
ii) Define Reactive power and active power.
b) Determine the current in 5Ω resistor shown in Figure below. [8M]



2. a) i) List out the various types of wires with an example. [6M]
ii) What is the importance of an Earthing?
b) What are the various components of LT switchgear? Explain the importance of any two of them in detail. [8M]
3. a) Describe the constructional features of a DC machine with a neat diagram and explain. [7M]
b) Draw the speed-torque characteristics of an Induction motor and explain in detail. [7M]
4. a) Explain the operation of a Full-Bridge Rectifier with a capacitor filter circuit and draw its output voltage waveforms. [7M]
b) Define Ripple factor. Explain how does the harmonics can be eliminated using filters? [7M]
5. a) Compare the characteristics of BJT and FET in detail. [7M]
b) What is the need for biasing for FET? Explain. [7M]
6. a) Define the following terms: (i) rms value (ii) average value (iii) power factor (iv) active power (v) reactive power (vi) apparent power. [6M]
b) Determine the current in the mains and the power factor if a source of 220V, 50Hz is connected to a network that comprises of TWO circuits A and B in Parallel. The circuit A consists of a coil of resistance 20Ω and inductance of 0.07H and the circuit B consists of a capacitor of 60μF in series with a resistance of 50Ω. [8M]
7. a) Give the classification of Batteries with an example. [7M]
b) Define power factor. Explain the importance of power factor improvement. [7M]
8. a) Explain the construction of a 1-phase transformer with a neat diagram. [7M]
b) Explain briefly about the principle of operation of a 3-phase induction motor. [7M]
