AU–71

B.Sc. (Part–I) Semester–II Examination

2S : ELECTRONICS

(Digital Electronics)

Time : Three Hours]   [Maximum Marks : 80

N.B. :— (1) All questions are compulsory.

(2) Draw neat sketches wherever necessary.

1. (A) Fill in the blanks :

(i) The Boolean equation of AND gate is $y =$ _____.   ½

(ii) The Base of Decimal number system is _____.   ½

(iii) PIPO is parallel in _____ out shift Register.   ½

(iv) EPROM stands for _____ Programmable Read Only Memory.   ½

(B) Choose correct alternative and rewrite the following :

(i) 1's complement of 0011 is :

(a) 1111   (b) 1101

(c) 1110   (d) 1100   ½

(ii) The Boolean equation of OR gate is :

(a) A+B   (b) A.B

(c) $\overline{A.B}$ (d) $\overline{A + B}$ ½

(iii) RAM and ROM are called _____.

(a) Semi conductor memory   (b) Auxiliary memory

(c) Magnetic memory   (d) None of the above   ½

VOX—35787   1   (Contd.)

(iv) In D flip flop D stands for _____.

    (a) Diode   (b) Dual

    (c) Delay   (d) None   ½

(C) Answer in **one** sentence :

    (i) State different types of flip flops.   1

    (ii) What is multiplexer ?   1

    (iii) What is counter ?   1

    (iv) What is Base of a Number System ?   1

EITHER

2. (A) Perform the following conversions :

    (i) $(11001)_2 = (x)_{10}$

    (ii) $(1010.101)_2 = (x)_{10}$

    (iii) $(32)_{10} = (x)_2$ 6

  (B) Give logic symbol, Boolean equation and truth table of NOT, AND, OR gates.   6

OR

  (P) Explain the working of 4-Bit Binary adder.   6

  (Q) Draw a logic symbol, Boolean equation and truth table of XOR gate. Explain its working.   6

EITHER

3. (A) State and prove De' Morgan's Theorems.   6

  (B) Explain the working of CMOS NAND gate.   6

OR

  (P) What is K-map ? Draw a K-map for 2, 3 and 4 input variables.   6

  (Q) Explain the working of DTL NAND gate.   6

EITHER

4. (A) Draw the circuit diagram of clocked RS flip flop and explain its working.   6

  (B) Draw a neat circuit diagram of Astable multivibrator and explain its working.   6

OR

(P) Explain construction and working of monostable multivibrator. 6

(Q) Explain the working of JK flip flop with truth table. 6

EITHER

5. (A) Explain the working of Ring counter. 6

(B) What is Shift Register ? Explain working of SISO Shift Register. 6

OR

(P) Explain the working of 4-Bit Ripple counter. 6

(Q) Explain PIPO Shift Register. 6

EITHER

6. (A) Draw a neat circuit diagram of 4:1 multiplexer and explain its working. 6

(B) Explain the working of BCD to decimal decoder. 6

OR

(P) Explain the working of 1:4 Demultiplexer. 6

(Q) Explain the working of decimal to BCD Encoder. 6

EITHER

7. (A) Explain primary and secondary memories with suitable examples. 6

(B) Explain the concept of memory Hierarchy. 6

OR

(P) What are different types of magnetic memories ? State its advantages and disadvantages.

6

(Q) What is volatile and non-volatile memory ? Give examples of each. 6