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

YBC—15270   1   (Contd.)

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

YBC—15270   2   375