B.Tech. Third Semester (Computer Engineering) (C.B.C.S.) Winter 2022

Digital Circuits & Fundamentals of Microprocessor

P. Pages : 2

Time : Three Hours

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SPM/KW/22/2536

Max. Marks : 70

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. Due credit will be given to neatness and adequate dimensions.
8. Assume suitable data whenever necessary.
9. Diagrams and chemical equations should be given whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.
11. Use of non programmable calculator is permitted.

1. a) Convert the following- 8
   i) Convert 111001_2 to decimal
   ii) Convert 5497_{10} to binary
   iii) Convert 3A9E BOD_{16} to binary
   iv) Convert 756.603_8 to Hex

   b) Expand $A(\bar{B}+A)B$ to Maxterms and Minterms. 6

OR

2. a) Design BCD to 7 segment decoder for common cathod configuration. 7

   b) Why NAND and NOR Gates are called as universal Gates Realise all remaining logic gates using this. 7

3. a) Draw and Explain full adder using two half Address and one OR Gate. 7

   b) Explain 8:1 multiplexer in details. Implement the function $F(A,B,C,D)=\Sigma m(1,2,3,4,5,8,9,12)$ using 8:multiplexers. 7

OR

4. a) Design an Even Parity bit generator for a 4 Bit input. 7

   b) With the help of a Logic diagram and a truth table, Explain an octal to Binary Encoder. 7

5. a) Convert the following- 7
   i) JK flip flop to SR flip flop
   ii) T flip flop to JK flip flop

b) Explain different methods of triggering of f/f, Different truth tables of f/f 7

OR

6. a) With neat diagram Explain the working of serial in, serial out shift register. Also give the applications of shift registers. 7

b) Design synchronous 3 bit Down counter. 7

7. a) Give comparison between PROM, PLA and PAL. 7

b) What is ROM? Explain different types of ROMS. 7

OR

8. Explain in details- 14
i) PAL ii) PLA
iii) PLD

9. a) Draw and Explain the Architecture of 8085 microprocessor in details. 7

b) Differentiate between markable and non markable interrupts. 7

OR

10. a) Explain the following instructions of 8085. 7
i) DAA ii) DAD B
iii) ANA M

b) Explain the various addressing modes of 8085 microprocessor. 7

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