

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
Diploma Engineering, Mid semester Examination

Semester: 3
Subject Code: 03608203
Subject Name: Digital Electronics

Date: 08/08/2022
Time: 07:50 to 09:20
Total Marks: 40

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. English version is considered to be Authentic.

Q.1 Answer any six out of Ten. (2 Marks Each) (12)

1. Perform Binary Addition for 10011001+ 00111100
2. Draw Symbol and truth table of NOR Gate.
3. Draw the K-MAP for 2 variables.
4. Find 2's complement of 10110101.
5. Draw the symbol and truth table of NAND gate.
6. Draw the symbol and truth table of EX-OR Gate.
7. $(A')' = \underline{\hspace{2cm}}$ & If $A=0$ then $A' = \underline{\hspace{2cm}}$
8. $(6543652)_8 = (\underline{\hspace{2cm}})_2$
9. Find 2's complement of 11101110.
10. Perform Binary Subtraction for 1010111-111011

Q.2 A) Simplify using Boolean Expression $(X + Y)(X + \overline{Y})(\overline{X} + Y)$ (03)**OR**

A) Explain Distributive Property and prove it. (03)

B) $(36.39)_{10} = (\underline{\hspace{2cm}})_2 = (\underline{\hspace{2cm}})_8$ (03)**OR**B) $(5726)_8 (\underline{\hspace{2cm}})_2 = (\underline{\hspace{2cm}})_{10}$ (03)

C) Explain Half Subtractor. (04)

ORC) Simplify using Boolean Expression $(A + C)(\overline{A} + B)(B + C)$ (04)

D) State and Prove De 'Morgan's Theorem. (04)

Q.3 A) Explain Associative Property and prove it. (03)**OR**

A) Explain Half Adder. (03)

B) $(567)_{10} = (\underline{\hspace{2cm}})_2 = (\underline{\hspace{2cm}})_8$ (03)**OR**B) $(2674)_8 = (\underline{\hspace{2cm}})_2 = (\underline{\hspace{2cm}})_{10}$ (03)C) Draw logical diagram of given equation :- $Y = (A + B). C + \overline{(A + C)}. \overline{B}$ (04)**OR**

C) Give advantages of K-Map. Draw K-map diagram for 4 variables. (04)

D) Draw symbol and truth table of basic logic gate. (04)