Roll No. 2282300070

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EX-208

B.Tech. III[rd] Semester (New Scheme) CSE Examination, 2022-23

Digital Electronics

Paper - CS - 302

Time : 3 Hours] **[Maximum Marks : 60**

Note :- Ques No. 1 is compulsory. There is internal choice in Q. No. 2 to 6.

1. Write short answers.

(a) Define alphanumeric code.

(b) Explain Minterm and Maxterm

(c) Obtain 4 : 1 MUX using two 2 : 1 MUX.

(d) Describe sequential circuit

(e) Explain what is meant by NMOS logic.

2. Do as directed

(i) Convert $(1001110)_2$ to its octal equivalent

(ii) Add $(23)_8$ and $(67)_8$

(iii) $(A72E)_{16} = (\ )_8$

(iv) $(4562)_{10} = (\ )_{BCD}$

(v) Obtain 2's Complement of $(111001101)_2$

OR

Explain Error correcting codes in detail. Determine hamming code sequence with odd parity for natural BCD for making it an error correcting code.

3. Explain in detail SOP and POS and also compare them. A logic circuit is represented a $P = \Sigma m(1,3,6)$. Write its expression in standard canonical form. Determine its truth table and draw logic diagram.

OR

Explain k-map in detail. Minimize the following expression using karnaugh map $F(A,B,C,D) = \sum(0,5.7.9.12.13)$

4. Design 4-bit parallel adder and subtractor. Also describe BCD adder circuit.

OR

Explain the working of D-type flip flop with its truth table and excitation table. Also convert JK flip flop into D flip flop.

5. Explain Ring counters with the help of block diagram and with suitable diagram. in a 4 stage ripple counter the propagation delay of a flip flop is 50 ns. if the pulse width of stroble is 30ns, find the maximum frequency at which the counter operates reliably.

OR

Describe 3-bit Synchronous counter in detail. Give the difference between Synchronous and asynchronous counter.

6. Write short note on any two of the following

(i) TTL

(ii) RTL

(iii) ECL

OR

Differentiate Mealy and Moore model. Design a mealy machine for a binary input sequence such that if it has a substring 100, the machine output A, if the input has substring 110, its output B or other output will be C.

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