NAME - KHUSHBOO UPADHYAY.

S.ID - 20052088.

COURSE- BSC IT.

Quest. (a) (i) $(10110.0101)_2 = (\_\_)_{10}$.

→ Internal Part :

$(10110)_2$

$= 1\times2^4 + 0\times2^3 + 1\times2^1 + 0\times2^0$.

$= 16 + 0 + 4 + 2 + 0$.

$= (22)_{10}$.

→ Fraction Part :

(0101).

$= 0\times2^{-1} + 1\times2^{-2} + 0\times2^{-3} + 1\times2^{-4}$

$= 0 + \frac{1}{4} + 0 + \frac{1}{16}$.

$= \frac{4+1}{16}. = \frac{5}{16} = (0.3125)_{10}$.

$\Rightarrow (22.3125)_{10}$ Ans.

(ii) $(26.24)_8 = (\_\_)_2$

→ Internal Part ←

$(26)_8$.

$\Rightarrow (010110)_2$

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→ Fractional Part.

$(\overrightarrow{24})_8 \longrightarrow (0101)_2$.

⇒ $(10110.0101)_2$ Ans

(iii) $(FAFA.B)_{16} \longrightarrow (\ )_8$

→ Internal Part.

$(FAFA)_{16} \Rightarrow (\underline{1111}\ \underline{1010}\ \underline{1111}\ \underline{1010})_2$.

Now, Divide in 3 parts to convert into octal.

001 111 101 011 111 010.
↓ ↓ ↓ ↓ ↓ ↓
1 7 5 3 7 2.

→ Fractional Part -

$(B) = (1011)_2$.

Now, divide it in 3parts.

⇒ 101 100.
↓ ↓
5 4.

⇒ The ans. is $(175372.54)_8$ Ans

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(iv). $(5689)_{10} = (\_\_)_{16}$.

16	5689.	
16	355.	9
16	2	3
16	1	6
	0	1

$\Rightarrow (5689)_{10} = (1639)_{16}$ Ans

(v) $(68BE)_{16} = (\_)_2$.

6 8 B E.
↓ ↓ ↓ ↓
0110 1000 1011 1110.

$(68BE)_{16} = (0110100010111110)_2$ Ans

Ans(b).

(i) $(3250)_{10} - (72532)_{16}$ using 10's complement.

10's complement of $(72532)_{16}$.

99999
− 72532.
27467. $\Rightarrow$ 27467 + 1 $\Rightarrow$ 27468 Ans

Now,

03250.
+ 27468.
30718.

99999 − 30718 = 69281

Now, 69281 + 1 = 69282.

(ii) $(52532)_{10}$ — $(3250)_{10}$ using 10's complement.

10's complement of $(3250)_{10}$.

$99999 - 03250. = 96749.$

$\therefore 96749 + 1 = \boxed{96750}$

Now, $52532 + 96750$

$= 149282.$ Ans

Khushboo Upadhyay.

20052088.

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