DISTANCE EDUCATION

B.C.A. DEGREE EXAMINATION, DECEMBER 2010.

ELECTRONIC DEVICES AND DIGITAL CIRCUITS

(2003 onwards)

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

1. (a) What is Excess-3 code? Why it is important? (5)

   (b) Write short notes on ASCII code. (5)

   (c) Convert the following :

   (i) $(5A8)_{16} = ?_2$

   (ii) $(555)_{10} = ?_8$

   (iii) $(741)_8 = ?_2$

   (iv) $(7400)_8 = ?_{10}$. (10)

2. (a) "NOR gate is a universal building block" - Justify. (10)

   (b) What are the basic operations available in digital system? Explain with gate symbol. (10)

3. (a) Explain the function of Full Adder circuit. (10)

   (b) State and prove Demorgan's law with truth tables. (10)

4. (a) Simplify the function :

   $F(x, y, z) = \sum (0, 1, 3, 6, 7)$. (10)

   (b) Using Demorgan's theorem, show that :

   (i) $(A + B)'(A' + B') = 0$

   (ii) $A + A'B + A'B' = 1$. (10)

5. (a) Define Flip-flop. With neat diagram and truth-table explain the R-S flip-flop. (10)

(b) Write short notes on Right shift and left shift operations. (10)

6. (a) Design a 2-bit shift register using JK flip flop. (10)

(b) What are the various types of counters? Explain. (10)

7. (a) Explain the formation of the depletion region across an unbiased P-N junction. (10)

(b) What are the different configurations of BJT? Explain. (10)

8. (a) Explain the construction of N-channel JFET. (10)

(b) Explain the four distinct regions of the output characteristics of a JFET. (10)