

Question Bank (I-Scheme)

Name of course: Digital Electronics and Microcontrollers Applications

Unit Test: I

Subject code: 22421 (DEM)

Semester: IV

Program: EE

CHAPTER 1: Logic Gates and logic families (12 marks) (CO1)

2 marks

1. Sketch the symbol of EX- OR and EX- NOR gate with its truth table.
2. Identify the following IC and draw the pin diagram of any one IC – 7400,7486,7404,7432.
3. Why NAND and NOR are said to be universal gates.

4 marks

4. Implement OR gate using transistor.
5. Construct basic gates using universal gates.
6. State & explain De-Morgan's first theorem.
7. For the given figure No. 1, derive the Boolean expression of Y.

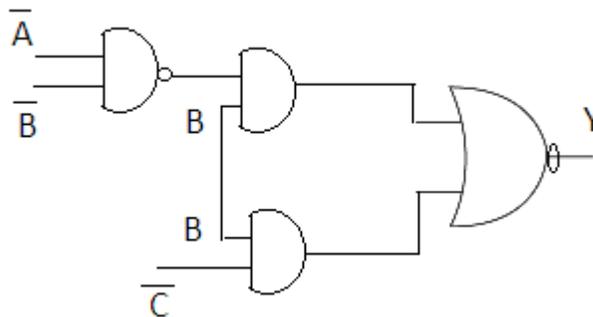


Figure No. 1

8. Write any two laws of Boolean algebra. Justify with the help of truth table.
9. Compare TTL, CMOS & ECL families on the following:
 - (i) Power dissipation
 - (ii) Noise Margin
 - (iii) Speed of Operation
 - (iv) Fan-in

CHAPTER 2: Combinational Logic and Sequential Logic Circuits (18 marks) (CO2)

2 marks

10. Draw three variable K-map formats.

11. State the necessity of multiplexer.
12. Draw Block diagram of 4:1 Multiplexer and write its truth table.
13. Write the excitation table for T-FF.
14. Define modulus of a counter? Write down the number of flip flops required for mod-5 counter?

4 marks

15. Solve the following SOP expressions with the help of K-map :
 - (i) $F(A, B, C, D) = \sum m(0, 1, 3, 4, 5, 7)$
 - (ii) $F(A, B, C) = \sum m(0, 1, 4, 5, 6, 7)$
16. Explain full adder with its logic diagram & truth table.
17. Design Gray to Binary converter.
18. Design 1: 16 demultiplexer using 1: 4 demultiplexers.
19. Draw clocked SR flip flop. State the use of preset and clear in flip flop.
20. Draw master-slave JK FF & write it's truth table.
21. Construct 3-bit synchronous UP counter using flip flop. Also draw its timing diagram.

CHAPTER 3: Basics of Microprocessor and 8051 Microcontroller (08 marks)
(CO3)

2 marks

22. Define: (i) Address bus (ii) Data bus.
23. Compare Harward and Von-Neuman architecture. (any two points)

4 marks

24. Compare microprocessor & microcontroller. (any four points).
25. List any eight features of microcontroller 8051.