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$$\frac{15}{16} = 0.9375 \times 16 = 15_F = (FFF)_{16}$$

$$H) = (10101111)_2 = (\dots)_8$$

Solution

$$(10101111)_2 = (\dots)_8$$

$$\begin{array}{r} 010 \\ \downarrow \\ 2 \end{array} \begin{array}{r} 101 \\ \downarrow \\ 5 \end{array} \begin{array}{r} 111 \\ \downarrow \\ 7 \end{array} = (257)_8$$

$$I) = (101010)_{10} = (\dots)_8$$

Solution

$$\begin{array}{r} 101010 \\ \hline 8 \end{array} = 12626.25 \Rightarrow 0.25 \times 8 = 2$$

$$\begin{array}{r} 12626 \\ \hline 8 \end{array} = 1578.25 \Rightarrow 0.25 \times 8 = 2$$

$$\begin{array}{r} 1578 \\ \hline 8 \end{array} = 197.25 \Rightarrow 0.25 \times 8 = 2$$

$$\begin{array}{r} 197 \\ \hline 8 \end{array} = 24.625 \Rightarrow 0.625 \times 8 = 5$$

$$\begin{array}{r} 24 \\ \hline 8 \end{array} = 3$$

$$= (35222)_8$$

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

Solution

$$\begin{array}{c} 98 \\ \swarrow \quad \searrow \\ 1001 \quad 1000 \end{array}$$

$$= (10011000)_{BCD}$$

Q3:- Develop a truth table for each of the following standard SOP expression.

A) $\bar{x}\bar{y}\bar{z} + \bar{x}y\bar{z} + x\bar{y}\bar{z} + \bar{x}yz + xy\bar{z}$

| Input | | | (SOP) expression | output |
|-------|---|---|-------------------------|--------|
| x | y | z | | |
| 0 | 0 | 0 | $\bar{x}\bar{y}\bar{z}$ | 1 |
| 0 | 0 | 1 | $\bar{x}\bar{y}z$ | 0 |
| 0 | 1 | 0 | $\bar{x}y\bar{z}$ | 1 |
| 0 | 1 | 1 | $\bar{x}yz$ | 1 |
| 1 | 0 | 0 | $x\bar{y}\bar{z}$ | 0 |
| 1 | 0 | 1 | $x\bar{y}z$ | 1 |
| 1 | 1 | 0 | $xy\bar{z}$ | 1 |
| 1 | 1 | 1 | xyz | 0 |

B) $\bar{A}\bar{B}c\bar{D} + A\bar{B}c\bar{D} + \bar{A}\bar{B}cD + \bar{A}Bc\bar{D}$

| A | B | C | D | Expression | Output |
|---|---|---|---|--------------------------|--------|
| 0 | 0 | 0 | 0 | $\bar{A}\bar{B}c\bar{D}$ | 1 |
| 0 | 0 | 0 | 1 | | 0 |
| 0 | 0 | 1 | 0 | $\bar{A}\bar{B}cD$ | 1 |
| 0 | 0 | 1 | 1 | $\bar{A}Bc\bar{D}$ | 1 |
| 0 | 1 | 0 | 0 | | 0 |
| 0 | 1 | 0 | 1 | | 0 |
| 0 | 1 | 1 | 0 | | 0 |
| 0 | 1 | 1 | 1 | | 0 |
| 1 | 0 | 0 | 0 | | 0 |
| 1 | 0 | 0 | 1 | | 0 |
| 1 | 0 | 1 | 0 | | 0 |
| 1 | 0 | 1 | 1 | | 0 |
| 1 | 1 | 0 | 0 | $A\bar{B}c\bar{D}$ | 1 |
| 1 | 1 | 0 | 1 | | 0 |
| 1 | 1 | 1 | 0 | | 0 |
| 1 | 1 | 1 | 1 | | 0 |

