

P-871

Total Pages : 3

Roll No.

MCS-404/DCA-104

Digital Electronics

(MSCIT/PGDCA/DCA)

1st Semester Examination, 2023 (June)

Time : 2 Hours]

[Max. Marks : 70

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answer to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

SECTION-A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. Simplify the following Boolean function using Tabulation Method :

$$F(w, x, y, z) = \sum m(0, 1, 5, 7, 8, 10, 14, 15)$$

2. What do you mean by combinational circuit? Explain adders. Draw 4 bit binary parallel adder.
3. Use a multiplexer having three select lines to implement the following function. Also realize the same using a 16: 1 MUX.
$$F = \sum m (0, 1, 2, 3, 4, 10, 11, 14, 15)$$
4. Convert :
 - (a) SR flip-flop to JK flip-flop.
 - (b) JK flip-flop to SR flip-flop.
 - (c) SR flip-flop to D flip-flop.
 - (d) JK flip-flop to T flip-flop.
5. Explain the working of Decode Counter.

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. What are weighted codes? Compare the different codes used in digital systems.

2. What do you mean by Sum of Product (SOP) of Boolean Expression. Explain with example.
 3. (a) Carry out subtraction using : 1's complement for $(101101 - 11001)_2$.
(b) Subtract 85 from 34 using 10's complement method.
 4. Draw output waveform in each case :
 - (a) AND.
 - (b) X-NOR.
 5. What is a decoder ? Explain 3 to 8 decoder with logic diagram.
 6. What is sequential circuit? How it differ from combinational circuit?
 7. What are flip-flops? What is the difference between flip-flop and latches.
 8. What is universal shift register? Draw the circuit diagram of universal shift register and explain its working.
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