

B.E. (Computer Technology) Third Semester (C.B.S.)  
**Digital Electronics & Microprocessor Paper - III**

P. Pages : 2

Time : Three Hours



TKN/KS/16/7322

Max. Marks :80

- Notes :
1. All questions carry marks as indicated.
  2. Solve Question 1 OR Questions No. 2.
  3. Solve Question 3 OR Questions No. 4.
  4. Solve Question 5 OR Questions No. 6.
  5. Solve Question 7 OR Questions No. 8.
  6. Solve Question 9 OR Questions No. 10.
  7. Solve Question 11 OR Questions No. 12.
  8. Due credit will be given to neatness and adequate dimensions.
  9. Assume suitable data whenever necessary.
  10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) What do you mean by logic gate? Draw and explain all basic logic gate, universal logic gate & special logic gates with their truth table. **8**
- b) State and prove De Morgan's laws. **5**

**OR**

2. a) Reduce the following four variable function to its minimum sum of product form **6**
- $$Y = \overline{A}\overline{B}C\overline{D} + ABC\overline{D} + \overline{A}BC\overline{D} + \overline{A}B\overline{C}D + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}D + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}\overline{D}$$
- b) Implement the following function using basic gates  $f(ABC) = \sum m(0,1,3,7) + \sum d(2,5)$  **7**
3. a) What do you mean by combinational circuit? Draw and explain any two combinational circuit in details. **7**
- b) Implement a 8:1 MUX using 4:1 MUX & explain. **7**

**OR**

4. a) Draw and explain the master-slave J-K configuration & state its advantages. **7**
- b) Convert the following flip-flop **7**
- i) S-R to T flip-flop
  - ii) T to D flip-flop
5. a) Design MOD-6 synchronous counter using J-K flip-flop. **8**
- b) Differentiate between synchronous & Asynchronous counter. **5**

**OR**

6. a) Implement full Adder using two half adder and one OR gate. 7  
b) Draw and explain carry look Ahead Adder. 6
7. a) Draw and explain the architecture of 8085 microprocessor. 9  
b) Draw and explain the PSW of 8085 microprocessor. 5

**OR**

8. a) Explain the function of different registers used in 8085 microprocessor. 7  
b) Explain the classification of Instruction set of 8085 microprocessor with examples. 7
9. a) Draw and explain the timing diagram of INXB instruction. 7  
b) Write an ALP for adding first 10 Natural Nos. 6

**OR**

10. a) Explain any four assembler directive with examples. 6  
b) Differentiate between PUSH/POP and CALL/RETURN instructions. 7
11. a) How does microprocessor handle interrupt? Draw and explain the interrupt structure of 8085. 7  
b) Write a delay subroutine for 8085 to generate delay of  $100\ \mu\text{s}$  (Assume 320 ns clock cycle) 6

**OR**

12. a) Write an ALP for transfer 16 bytes of data from one memory location to another memory location. 7  
b) Explain the concept of looping with examples. 6

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