B.E. Third Semester (Computer Technology) (C.B.S.)
Digital Electronics & Microprocessor

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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. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) What is universal gate? Explain the universal gates with symbol and Truth table. Also implement EX-OR gate with 2 input NAND gate. **8**

b) Convert (101101.10110) into **6**
   i)   Decimal
   ii) Octal
   iii) Hexadecimal

OR

2. a) State and explain DeMorgan's Theorem. **6**

b) Simplify the following & realize using logic gates **8**
$F(A,B,C,D) = \overline{A}BCD + A\overline{B}C + \overline{A}CD + A\overline{C} + C$

3. a) Design full adder circuit using logic gates. Also implement full adder using two half adder circuit. **7**

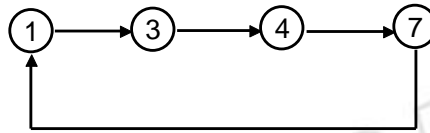b) Design 3 bit binary to gray code convertor using logic gates. **6**

OR

4. a) Draw and explain S-R flip flop. **7**

b) Convert the following flip flop **6**
   a) S-R f/f to T f/f
   b) D f/f to T f/f

5. a) Differentiate between synchronous and Asynchronous counter. **5**

b) Design 3bit asynchronous up-down counter using T-flip flop. **8**

OR

6. a) Write short note on carry 100k ahead adder. **6**

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b) Design synchronous counter that goes through following states. **7**

7. a) Draw and explain the internal architecture of 8085 microprocessor. **10**

b) Explain the following pins of 8085 IC. **4**
   i) ALE
   ii) TRAP
   iii) $IO/\overline{m}$
   iv) Ready

OR

8. a) Explain the following instructions of 8085 IC. **8**
   i) LDA 5000H
   ii) DAD B
   iii) DAA
   iv) XTHL

b) How AD0-AD7 lines are demultiplexed. Explain with diagram. **6**

9. a) What do you mean by addressing mode. Discuss the various addressing modes for 8085 microprocessor. **7**

b) Draw and explain the timing diagram of MVI B, 25H. **6**

OR

10. a) Write an assembly program for 8085 microprocessor to find the smallest number from 10 Nos. Stored in memory from 5020H. Also store the smallest number in register D. **7**

b) Explain PUSH and POP instruction in detail. **6**

11. a) Explain loop and Nested loop with example. **6**

b) Write a program to generate delay of 200 msec. Assume clock frequency of microprocessor is 3MHz. **7**

OR

12. a) Draw and explain the interrupt structure of 8085 IC. **7**

b) Explain any three advanced instructions of 8085 microprocessor. **6**

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