"assignment 1"

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From binary to Hex

1 (i) 0 0 1 0 0 1 1 0 0 1 0

1 3 2

(ii) 1 1 1 1 0 0 0 0 1 1 1 0 0 0 1 0

F 0 E 2

(iii) 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1

5 5 5 5

(iv) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

F F F F

(v) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1

0 0 0 1

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2 (i) $(239)_{16} = (9 \times 16^0) + (3 \times 16^1) + (2 \times 16^2)$

$9 + 48 + 512 = 569_{decimal}$

$569 \div 8$	1
$71 \div 8$	7
$8 \div 8$	0
1	1
0	

$= (1071)_8$

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② (ii) $(F0E2)_{16} = (2\times16^0) + (E^{14}\times16^1) + (0\times16^2) + (F^{15}\times16^3)$

$2 + 224 + 0 + 61440$

$= 61666$ decimal

$61666 \div 8$	2
$7708 \div 8$	4
$963 \div 8$	3
$120 \div 8$	0
$15 \div 8$	7
1	1
0	

$= (170342)_8$

(iii) $(5555)_{16} = (5\times16^0) + (5\times16^1) + (5\times16^2) + (5\times16^3)$

$5 + 80 + 1280 + 20480$

$= 21845$ decimal

$21845 \div 8$	5
$2730 \div 8$	2
$341 \div 8$	5
$42 \div 8$	2
$5 \div 8$	5
0	

$= (52525)_8$

(iv) $(FFFF)_{16} = (F^{15}\times16^0) + (F^{15}\times16^1) + (F^{15}\times16^2) + (F^{15}\times16^3)$

$15 + 240 + 3840 + 61440$

$= 65535$ decimal

$65535 \div 8$	7
$8191 \div 8$	7
$1023 \div 8$	7
$127 \div 8$	7
$15 \div 8$	7
$1 \div 8$	1
0	

$= (177777)_8$

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(v) $(01)_{16} = 1 \times 16^0 + 0 \times 16^1 = 1$ decimal

1 decimal $= (1)_8$

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3 (i) $(1071)_8 = (1 \times 8^0) + (7 \times 8^1) + (0 \times 8^2) + (1 \times 8^3)$

$1 + 56 + 0 + 512 = 569$ decimal

(ii) $(170342)_8 = (2 \times 8^0) + (4 \times 8^1) + (3 \times 8^2) + (0 \times 8^3) + (7 \times 8^4) + (1 \times 8^5) = 61666$ decimal

(iii) $(52525)_8 = (5 \times 8^0) + (2 \times 8^1) + (5 \times 8^2) + (2 \times 8^3) + (5 \times 8^4)$

$= 21845$ decimal

(iv) $(177777)_8 = (7 \times 8^0) + (7 \times 8^1) + (7 \times 8^2) + (7 \times 8^3) + (7 \times 8^4) + (1 \times 8^5) = 65535$ decimal

(v) $(1)_8 = (1 \times 8^0) = 1$ decimal

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4 (i) $(11101)_2 = (1 \times 2^0) + (0 \times 2^1) + (1 \times 2^2) + (1 \times 2^3) + (1 \times 2^4) = 29$

(ii) $(00000111)_2 = (1 \times 2^0) + (1 \times 2^1) + (1 \times 2^2) + (0 \times 2^3) + (0 \times 2^4) + (0 \times 2^5) + (0 \times 2^6) + (0 \times 2^7) = 7$

(iii) $(1100011)_2 = (1 \times 2^0) + (0 \times 2^1) + (0 \times 2^2) + (0 \times 2^3) + (1 \times 2^4) + (1 \times 2^5) = 49$

(iv) $(1010)_2 = (0 \times 2^0) + (1 \times 2^1) + (0 \times 2^2) + (1 \times 2^3) = 10$

(v) $(111111)_2 = (1 \times 2^0) + (1 \times 2^1) + (1 \times 2^2) + (1 \times 2^3) + (1 \times 2^4) + (1 \times 2^5) = 63$

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(5) (i) $(198)_{10}$

198 ÷2	0
99 ÷2	1
49 ÷2	1
24 ÷2	0
12 ÷2	0
6 ÷2	0
3 ÷2	1
1 ÷2	0
0	

$= (01000110)_2$

(ii) $(133)_{10}$

133 ÷2	1
66 ÷2	0
33 ÷2	1
16 ÷2	0
8 ÷2	0
4 ÷2	0
2 ÷2	0
1 ÷2	1
0	

$= (10000101)_2$

(iii) $(034)_{10}$

34 ÷2	0
17 ÷2	1
8 ÷2	0
4 ÷2	0
2 ÷2	0
1 ÷2	1
0	

$= (100010)_2$

(iv) $(17)_{10}$

17 ÷ 2	1
8 ÷ 2	0
4 ÷ 2	0
2 ÷ 2	0
1 ÷ 2	1
0	

$= (10001)_2$

(v) $(123)_{10}$

123 ÷ 2	1
61 ÷ 2	1
30 ÷ 2	0
15 ÷ 2	1
7 ÷ 2	1
3 ÷ 2	1
1 ÷ 2	1
0	

$= (1111011)_2$

(vi) $(32)_{10}$

32 ÷ 2	0
16 ÷ 2	0
8 ÷ 2	0
4 ÷ 2	0
2 ÷ 2	0
1 ÷ 2	1
0	

$= (100000)_2$

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6 (i) $(1980)_{10}$

1980 ÷ 16	12 = C
123 ÷ 16	11 = B
7 ÷ 16	7
0	

$= (7BC)_{16}$

(ii) $(133)_{10}$

133 ÷ 16	5
8 ÷ 16	8
0	

$= (85)_{16}$

(iii) $(034)_{10}$

34 ÷ 2	2
2 ÷ 16	2
0	

$= (22)_{16}$

(iv) $(17)_{10}$

17 ÷ 16	1
1 ÷ 16	1
0	

$= (11)_{16}$

(v) $(123)_{10}$

123 ÷ 16	11 = B
7 ÷ 16	7
0	

$= (7B)_{16}$

(vi) $(32)_{10}$

32 ÷ 16	0
2 ÷ 16	2
0	

$= (20)_{16}$