

COLLEGE OF ENGINEERING TRIVANDRUM
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Second Semester B. Tech Degree
First Class Test – March 2024
EST130: BASIC ELECTRONICS ENGINEERING

Max. Marks: 20

Duration: 45 Minutes

Part A (Answer All Questions)

	Marks	CO	KL
1 Determine the capacitance of two capacitors with labelled values of a) 6K2 and b) 224.	[3]	CO 4	K2
2 Explain the phenomenon of avalanche breakdown and describe its voltage-current characteristics.	[3]	CO 4	K2

Part B (Answer One Question from Part 1 and Part 2)

Module 4 (Part 1)

- 3 Detail the progression of electronics development, focusing on elements like vacuum tubes, transistors, and integrated circuits. [7] CO 4 K2

OR

- 4 Describe how a potential barrier is created in a P-N junction diode, accompanied by an appropriate illustration. [7] CO 4 K2

Module 4 (Part 2)

- 5 Discuss the types of resistors and important specifications of resistors. Explain the significance of standard values in resistors and how to calculate the resistance in a five-band resistor. [7] CO 4 K2

OR

- 6 Describe with a suitable diagram, the operational principle of an NPN transistor. [7] CO 4 K2

B - 10⁰ - 0
B - 10¹ - 1
R - 10² - 2
G - 10³ - 3
Y - 10⁴ - 4

Course Outcome (COs)

EST130 /CO4	Understand the Evolution, Classification, Operational Principles and Characteristics of Electronic Components.
EST130/CO5	Comprehend the basic electronic circuits and instrumentation, encompassing rectifiers, power supplies, amplifiers, and electronic instrumentation systems.
EST130/CO6	Outline the Evolution and Principles of Communication Systems: From Telegraphy to 5G, AM & FM Principles, and Cellular Communication Basics.

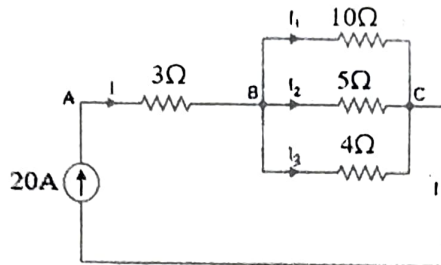
DEPARTMENT OF ELECTRICAL ENGINEERING
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II SEMESTER B. TECH DEGREE
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Max. Marks: 20

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Part A (Answer All Questions)

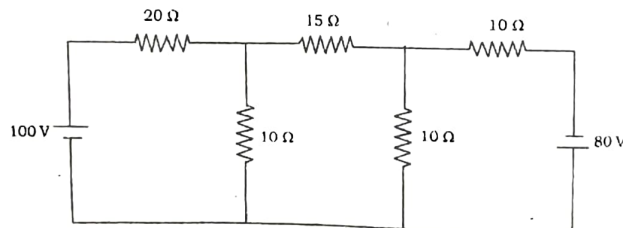
- | | | Marks | CO | K level |
|---|--|-------|----|---------|
| 1 | With the help of a simple electric circuit, explain the terms a) EMF and b) Potential difference. | [3] | 1 | 2 |
| 2 | Using current division rule, find the current flowing through 5Ω resistor in the network shown below. | [3] | 1 | 3 |



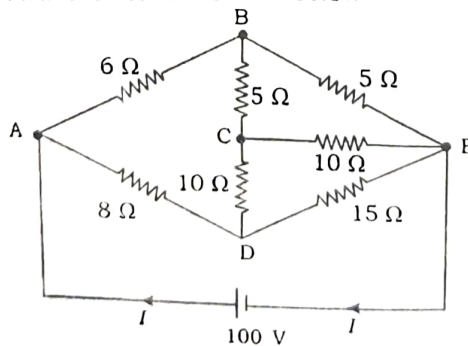
Part B (Answer any one full question. - 14 marks)

Module 1

- | | | | |
|--|-----|---|---|
| 3(a) Find the current through 15Ω resistor in the circuit using node voltage method | [8] | 1 | 3 |
|--|-----|---|---|

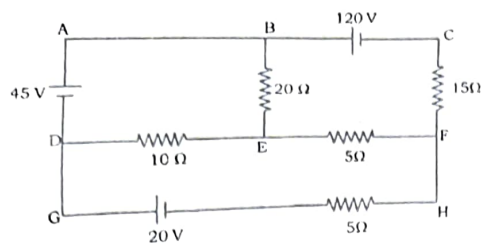


- | | | | |
|--|-----|---|---|
| 3(b) Find the current I in the network shown below | [6] | 1 | 3 |
|--|-----|---|---|

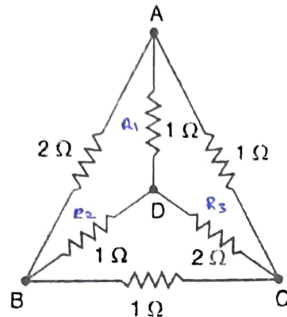


OR

- 4(a) Calculate current through 20Ω resistor in the circuit using mesh current method [8] 1 3



- 4(b) In the network shown in figure, find the resistance between terminals B and C using star/delta transformation [6] 1 3



CO1: Apply fundamental concepts and circuit laws to solve simple DC electric circuits