REV-01
BCA/03/08

2025/12

SET A

BACHELOR OF COMPUTER APPLICATION
FIRST SEMESTER (REPEAT)
PRINCIPLES OF ELECTRONICS
BCA-105

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins. **Full Marks: 35**

Objective

Time: 15 mins. **Marks: 10**

Choose the correct answer from the following: ***1×10=10***

1. According to KCL:
   a. $\Sigma I=1$ b. $\Sigma I=2$
   c. $\Sigma I=0$ d. $I=0$

2. KVL can be applied to:
   a. Closed path b. Open path
   c. Both a & b d. None of these

3. Transistor is a:
   a. Three junction device b. Two junction device
   c. Uni-junction device d. All of these

4. In case of conductor, the forbidden energy band is:
   a. Large b. Very large
   c. Small d. Negligible

5. Voltage division rule is applicable to:
   a. Series Circuit b. Parallel Circuit
   c. Both a & b d. None of these

6. If a wire having length 2m and area $4m^2$ has a resistance of 8 Ohm, its resistivity is:
   a. 8 ohm-m b. 16 ohm-m
   c. 20 ohm-m d. 4 ohm-m

7. The electronic circuit that converts AC to DC is called:
   a. Converter b. Amplifier
   c. Rectifier d. Clipper

8. If two voltages of values 18 V and 12 V are connected in series opposing circuit, the net voltage will be:
   a. 18 V b. 12 V
   c. 30 V d. 6 V

9. Which of the following atoms may be used as a P-type impurity?
   a. Arsenic b. Boron
   c. Phosphorous d. Antimony

10. To obtain a N-type semiconductor, the impurity added to a pure semiconductor is:

a. Pentavalent
b. Trivalent
c. Tetravalent
d. None of these

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(Descriptive)

Time : 1 hr. 15 mins. **Marks : 25**

[Answer question no.1 & any two (2) from the rest]

1. Differentiate between Semiconductor, Conductor and Insulator with the help of energy diagram. 5

2. a) What is a transistor? Discuss the various modes of operation of transistor. 5+5=10
   b) In a circuit, if series opposing voltages are 12 V and 6 V and two resistors of values 4Ω & 8Ω are connected in series, then compute
   (i) Circuit current
   (ii) Power supplied by the two batteries
   (iii) Power dissipated in two resistors

3. a) What do you mean by linear circuit? Write short notes on resistor, capacitor and inductor. 5+5=10
   b) Write the significance of forbidden energy gap. What are the various electrical properties of semiconductors? Discuss briefly.

4. Define Kirchhoff's laws. Two resistors of values 14Ω and 10Ω are connected across a voltage source of 6V. Another 10Ω resistor and 5V voltage source are connected across the previous combination. Find the values of current flowing in the two mesh formed. 10

5. a) Explain the working principle of half wave rectifier circuit with the help of diagram. 5+5=10
   b) Three resistors of values 10Ω, 25Ω and 100Ω are connected across a voltage source of 100 V having power 1.5 kW. Find the currents flowing through each resistor.

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