1. 137_{10} → Binary

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1
1	0	0	0	1	0	0	1

$137 - 128 = 9$

$9 - 8 = 1$

$\therefore 137_{10} = 10001001_2$

2. 128_{10} → Binary

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1
1	0	0	0	0	0	0	0

$128 - 128 = 0$

$\therefore 128_{10} \rightarrow 10000000_2$

3. 11001001_2 → decimal

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1
1	1	0	0	1	0	0	1

$128 + 64 + 8 + 1 = 201$

$\therefore 11001001_2 = 201_{10}$

4. 01000111_2 → decimal

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1
0	1	0	0	0	1	1	1

$64 + 4 + 2 + 1 = 71$

$\therefore 01000111_2 = 71_{10}$

5. $AA_{16} \rightarrow$ Binary

$A_{16} = 10_{10} = 1010_2 \rightarrow$

2^4	2^3	2^2	2^1	2^0
16	8	4	2	1
$10-8=2$	1	0	1	0

$\therefore AA_{16} = 10101010_2$

6. $19_{16} \rightarrow$ binary

16	8	4	2	1

$1_{16} = 1_{10} = 0001_2$

$9_{16} = 9_{10} = 1001_2$

$\therefore 19_{16} = 11001_2$

$11101101_2 \rightarrow$ hexadecimal

2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
128	64	32	16	8	4	2	1
1	1	1	0	1	1	0	1

$\rightarrow 128+64+32+8+4+1 = 237$

$237_{10} \rightarrow$ hexadecimal

$2_{10} = 2_{16}$, $30 = 3_{16}$, $7_{10} = 7_{16}$

$11101101_2 = 237_{16}$

7. 11101101_2 → hexadecimal

↳ nibble

1110 1101

↳ 14_{10} ↳ 13_{10}

↳ E_{16} ↳ D_{16}

8	4	2	1
1	1	1	0

$8+4+2=14_{10}$

8	4	2	1
1	1	0	1

$8+4+1=13_{10}$

0 1 2 3 4 5 6 7 8 9 A B C D E F

$\therefore 11101101_2 = ED_{16}$

8. 11001110_2 → hexadecimal

↳ nibble

1100 1110

↳ 12_{10} ↳ 14_{10}

↳ C_{16} ↳ E_{16}

8	4	2	1
1	1	0	0

$8+4=12_{10}$

8	4	2	1
1	1	1	0

$8+4+2=14_{10}$

0 1 2 3 4 5 6 7 8 9 A B C D E F

$\therefore 11001110_2 = CE_{16}$

9. $ABCD_{16}$ → decimal

16^3	16^2	16^1	16^0
4096	256	16	1
A	B	C	D

$A = 10_{10}$
$B = 11_{10}$
$C = 12_{10}$
$D = 13_{10}$

~~4096(10) + 256(11)~~

$4096(10) + 256(11) + 16(12) + 1(13)$

$= 43981_{10}$

$\therefore ABCD_{16} = 43981_{10}$

10. $2F3E_{16}$ → decimal

16^3	16^2	16^1	16^0
4096	256	16	1
2	F	3	E
2	15	3	14

$F = 15_{10}$
$E = 14_{10}$

$4096(2) + 15(256) + 16(3) + 14(1)$

$= 12094_{10}$

$\therefore 2F3E_{16} = 12094_{10}$

11. 1095_{10} → hexadecimal

1095/16 = 68 Remainder = 7

68/16 = 4 Remainder = 4

~~$447_{16} = 1095_{10}$~~

4/16 = 0 Remainder = 4

$\therefore 1095_{10} = 447_{16}$

12. 99_{10} → hexadecimal

99/16 = 6 Remainder = 3

6/16 = 0 Remainder = 6

~~$99_{10} = 36_{16}$~~

$\therefore 99_{10} = 63_{16}$