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

(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