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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

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

- 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.