QUESTION BANK (K Scheme)

Name of subject: Digital Electronics and Microcontrollers Applications
Course Title: DEM (314324)   **Unit Test: I**
Semester: 4K   **Program Code: EE**

CHAPTER 1: Logic Gates and logic families (16 marks) (CO1) 13.71 (4+4+2+2+2)

2 marks

1. Perform the following Conversion:
   a) $(110101)_2 = ($ $)_{10}$
   b) $(A4)_{16} = ($ $)_{10}$
   c) $(247)_{10} = ($ $)_8$
   d) $(A72)_{16} = ($ $)_8$
   e) $(736)_8 = ($ $)_2$
   f) $(2F9)_{16} = ($ $)_2$
   g) $(123)_8 = ($ $)_{16}$
   h) $(95)_{10} = ($ $)_{16}$
2. Sketch the symbol of EX- OR and EX- NOR gate with its truth table.
3. Identify the following IC and draw the pin diagram of any one IC – 7400 and 7402.
4. Why NAND and NOR are said to be universal gates?

4 marks

5. Explain switch circuit of NAND & NOR gate with Truth table.
6. Identify the following IC and draw its symbol & truth table (Basic Gates).
7. Construct basic gates using universal gates.
8. Add $(569)_{10}$ & $(687)_{10}$ in BCD.
9. Perform the subtraction using $(45)_{10} - (47)_{10}$ using
   a) 1's Compliment method
   b) 2's Compliment method
10. Draw circuit diagram of the following with truth table:
    a) Half Adder
    b) Half Subtractor
    c) Full Adder
    d) Full Subtractor

CHAPTER 2: Digitial Logic Circuits (14 marks) (CO2) 12 (4+4+2+2)

2 marks

11. Define multiplexer & state its necessity.
12. Write the excitation table for SR FF, JK-FF, T-FF and D-FF.
13. Define modulus of a counter? Write down the number of flip flops required for mod-5 counter?
14. Differentiate between MUX & DEMUX. (4 points)
15. Compare synchronous & asynchronous counter. (4 points)

4 marks

16. Draw Block diagram of 8:1 Multiplexer and write its truth table.
17. Design 1: 16 demultiplexer using 1: 4 demultiplexers.
18. Draw clocked SR flip flop. State the use of preset and clear in flip flop.
19. Compare all flip-flops on the basis of logic diagram, circuit diagram and truth table.
20. Draw circuit diagram & truth table of 4-bit asynchronous counter.

CHAPTER 3: 8051 Microcontroller Architecture (08 marks) (CO3)   6.85 (4+2)
2 marks

21. State the different type of buses.
22. Define: (i) Address bus (ii) Data bus (iii) Control bus.
23. Define microcomputer & microcontroller

4 marks

24. Compare microcomputer & microcontroller. (Any four points).
25. List any eight features of microcontroller 8051.
26. Compare Harward and Von-Neuman architecture. (definition, diagram, applications, physical address)