

Mid - Exam

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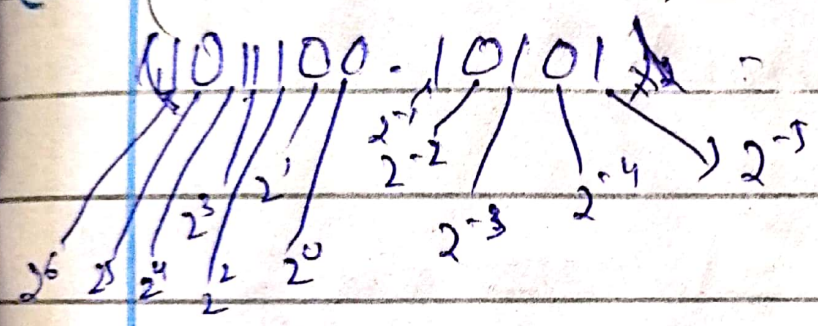
Semester : 3rd

Section : A

Paper : DLD

Q.1:

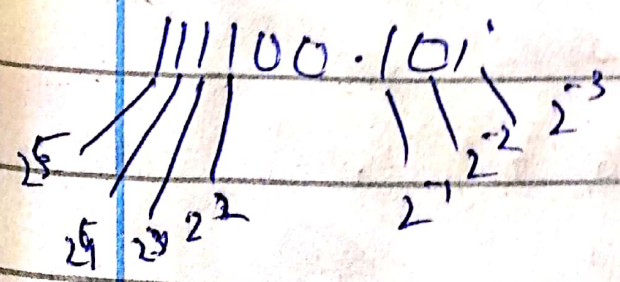
(A) $(1011000.10101)_2$



$$= 64 + 0 + 16 + 8 + 4 + 0 + 0 + 0.5 + 0 + 0.125 + 0.031$$

$$= (92.5)_{10}$$

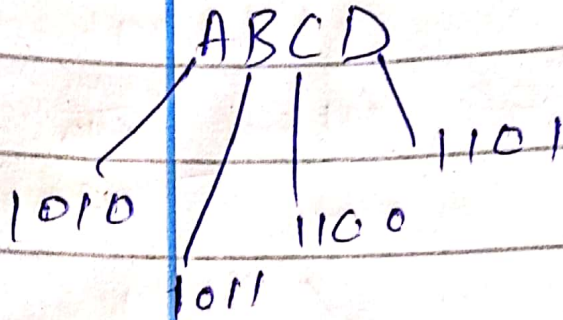
(B) $(111100.101)_2$



$$= 32 + 16 + 8 + 4 + 0 + 0 + 0.5 + 0.125$$

= (60.6)₁₀.

(c) (ABCD)₁₆

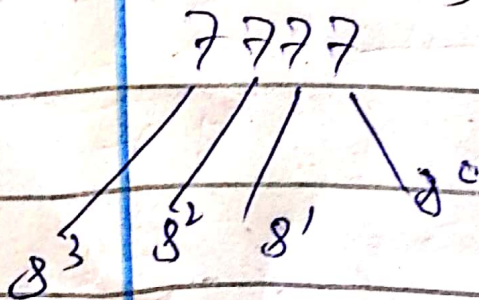


(1010101111001101)₂.

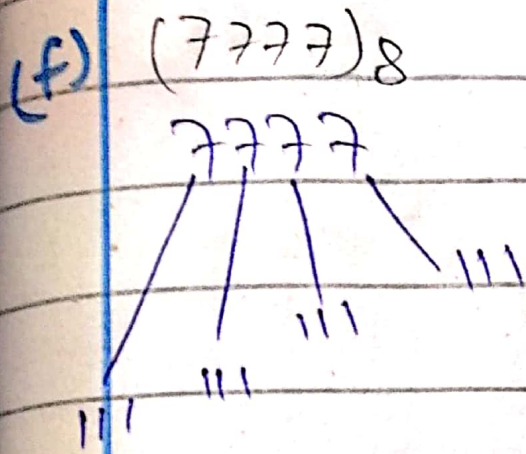
(d) (10)₁₀

$\frac{10}{16} = 0.625 \times 16 = 10 = A.$

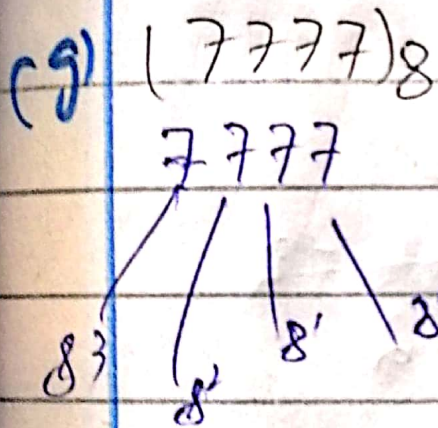
(e) ~~7777~~ (7777)₈



$3584 + 448 + 56 + 7$
 $(4095)₁₀.$



$$= (11111111)_2$$



converted into decimal

$$3584 + 448 + 56 + 7$$

$$(4095)_{10}$$

converted into Hexadecimal

$$\frac{4095}{16} = 255.9375 = 0.9375 \times 16 = 15$$

$$\frac{255}{16} = 15.9375 = 0.9375 \times 16 = 15$$

$$\frac{15}{16} = 0.9375 \times 16 = 15$$

$(FFF)_{16}$.

m) $(10101111)_2$

10101111

$\frac{010}{10} \frac{010}{10} \frac{111}{5} \rightarrow 7$
 $2 \quad 5$

$(257)_8$.

ii) $(101010)_{10}$

$101010 = \frac{6213}{8} = \frac{12426}{16}$

$\frac{12626}{8}$

$12626.25 \Rightarrow 0.25 \times 8 = 2$

$\frac{6213}{8}$

$\frac{394}{8} = \frac{788}{16} = \frac{1576}{32}$

$\frac{1578}{8}$

$1578.25 = 0.25 \times 8 = 2$

$\frac{394}{8}$

$\frac{197}{8}$

$197.25 = 0.25 \times 8 = 2$

$\frac{197}{8}$

$197.25 = 0.25 \times 8 = 2$

$\frac{24}{8}$

$24.625 = 0.625 \times 8 = 5$

$\frac{24}{8}$

$24.625 = 0.625 \times 8 = 5$

$\frac{24}{8}$

$24.625 = 0.625 \times 8 = 5$

$\frac{24}{8}$

3

8

$(18A92)_{16} = 125222$

5

(j) $(98)_{10}$
98
/ \

1001

1000

$(10011000)_{BCD}$.

Q22

(A) $\overline{A\bar{B}(C+\bar{D})} \rightarrow \overline{A\bar{B}} + (C+\bar{D})$
 $\overline{A+\bar{B}} + \bar{C} \cdot \bar{D}$ $\bar{B} = B$
 $(\bar{A}+B) + \bar{C}D$ $\bar{D} = D$

(B)

$\overline{(A+\bar{B}+C+\bar{D})} + \overline{A\bar{B}C\bar{D}}$
 $\overline{(A+\bar{B}+C+\bar{D})} + \overline{A\bar{B}C\bar{D}}$
 $\bar{A} \cdot \bar{\bar{B}} \cdot \bar{C} \cdot \bar{\bar{D}} + (\bar{A} + \bar{B} + \bar{C} + \bar{D})$
 $(\bar{A} \bar{B} \bar{C} \bar{D}) + \bar{A} + \bar{B} + \bar{C} + \bar{D}$

$\bar{\bar{D}} = D$
 $\bar{\bar{B}} = B$

Q 31.

(A)

iii)

$$\bar{x}\bar{y}\bar{z} + \bar{x}y\bar{z} + \bar{x}yz + x\bar{y}\bar{z}$$

x y z

0 0 0 $\rightarrow \bar{x}\bar{y}\bar{z} = 1$

0 0 1 $\rightarrow 0$

0 1 0 $\rightarrow \bar{x}y\bar{z} = 1$

0 1 1 $\rightarrow \bar{x}yz = 1$

1 0 0 $\rightarrow 0$

1 0 1 $\rightarrow x\bar{y}z = 1$

1 1 0 $\rightarrow x\bar{y}\bar{z} = 1$

1 1 1 $\rightarrow 0$

(B)

$$\bar{A}\bar{B}C\bar{D} + A\bar{B}C\bar{D} + \bar{A}B\bar{C}D + A\bar{B}C\bar{D}$$

A B C D

0 0 0 0 $\rightarrow \bar{A}\bar{B}\bar{C}\bar{D}$

0 0 0 1 $\rightarrow 0$

0 0 1 0 $\rightarrow \bar{A}\bar{B}C\bar{D} = 1$

0 0 1 1 $\rightarrow \bar{A}\bar{B}CD = 1$

0 1 0 0 $\rightarrow 0$

0 1 0 1 $\rightarrow 0$

0 1 1 0 $\rightarrow 0$

0 1 1 1 $\rightarrow 0$

1 0 0 0 $\rightarrow 0$

1 0 0 1 $\rightarrow 0$

1 0 1 0 $\rightarrow 0$

1 0 1 1 $\rightarrow 0$

1 0 0 0 $\rightarrow ABC\bar{D} = 1$

1 1 0 1 $\rightarrow 0$

1 1 0 0 $\rightarrow 0$

1 1 1 1 $\rightarrow 0$

Q41.

(A)

$$BC + DE(B\bar{C} + DE)$$

$$A \cdot A = A$$

$$BC + DE(B\bar{C} + DE)$$

$$~~BC + DE(B\bar{C} + DE)~~$$

(B)

$$B(C\bar{D} + CE)$$

$$C \cdot C = C$$

$$C \cdot C = C$$

$$0 + B C C E$$

$$B C E$$

(C)

$$B + C[B\bar{D} + (C + \bar{D})E]$$

$$B + C[B\bar{D} + EC + E\bar{D}]$$

$$B + C\bar{B}\bar{D} + CEC + CE\bar{D}$$

$$C \cdot C = C$$

$$B + C\bar{B}\bar{D} + CE + CE\bar{D}$$