QUESTLINE-5 / BINARY LOGIC & NUMBER SYSTEMS

(i) 101011 (binary) → decimal & hex

* 101011 → decimal

$1\,0\,1\,0\,1\,1 \Rightarrow 2^5\times1 + 2^4\times0 + 2^3\times1 + 2^2\times0 + 2^1\times1 + 2^0\times1$

$= 32+0+8+0+2+1$

$= 43$

$\therefore (101011)_2 = 43_{10}$

* 101011 → hex

$0010\ \ 1011 \Rightarrow 2^3\times0 + 2^2\times0 + 2^1\times1 + 2^0\times0$ and $2^3\times1 + 2^2\times0 + 2^1\times1 + 2^0\times1$

$=$ 2 and 11 (11 = B in hex digits)

$=$ 2B

$\therefore (101011)_2 = 2B_{16}$

(ii) 93 (decimal) → binary and hex

* 93 → binary

2	93	1
2	46	0
2	23	1
2	11	1
2	5	1
2	2	0
	1	

$\therefore 93_{10} = 1011101_2$

93 → hex

16	93	5
	13 → D	

$\therefore 93_{10} = 5D_{16}$