Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

B.Sc. Honours (Physics) (Sem.–3)

ANALOG SYSTEMS AND APPLICATION

Subject Code : BSHP-214-21

M.Code : 92457

Date of Examination : 16-12-22

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION - B & C. have FOUR questions each.**
3. **Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.**
4. **Select atleast TWO questions from SECTION - B & C.**

SECTION-A

l. Write short notes on :

a) Define Mobility and discuss the factor on which mobility depends.

b) Discuss the effect of forward and reverse bias on contact potential.

c) What is the use of C-filter in rectifiers?

d) What is Q-point in bipolar junction transistors?

e) Calculate the wavelength of light emitted from a LED made up of material with band gap 1.24 eV.

f) Define hybrid parameters for transistor.

g) Write a note on Class B amplifiers.

h) What is Barkhausen criterion?

i) What is the use tank circuit in oscillators?

j) The tuned collector circuit use an LC tuned circuit with L = 58.6 μH and C = 300 pF. Calculate the frequency of oscillator.

SECTION-B

2. Drive the expression for barrier potential of a p-n junction.

3. What is a Zener diode? Discuss its operation as voltage regulator.

4. Draw a neat diagram to study the V-I characteristics for forward and reverse biased diode and discuss various features of V-I characteristics.

5. Explain the mechanism of a amplification in a transistor. Show that output signal is in phase with input signal in common base confirmation.

SECTION-C

6. Draw a fixed bias circuit and obtain the expression for its stability factor.

7. Find the values of current gain and voltage gain for a small signal common collector amplifier.

8. Draw the circuit diagram of a Tunes collector oscillator and determine the condition for sustained oscillations.

9. Explain the principle and working of a RC phase shift oscillator with help of a neat circuit diagram.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.