||||||||||||||||||||||||||||||||||||||||||||||||||||||
* D B Z - 0 0 3 - 0 4 9 2 0 0 6 *

DBZ-003-0492006 Seat No. _____

B. Sc. / M. Sc. (Applied Physics) (Sem. III) (CBCS) Examination

July - 2022

Basic Electronics : Paper-VIII

(New Course)

Faculty Code : 003
Subject Code : 0492006

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are compulsory.
  (2) Numbers in the right margin indicate marks.

1 Attempt any SEVEN short questions : (Two marks each) **14**

  (1) Define intrinsic and extrinsic semiconductor.

  (2) What is the function of diode in rectifier ?

  (3) Draw the circuit diagram of optoisolator.

  (4) Give the application of CB, CE, CC amplifier.

  (5) Why collector is wider than emitter and base ?

  (6) Why is potential divider method of biasing became universal?

  (7) Write the input and output phase relation in CE, CB, CC circuit.

  (8) Draw the schematic symbol of LED and Zener diode.

  (9) Write the potential barrier voltage for Si and Ge.

  (10) Define PIV.

2 (A) Write answer of any **two** : (Five marks each) **10**

  (1) Derive an expression for the efficiency of a half wave rectifier.

(2) What do you understand by intrinsic and extrinsic semiconductor?

(3) Discuss the behavior of pn junction under forward and reverse biasing.

(4) Describe transistor action in detail.

2 **(B)** **Write answers of any one :** **04**

(1) Describe in detail the energy band in semiconductor.

(2) Discuss the effect of temperature on semiconductor.

3 **(A)** **Write answers of any two : (Five marks each)** **10**

(1) Explain the stability factor in voltage divider method.

(2) Write short note on fixed bias for transistor and its effect on stability.

(3) Explain the working of transformer coupled transistor amplifier with neat circuit diagram.

(4) Write short note on Varactor diode.

3 **(B)** **Write answers of any one :** **04**

(1) Explain the zener diode as voltage stabilizer.

(2) Write the advantage and disadvantage of half wave and centre tap full wave rectifier.

4 **(A)** **Write answers of any two : (Five marks each)** **10**

(1) Explain the working of LED and write its applications.

(2) Explain the V-I characteristics of tunnel diode with tunnelling effect.

(3) What do you understand by class A, class B, class C power amplifier ?

(4) Write the operation and characteristic of photodiode.

4 **(B)** **Write a short note on any one :** **04**

(1) Define α, Show that it is always less than unity.

(2) Describe various region in CE transistor configuration of transistor working.

5 **(A)** Write answers of any **two** : (**Five** marks each)   **10**

      (1) Explain the working of Full wave bridge rectifier with well labelled diagram.

      (2) Derive an expression for collector current (I_c) in CE connection.

      (3) Explain the input and output characteristics of CB connection.

      (4) Describe the potential divider method with suitable diagram.

5 **(B)** Write answers of any **one** :   **04**

      (1) Give two applications of photodiode.

      (2) Draw well labelled diagram of npn and pnp transistor and write its description.

_____