

Date

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Semester .. 3<sup>rd</sup>

Section A

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# Question No. 1

(A)  $(1011100.10101)_2 = (\dots)_{10}$

$$(1 \times 2^6) + (0 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (0 \times 2^0) + (1 \times 2^{-1}) + (0 \times 2^{-2}) + (1 \times 2^{-3}) + (0 \times 2^{-4}) + (1 \times 2^{-5})$$

Decimal value =  $(97.65625)_{10}$

(B)  $(111100.101)_2 = (\dots)_{10}$

$$(1 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (0 \times 2^0) + (1 \times 2^{-1}) + (0 \times 2^{-2}) + (1 \times 2^{-3})$$

Decimal value =  $(60.625)_{10}$

(C)  $(ABCD)_{16} = (\dots)_{10}$

A	B	C	D
1010	1011	1100	1101

$(101010111001101)_{16}$

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(D)  $(10)_{10} = \dots ( \dots )_{16}$

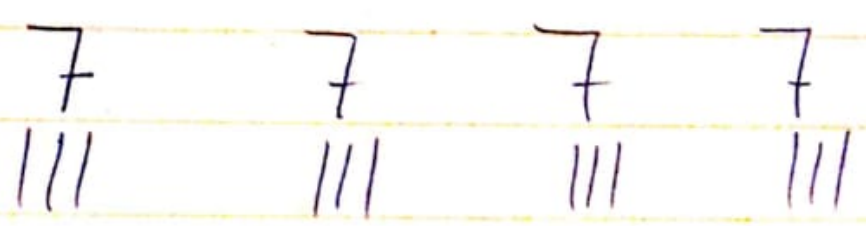
$$\begin{array}{r|l} 16 & 10 \\ \hline 16 & 0 \end{array} \quad 10$$

$(10)_{10} = (A)_{16}$

E)  $(7777)_8 = ( \dots )_{10}$

$$\begin{aligned} (7777)_8 &= (7 \times 8^3) + (7 \times 8^2) + (7 \times 8^1) + (7 \times 8^0) \\ &= 3584 + 448 + 16 + 7 \\ &= \underline{\underline{(4095)_{10}}} \end{aligned}$$

F)  $(7777)_8 = ( \dots )_2$



$( ||| ||| ||| ||| )_2$

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g (7777)<sub>8</sub> ..... ( )<sub>6</sub>

from octal B Binary we have done in part of F value is

(11111111)<sub>2</sub>

$\frac{111}{F} \quad \frac{111}{F} \quad \frac{111}{F} = (FFF)_{16}$

h (10101111)<sub>2</sub> = (....)<sub>8</sub>

$\frac{010}{2} \quad \frac{101}{5} \quad \frac{111}{7} = (257)_8$

i (101010)<sub>16</sub> = (....)<sub>8</sub>

8	101010	
8	12626	2
8	1578	2
8	197	2
8	24	5
8	3	0
	6	3

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$$(101010)_{10} = (305222)_8$$

(J)  $(98)_{10} = (\dots)_{BCD}$

BCD = 10011000 . Ans!

## Question No. 2

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

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

$$= \overline{A} + \overline{\overline{B}} + \overline{C} \cdot \overline{\overline{D}}$$

$$= \overline{A} + B + \overline{C} \cdot D$$

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

Sol:  $\bar{A}\bar{B}\bar{C}\bar{D} + \bar{A} + \bar{B} + \bar{C} + \bar{D}$   
 $= \bar{A} + \bar{B} + \bar{C} + \bar{D}$

Sol!

Question No. 3

$X\bar{Y}\bar{Z} + \bar{X}Y\bar{Z} + X\bar{Y}Z + XY\bar{Z}$

Truth table

X	Y	Z	X
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

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(B)  $\bar{A}\bar{B}C\bar{D} + ABC\bar{D} + \bar{A}\bar{B}CD$   
 $+ \bar{A}\bar{B}C\bar{D}$

A	B	C	D	X
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0

(7)

# QUESTION 4

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

Solution:

$$BC + DE\bar{B}C + DEDE$$

$$AA = A$$

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

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

Solution:

$$BC\bar{C}\bar{D} + BCCE$$

$$0 + BCCE$$

$$BCE$$

$$C \cdot \bar{C} = 0$$

$$C \cdot C = C$$



⑧

$$c) \underline{B + C [BD + C + \bar{D}]E}$$

Solution.

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

$$B + CBD + CEC + CE\bar{D} \quad C \cdot C = C$$

$$\underline{B + CBD + CE + CE\bar{D}}$$