Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(CSE)/(IT) (2011 Onwards) (Sem.–3)

DIGITAL CIRCUITS & LOGIC DESIGN

Subject Code : BTCS-303

Paper ID : [A1125]

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 FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. Define 1's and 2's compliment?
2. Differentiate combinational and sequential circuits.
3. What are the advantages of CMOS memory chips over BIPOLAR memory chips?
4. What is Flip-Flop?
5. Convert $(10110111)_2$ to octal number?
6. Realize OR gate using only NAND gates.
7. What is EEPROM?
8. Define the terms decoder and de-multiplexer.
9. Give the logic diagram and characteristics table of a clocked D flip flop.
10. What is a ring counter?

SECTION-B

11. Simplify the following function using K Map.

    $F(A,B,C) = \sum(0,2,3,4,6)$

12. Design full subtracter using NAND gates only.

13. Explain the working of Master Slave JK Flip Flop.

14. Write a short note on the following.

    a) RTL

    b) CMOS

15. Explain the working of Successive Approximation A/D Converter.

SECTION-C

16. a) Write the expression for Boolean function

    $F(A,B,C): \sum m(1,4,5,6,7)$ in standard POS form.

    b) Write short note on VLSI design.

17. a) Design a 3 bit Gray to Binary code convertor.

    b) Distinguish between half and full adder using logic diagram and truth table.

18. Explain different types of ROM along with their advantages and disadvantages.