11-Sept

DELD Test (2|118)

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1) Binary equivalent of $(45.312)_8$ is

$(45.312)_8$ → octal

$(100\ 101.\ 011\ 001\ 010)_2$ → Binary

ie. $(100101.011001010)_2$ Ans

2) decmal value of $(A0F9.0EB)_{16}$ is

| Deci. | Hexa. |
|---|---|
| 0 | 0 |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| 10 | A |
| 11 | B |
| 12 | C |
| 13 | D |
| 14 | E |
| 15 | F |

$(A0F9.0EB)_{16}$

$(10\times16^3 + 0\times16^2 + 15\times16^1 + 9\times16^0 + 0\times16^{-1} + 14\times16^{-2} + 11\times16^{-3})_{10}$

$40960 + 240 + 9 + 0.054 + 0.002$

$= 41209.057$

Ans

3) Sum of $(27)_8$ & $(74)_8$ is

$$\begin{array}{r} (27)_8 \\ +(74)_8 \\ \hline (123)_8 \end{array}$$

$\therefore (27)_8 + (74)_8 = (123)_8$

Ans

4) $(128)_{10} = (1003)_b$

| | |
|---|---|
| 3 \| | 128 |
| 0 \| | $x = 25$ |
| 0 \| | $y$ |
| | 1 |

the value of $x \Rightarrow \frac{128-3}{5} = 25$

the value of $y \Rightarrow \frac{25}{5} = 5$

⇒ the base of number should be 5.

∴ value of b is 5.

5) $(A2C)_{16} = (X)_8$

A 2 C Hexadecimal

↓ ↓ ↓

1010 0010 1100 binary

$\therefore (A2C)_{16} = (101000101100)_2$

101 000 101 100 binary

↓ ↓ ↓ ↓

5 0 5 4 octal

$\therefore$ ~~Act~~ $(101000101100)_2 = (5054)_8$

$\therefore (A2C)_{16} = (5054)_8 \therefore \Rightarrow X = 5054$ Ans

6) binary equivalent of 0.25

| fecimal | | Ans. | integer. |
|---|---|---|---|
| $0.25 \times 2$ | = | 0.5 | 0 |
| $0.5 \times 2$ | = | 1 | 1 |

$\therefore (0.25)_{10} = (0.01)_2$.

Ans

7) value in hexadecimal form of $(18.675)_{10}$.

decimal

| | |
|---|---|
| 1 | 18 |
| | 2 |

converting 18 to hexadecimal form.

| | |
|---|---|
| 1 | 18 |
| | 2 |

$\therefore (18)_{10} = (12)_{16}$.

converting 0.675 to hexadecimal form:

| decimal number | | integer part | equivalent hex. |
|---|---|---|---|
| 0.675 x 16 | = 10.8 | 10 | A. |
| 0.8 x 16 | = 12.8 | 12 | C |
| 0.8 x 16 | = 12.8 | 12 | C |
| 0.8 x 16 | = 12.8 | 12 | C. |

$\therefore (0.675)_{10} = (ACC)_{16}$

$\therefore (18.675)_{10} = (12.ACC)_{16}$

ANS

8) If $(41)_3 = 13$, the base of number system is

9) Sum of binary numbers

$(1101.101)_2$ & $(111.011)_2$

```
  1 1 0 1 . 1 0 1
    1 1 1 . 0 1 1
  ---------------
1 0 1 0 1 . 0 0 0
```

13.625
7.375
21.000

∴ Ans is $(10101.000)_2$

10) 8 bit 2's complement form of $(-45)_{10}$.

binary representation of 45 is 101101

∴ -45 is represented as 1 0010111
(sign bit, magnitude)

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2's complement of +45: is:

finding 2's complement of 0 00 10 1 10 1 :

1's complement → 1 11 0 1 00 1 0

+ 1

1 1 1 0 1 0 0 1 1

8 bit 2's complement of $(-45)_{10}$ is

(1 1 1 0 1 0 0 1 1)

Sign magnitude Ans

11> decimal equivalent of $(2124)_5$

$(2\ 1\ 2\ 4)_5$ ⟹ given

$2\times5^3 + 1\times5^2 + 2\times5^1 + 4\times5^0 = (2\times125) + (25) + (10) + 4$

$= (289)_{10}$

$\therefore (2124)_5 = (289)_{10}$ Ans

12> given number $(3\times4096 + 15\times256 + 5\times16 + 3)$

also written as $(3\times16^3 + 15\times16^2 + 5\times16^1 + 3\times16^0)$

hex. equivalent $(3F53)_{16}$

binary equivalent $(1111\ 0101\ 0011)_2$

total number of 1's ⇒ 10.

Ans

13> ~~decimal~~ 4bit binary

14> decimal value of signed magnitude binary number (1 1 1 0 1) is

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→ $(1\underbrace{11.01}_{\text{magnitude}})_2 = (-13)_{10}$

sign.

: Ans -13

1's complement

0 0 0 1 0.

+ 1

0 0 0 1 1

$(00011)_2 \rightarrow (3)_{10}$

1) Moore's law → ~~optimum~~

The number of transistors on a chip doubles every two years ✓