Unit-III

6. (a) What is flip-flop? Explain the working of clocked R-S flip flop. 7½

(b) What is Race condition? How this condition is removed or solved? 7½

7. (a) Explain J-K Master-Slave flip-flop along with it's circuit diagram. 7½

(b) Explain the working of shift-right register with an example. 7½

Unit-IV

8. (a) Write short note on following : 7½

(i) RAM

(ii) ROM

(iii) PROM

(iv) EPROM

(v) EEPROM

(b) Design MOD-9 counter and explain it's working. 7½

9. What do you mean by Multivibrator? Explain the following : 15

(a) Astable multivibrator

(b) Monostable multivibrator

(c) Bistable multivibrator

A

(Printed Pages 4)

Roll No. _____

SFS-4697

B.C.A. (Semester-II) Examination, May 2015

(Old Course)

Digital Electronics

Paper - V

(BCA-205)

Time Allowed : Three Hours] [Maximum Marks :100

Note : Answer five questions in all. Question No. 1 is compulsory and attempt one question from each of the four units, I, II, III and IV.

1. (a) What do you mean by number system? Discuss various types of number system. 4×10=40

(b) State & Prove De-Morgan's theorem.

(c) What do you mean by Universal gates?

(d) Differentiate between combinational and sequential circuits.

(e) Explain the working of 2's complement adder/subtractor circuit.

(f) What is decoder? Explain Binary-to-octal decoder.

(g) What is flip-flop? Differentiate between latch and flip-flop.

(h) What do you mean by shift register? Explain shift-left register.

(i) What is counter? Differentiate between up counter and down counter.

(j) Write a short note on RAM and it's types.

Unit-I

2. (a) Construct the following gates using NAND gate only : 7½

(i) AND gate

(ii) OR gate

(iii) NOT gate

(iv) XOR gate

(v) XNOR gate

(b) Convert the following : 7½

(i) $(1428)_{10} = (?)_2$

(ii) $(7854)_{10} = (?)_8$

(iii) $(A24C)_{16} = (?)_2$

(iv) $(110111001001011)_2 = (?)_8$

(v) $(BC\ 52)_{16} = (?)_8$

3. Solve the following using K-Map : 5×3=15

(a) $F(A,B,C,D) = \Sigma m\ (0,1,4,5,8,9,14, 15)$

(b) $F(A,B,C,D) = \Sigma m\ (1, 2, 5, 8, 14) + d(3,7,15)$

(c) $F(A,B,C,D) = \pi m\ (1, 3, 5, 7, 9, 10, 12)$

Unit-II

4. (a) What do you mean by Arithmatic circuit? Draw half adder and full adder circuit and explain. 10

(b) Simplify the given expressions : 5

(i) $\overline{(A+\overline{B}+\overline{C}).(\overline{A}+B+C).\overline{(A+B+C)}}$

(ii) $\overline{A.\overline{B}.C + \overline{A}\overline{B}C + ABC}$

5. (a) What is Multiplexer? Draw 8×1 multiplexer and explain its working. 7½

(b) What do you mean by Encoder? Draw and explain Octal-to-Binary encoder. 7½