Dec 2015

Bachelor of Computer Applications (BCA) Examination

III Semester

Digital Computer Electronics

Time 3 Flours] [Max. Marks 50

Note : Attempt all the five questions. Ail questions carry equal marks.

1. (a) Perform the following subtraction, using 2's complement subtraction method :

(i) M - N (ii) N - M where M = 10101100 and N = 11010101.

(b) Convert the binary number 1101 010 into following codes :

   (i) Gray Code (ii) Excess- 3 Code (iii) BCD.

(c) Convert the following number to their indicated bases :

(i) $(58.3)10 = (?)8$ (ii) $(AF3) 6 = = (?)1$

(iii) $(627)8 = (?)lo$ (iv) $(82.9)10 (?j2.$

2. (a) Explain principle of duality with suitable example.

(b) (i) Simplify the following function using Boolean algebra :

   f = AD + ABCD' + A'B'C'D' - ABC' + A'B'CD + ABC.

(ii) Implement AND and OR gate using NAND gate.

(c) Implement full adder using half adders and external gates.

3. (a) Obtain the minimal sum of products for the function (use K map) :

F (A, B, C, D) = E (1, 3, 7, 11, 15)

d (A, B, C,'D) = E (0, 2, 5) d : don't care.

(b) Explain the following in brief :

(i) Standard Sum of Product

(ii) Standard Product of Sum

(iii) Canonical Sum of Product

(iv) Canonical Product of Sum.

(c) Draw the truth table for a three input function given below : f= (A, B, C) = AB + BC + AC.

4. (a) Implement the full add.er with the help of decodes and external gate.

(b) Compare the different type of TTL on the basis of following parameter :

(i) Fan-in . (ii) Fan-out (iii) Power dissipation.

(c) Explain 8 x 1 multiplexer.

5. (a) What are the problems in the level triggering ? Flow it these problems can be removed?

(b) Explain the difference between buffer register and shift register using suitable example.

(c) Design a module-10 ripple counter.