B.Sc. Part-II (Semester-III) Examination

ELECTRONICS

(Electronics Devices and Circuits)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) Question No. **1** is compulsory.

(2) Draw neat diagrams wherever necessary.

1. (A) Fill in the blanks with correct word : 2

(i) In ideal Op-Amp value of input impedance is _____.

(ii) Bistable multivibrator has _____ stable states.

(iii) D/A is known as _____.

(iv) Voltage gain of Non-inverting amplifier is _____.

(B) Choose the correct alternative : 2

(i) In ideal Op-Amp bandwidth is :

(a) Zero (b) Minimum

(c) Infinite (d) None

(ii) The monostable multivibrator has _____ stable state(s).

(a) 2 (b) 1

(c) 3 (d) 4

(iii) One of the following is not an oscillator :

(a) Colpitts (b) Wein bridge

(c) Push pull (d) Hartley

(iv) Op-Amp IC 741 has total _____ pins.

(a) 2 (b) 6

(c) 14 (d) 8

(C) Answer the following questions in **ONE** sentence : 4

(i) What is feedback ?

(ii) List the hybrid parameters.

(iii) Define CMRR.

(iv) What is oscillator ?

EITHER

2. (A) Give the advantages and disadvantages of direct coupled amplifier. 4

(B) Draw hybrid equivalent circuit for CE transistor amplifier and derive the expression for (i) Current gain, (ii) Input impedance for CE-transistor amplifier. 8

OR

(P) Explain the working of single tuned amplifier with circuit diagram. 8

(Q) State the advantages and disadvantages of RC coupled amplifier. 4

EITHER

3. (A) Explain the construction and working of Class B push pull amplifier. Find its efficiency. 8

   (B) Explain cross over distortion. How it is eliminated ? 4

OR

   (P) Draw a circuit diagram of transformer coupled Class A amplifier and derive expression for its efficiency. 8

   (Q) Give the classification of amplifiers. 4

EITHER

4. (A) Explain Barkhausen criterion for sustained oscillations. 4

   (B) Explain the construction and working of Hartley oscillator. 8

OR

   (P) Explain the construction and operation of RC-phase shift oscillator using transistor. State its advantages. 8

   (Q) State the advantages of negative feedback. 4

EITHER

5. (A) Explain the working of Op-Amp as non-inverting amplifier and derive the expression for voltage gain. 6

   (B) With suitable diagram explain the working of Op-Amp as summing amplifier. 6

OR

   (P) Explain the concept of virtual ground in Op-Amp. 4

   (Q) Define : 2

      (i) Common mode voltage gain

      (ii) Differential mode voltage gain.

   (R) Draw the block diagram of Op-Amp and explain the function of each block. 6

EITHER

6. (A) Explain the construction and working of Op-Amp as a monostable multivibrator. 6

   (B) Explain how Op-Amp is used as damped harmonic oscillator. 6

OR

   (P) Explain the working of Op-Amp as a Schmitt Trigger. 6

   (Q) Explain the working of Op-Amp as an astable multivibrator. 6

EITHER

7. (A) Explain the working of successive approximation type A/D converter. 8

   (B) Explain the terms :

      (i) D/A Accuracy

      (ii) D/A Resolution. 4

OR

   (P) Describe the construction and working of Weighted Resistor type D/A Converter. 6

   (Q) Explain the need of D/A and A/D converter. 4

   (R) What is A/D and D/A converter ? 2