

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**

B.Tech. I Year I Semester Supplementary Examinations February-2024

BASIC ELECTRICAL AND MECHANICAL ENGINEERING

(Common to CE & AGE)

Time: 3 hours

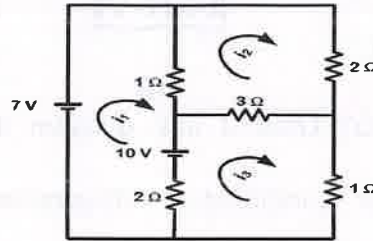
Max. Marks: 60

(Answer all Six Units 6 X 10 = 60 Marks)

PART-A

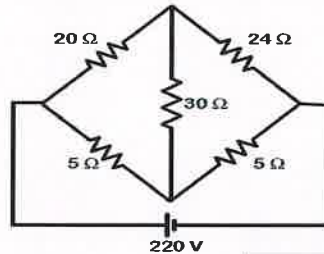
UNIT-I

- 1 a State and explain Ohm's law. CO1 L2 5M
 b Find i_1, i_2, i_3 for the given circuit by using Kirchoff's laws. CO1 L4 5M



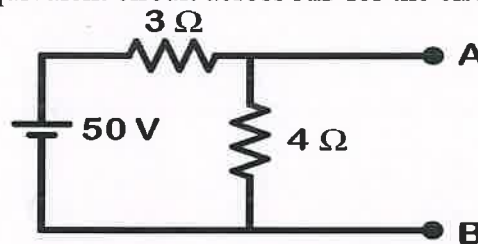
OR

- 2 Find the current delivered by the source for the circuit shown in figure. CO1 L4 10M



UNIT-II

- 3 a State Super position theorem, CO2 L2 3M
 b Find Norton's equivalent circuit across AB for the circuit shown. CO2 L3 7M



OR

- 4 a Explain in detail about Impedance parameters. CO2 L3 5M
 b The given ABCD parameters are $A=2, B=0.9, C=1.2, D=0.5$. Find Y-parameters. CO2 L4 5M

UNIT-III

- 5 a Discuss about the principle of operation of DC motors. CO3 L3 5M
 b The counter EMF of Shunt motor is 227 V. The field resistance is 160Ω and field current 1.5A. If the line current is 36.5A, find the armature resistance also find armature current when the motor is stationary. CO3 L3 5M

OR

- 6 a Discuss about the voltage regulation of the transformer. CO3 L3 5M
 b A 20 kVA, 2000/200 V, 50 Hz transformer has 66 secondary turns. Calculate the number of primary turns and primary and secondary currents. Neglect losses. CO3 L4 5M

PART-B

UNIT-IV

7 What is casting? Briefly elaborate the casting process with neat sketch and write the advantages and applications. **CO4 L2 10M**

OR

8 Classify the welding types? Explain the working of arc welding with neat sketch and mention the advantages, limitations and applications. **CO4 L2 10M**

UNIT-V

9 Define the working principle of lathe? Draw a line diagram of the lathe and describe functions of main parts with advantages and limitations. **CO5 L3 10M**

OR

10 Elaborate the working principle of milling machine with neat sketch. **CO5 L2 10M**

UNIT-VI

11 Classify the automobiles in detail. **CO6 L4 10M**

OR

12 a What is refrigeration system? Draw a neat diagram of refrigeration system. **CO6 L3 5M**

b Distinguish between vapour compression refrigeration and vapour absorption systems. **CO6 L4 5M**

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