

DCLD Assignment 1

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Section : A

Number Conversion :

$$(1) (1101111)_2 = (?)_8$$

$$\begin{array}{ccc} \overline{001} & \overline{101} & \overline{111} \\ \downarrow & \downarrow & \downarrow \\ 1 & 5 & 7 \end{array}$$

$$\therefore (1101111)_2 = (157)_8$$

$$(2) (2AB35.42)_{16} = (?)_2$$

$$\begin{array}{ccccccc} 2 & A & B & 3 & 5 & . & 4 & 2 \\ 0010 & 1010 & 1011 & 0011 & 0101 & & 0100 & 0010 \end{array}$$

$$\therefore (2AB35.42)_{16} = (00101010101100110101.01000010)_2$$

$$(3) (101101.110)_2 = (?)_{10}$$

$$\begin{array}{ccccccc} & 1 & 0 & 1 & 1 & 0 & 1 & . & 1 & 1 & 0 \\ & 2^5 & 2^4 & 2^3 & 2^2 & 2^1 & 2^0 & & 2^{-1} & 2^{-2} & 2^{-3} \\ 101101.110_2 = & 2^5 + 2^3 + 2^2 + 2^0 + 2^{-1} + 2^{-2} \\ & = 32 + 8 + 4 + 1 + 0.5 + 0.25 \\ & = 45.75 \end{array}$$

$$\therefore (101101.110)_2 = (45.75)_{10}$$

$$(4) (256.23.27)_{10} = (?)_2$$

Integral part:

| | | |
|---|-------|---|
| 2 | 25623 | 1 |
| 2 | 12811 | 1 |
| 2 | 6405 | 1 |
| 2 | 3202 | 0 |
| 2 | 1601 | 1 |
| 2 | 800 | 0 |
| 2 | 400 | 0 |
| 2 | 200 | 0 |
| 2 | 100 | 0 |
| 2 | 50 | 0 |
| 2 | 25 | 1 |
| 2 | 12 | 0 |
| 2 | 6 | 0 |
| 2 | 3 | 1 |
| | 1 | |

Fractional part

$$\begin{aligned}
 0.27 \times 2 &= 0.54 & 0 \\
 \cancel{0.70 \times 2} &= \cancel{1.40} & \cancel{1} \\
 0.54 \times 2 &= 1.08 & 1 \\
 0.08 \times 2 &= 0.16 & 0 \\
 0.16 \times 2 &= 0.32 & 0
 \end{aligned}$$

$$\therefore (256.23.27)_{10} = (10010000010111)_2$$

$$(5) (711436)_8 = (?)_{16}$$

$$\begin{array}{cccccc}
 7 & 1 & 1 & 4 & 3 & 6 \\
 111 & 001 & 001 & 100 & 011 & 110
 \end{array}$$

↓

$$\begin{array}{ccccc}
 0011 & 1001 & 0011 & 0001 & 1110 \\
 \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\
 3 & 9 & 3 & 1 & E
 \end{array}$$

$$(711436)_8 = (3931E)_{16} \text{ Ans.}$$

$$(5) (156A.82)_{16} = (?)_{10}$$

$$\begin{array}{cccccc} 1 & 5 & 6 & A & . & 8 & 2 \\ 1 \times 16^3 & 5 \times 16^2 & 6 \times 16^1 & 10 \times 16^0 & & 8 \times 16^{-1} & 2 \times 16^{-2} \end{array}$$

$$\begin{aligned} (156A.82)_{16} &= 4096 + 1280 + 96 + 10 + \frac{8}{16} + \frac{2}{256} \\ &= (5482.1953125)_{10} \end{aligned}$$

$$(7) (4267)_{10} = (?)_8$$

| | | |
|---|------|---|
| 8 | 4267 | 3 |
| 8 | 533 | 5 |
| 8 | 66 | 2 |
| 8 | 8 | 0 |
| | 1 | |

$$(4267)_{10} = (10253)_8$$

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