

A-1294

Total Pages : 4

Roll No.

MCS-404/DCA-104

Digital Electronics

Examination February, 2026

Time : 2:00 Hrs.

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 answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

Section–A

(Long Answer Type Questions) (2×19=38)

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.

A-1294

(1)

P.T.O.

1. Explain r 's complement and $(r - 1)$'s complement. Why is complement used ? Compute 10's complement of $(935)_{11}$. Compute 9's complement of $(74.360)_{10}$.
2. Reduce the following Boolean expression to the required number of literals :
 - (i) $ABC + A'B'C + A'BC + ABC' + A'B'C'$
(five literals).
 - (ii) $B'D + A'BC + ACD + A'BC$ (six literals) Using theorem and postulates only.
3. What do you understand by the canonical form of logic expressions ? Explain minterms and maxterms with help of suitable example.
4. What is the difference between Combinational Circuit and Sequential Circuit ? Design a combinational circuit that accepts a three bit number and generates an output binary number equal to the square of the input number.

5. What is Boolean Algebra ? Simplify the Boolean function :

$$F(w, x, y, z) = \Sigma(1, 3, 7, 11, 15)$$

and don't care condition :

$$d(w, x, y, z) = \Sigma(0, 2, 5)$$

Section-B

(Short Answer Type Questions) (4×8=32)

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.

1. What is shift register ? What are their types ? Explain.
2. Explain different types of logic gates with help of suitable logic equation and truth table.
3. What is the difference between Encoder and Decoder ? Explain.
4. What is Master-Slave Flip-Flop ? What is its benefit ?
5. What is the difference between synchronus counter and Asynchronus counter ?

6. What is Random Access Memory ? Explain SRAM vs DRAM.
7. What are Parallel Input Serial Output Shift Register and Parallel Input Parallel Output Shift Register ?
8. What is Flash Memory ? What are its uses ?
