Analytical Questions

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1) convert the following numbers from base 10 to base 16.

(i) $(2020)_{10} \longrightarrow (\ )_{16}$

16 | 2020	
16 | 126	-4
7	-14

$A \rightarrow 10$
$B \rightarrow 11$
$C \rightarrow 12$
$D \rightarrow 13$
$E \rightarrow 14$
$F \rightarrow 15$

$\Rightarrow 7144$

$\Rightarrow 7E4$

$\therefore (2020)_{10} = (7E4)_{16}$

(ii) $(2020.65625)_{10} \rightarrow (\ )_{16}$

w.k.t $(2020)_{10} = (7E4)_{16}$

$\therefore$ for fractional part

$(0.65625)_{10}$,

By using multiplication method,

$0.65625 \times 16 = 10.5$

$0.5 \times 16 = 8.0$

from here, we took Real part i.e,

$(0.65625)_{10} = 0.108$
$= 0.A8$

$\therefore (2020.65625)_{10} = (7E4.A8)_{16}$

(iii) $(172)_{10} \rightarrow (\ )_{16}$

16 | 172	
10	-12

$\therefore (172)_{10} = 1012$
$= AC$

$\therefore (172)_{10} = (AC)_{16}$

(iv) $(172.983)_{10}$

w.k.t Real part $(172)_{10} = (AC)_{16}$

$\therefore$ for fractional part,

$(0.983)_{10}$, By using multiplication method,

$0.983 \times 16 = 15.728$

$0.728 \times 16 = 11.648$

$0.648 \times 16 = 10.368$

$0.368 \times 16 = 5.888$

from here, we took Real part,

$(0.983)_{10} = 0.15111105$
$= (0.FBA5)_{16}$

$\therefore (172.983)_{10} = (AC.FBA5)_{16}$

(2) convert decimal number 49 into hexa decimal.

$(49)_{10} \rightarrow (\ )_{16}$

16 | 49	
3	-1

$= (49)_{10} = (31)_{16}$

(3) convert 122810 into hexa

$(122810)_{10} \longrightarrow (\ )_{16}$

16 | 122810	
16 | 7675	-10 = A
16 | 479	-11 = B
16 | 29	-15 = F
1	-13 = D

$\therefore (122810)_{10} \longrightarrow (1DFBA)_{16}$

4) convert 60010 in to hexa decimal number

A) $(60010)_{10} \longrightarrow (\ )_{16}$

16 | 60010
16 | 3750 - 10 = A
16 | 234 - 6
14 - 10 = A
↓
E.

$\therefore (60010)_{10} = (EA6A)_{16}$ //

5) convert the decimal number 1542 in to hexa decimal number.

A) $(1542)_{10} \longrightarrow (\ )_{16}$

16 | 1542
16 | 96 - 6
6 - 0

$\therefore (1542)_{10} = (606)_{16}$ //

(6) what is the hexa decimal equivalent of the decimal number $[175]_{10}$

$[175]_{10} \longrightarrow (\ )_{16}$

16 | 175
10 - 15 → F.
↓
A

$\therefore (175)_{10} = (AF)_{16}$ //

(7) convert the following decimal number to hexa.

(i) 105 $(105)_{10} \rightarrow (\ )_{16}$

16 | 105
6 - 9

$\therefore (105)_{10} = (69)_{16}$

(ii) 450 $(450)_{10} \rightarrow (\ )_{16}$

16 | 450
28 - 2
1 - 12

$\therefore (450)_{10} = 1122$
$= (1C2)_{16}$ //

(iii) 199 $(199)_{10} \rightarrow (\ )_{16}$

16 | 199
C ← 12 - 7

$\therefore (199)_{10} = (C7)_{16}$ //

(iv) 3000 $(3000)_{10} \rightarrow (\ )_{16}$

16 | 3000
16 | 187 - 8
11 - 11 → B
↓
B

$\therefore (3000)_{10} \longrightarrow (BB8)_{16}$

(8) convert the following numbers from base 10 to base 8.

(i) $(1032)_{10}$ $(1032)_{10} \rightarrow (\ )_8$

8 | 1032
8 | 129 - 0
8 | 16 - 1
2 - 0

$\therefore (1032)_{10} \longrightarrow (2010)_8$

(ii) $(1032.6875)_{10}$

$(1032.6875) \rightarrow (\ )_8$

w.k.t Real part

$(1032)_{10} \rightarrow (2010)_8$

$\therefore$ we took fractional part $(0.6875)_{10}$

∴ from multiplication method,

$0.6875 \times 8 = 5.5$

$0.5 \times 8 = 4$

$\therefore (0.6875)_{10}$ = By taking real part.

$= 0.54$

$\therefore (1032.6875)_{10} = (2010.54)_8$ //

9) convert $(172)_{10}$ to $(\ )_8$

8	172	
8	21	-4
	2	-5

$\therefore (172)_{10} = (254)_8$

10) convert $(172.878)_{10}$ to $(\ )_8$

w.k.t Real part

$(172)_{10} = (254)_8$.

∴ we took fractional part $(0.878)_{10}$

from multiplication method,

$0.878 \times 8 = 7.024$

$0.024 \times 8 = 0.192$

$0.192 \times 8 = 1.536$

$0.536 \times 8 = 4.288$.

$\therefore (0.878)_{10}$ = By taking real part

$= 0.7014$

$\therefore (172.878)_{10} = (254.7014)_8$

(11) convert $(127)_{10}$ to octal.

$(127)_{10} \rightarrow$ ~~127~~ $(\ )_8$

8	127	
8	15	-7
	1	-7

$\therefore (127)_{10} = (177)_8$

12) Identify the Ip address of class identification.

Classes	Range
class A	0 to 126
class B	128 - 191
class C	192 - 223
class D	224 - 239
class E	240 - 255

(i) 10.250.1.1

Limit of class 'A' Range is from 0-126.

∴ By observation 10.250.1.1 belongs to "class A".

(ii) 193.42.1.1

Limit of class 'C' Range is from 192-223

∴ By observation 193.42.1.1 belongs to "class C"

(iii) 249.240.80.78

Limit of class 'E' is Range is from 240-255

∴ By observation 249.240.80.78 belongs to "class E"

(iv) 215.45.45.0

Limit of class 'C' is Range is from 192 to 223.

∴ By observation 215.45.45.0
belongs to "class C"

v) 33.0.0.0

Limit of class A Range is from
0-126.

∴ By observation 33.0.0.0
belongs to "class A"

(vi) 158.98.80.0

Limit of class B Range
is from 128-191

∴ By observation 158.98.80.0
belongs to "class B"