Roll No. | | | | | | | | | | | | Total No. of Pages : 2

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BCA (Sem.–3) (2011 Batch)

DIGITAL CIRCUITS & LOGIC DESIGN

Subject Code : BSBC-303

Paper ID : [B0230]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.**

SECTION-A

1. Write briefly :

   a. What is use of complements?

   b. Why Universal Gate is called so?

   c. What is SOP and POS?

   d. Draw circuit of Full Subtractor with truth table.

   e. What is don't care condition?

   f. What is race condition?

   g. What is a sequential circuit?

   h. Draw a 4 × 1 multiplexer.

   i. Draw OR gate using NAND Gate and justify through truth table.

   j. Fill in the Blank : $(25.75)_8 = (?)_{10}$.

SECTION-B

2. Complete the following table:

Binary	Octal	Decimal	Hexadecimal
101000110	?	?	?
?	652	?	?
?	?	171.25	?
?	?	?	A3

3. a) Design binary to octal decoder with the help of NAND gates and explain its working,

   b) Explain the race condition in J-K flip-flop and also explain how it can be removed?

4. Simplify following Boolean expression using Boolean algebra and make equivalent circuit diagrams:

   i) F = AB + A(CD + CD')

   ii) F = (BC' + A'D) (AB' + CD')

5. What are uses of Asynchronous counters? Explain the working of asynchronous counter by giving any counter of your choice.

6. a) What are the differences between combinational and sequential circuits?
   b) Use NOR gate to make AND, OR, NOT and X-OR gates.

7. What are K-Maps? Explain how an expression can be solved using K-Map, using suitable example.