

## Practical-2

Q1 Binary to Decimal

(a)  $(0101)_2 \rightarrow (5)_{10}$

$$1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2 + 0 \times 2^3$$

$$1 + 0 + 4 + 0 = (5)_{10}$$

(b)  $(0111)_2 \rightarrow (7)_{10}$

$$\cancel{0 \times 2^3} + \cancel{0 \times 2^2} + \cancel{0 \times 2^1} + 1 \times 2^0 + 1 \times 2^1 + 1 \times 2^2 + 0 \times 2^3 = (7)_{10}$$

(c)  $(0011)_2 \rightarrow (3)_{10}$

$$1 \times 2^0 + 1 \times 2^1 = 2 + 1 = (3)_{10}$$

(d)  $(1001)_2 \rightarrow (9)_{10}$

$$1 \times 2^1 + 1 \times 2^3 = (9)_{10}$$

(e)  $(1011)_2 \rightarrow (11)_{10}$

$$\begin{aligned} &= 1 \times 2^0 + 1 \times 2^1 + 0 \times 2^2 + 1 \times 2^3 \\ &= 8 + 2 + 1 \\ &= (11)_{10} \end{aligned}$$

(f)  $(1111)_2$

$$1 \times 2^0 + 1 \times 2^1 + 1 \times 2^2 + 1 \times 2^3 = (15)_{10}$$

(19)  $(0000)_2 \rightarrow ( )_{10}$

$$= 0 + 0 + 0 + 0$$

$$= (0)_{10}$$

(20)  $(1101)_2$

$$1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2 + 1 \times 2^3$$

$$= 1 + 0 + 4 + 8$$

$$= (13)_{10}$$

Q2 Conversion Binary to Decimal

(21)  $(00010101)_2 \rightarrow ( )_{10}$

$$1 \times 2^0 + 1 \times 2^2 + 1 \times 2^4 = 1 + 4 + 16$$

$$= (21)_{10}$$

(22)  $(10110101)_2 \rightarrow ( )_{10}$

$$1 \times 2^0 + 1 \times 2^2 + 1 \times 2^4 + 1 \times 2^5 + 1 \times 2^7$$

$$= 1 + 4 + 16 + 32 + 128$$

$$= (181)_{10}$$



Q8

$$(c) (11010011)_2 \rightarrow (?)_{10}$$

$$= 1 \times 2^0 + 1 \times 2^1 + 0 \times 2^2 + 1 \times 2^3 + 0 \times 2^4 + 0 \times 2^5 + 1 \times 2^6 + 1 \times 2^7$$

$$= 3 + 2 + 8 + 128$$

$$= (139)_{10}$$

$$(d) (01101000)_2 \rightarrow (?)_{10}$$

$$= 0 \times 2^0 + 1 \times 2^1 + 1 \times 2^2 + 0 \times 2^3 + 1 \times 2^4 + 0 \times 2^5 + 0 \times 2^6 + 0 \times 2^7$$

$$= 2 + 4 + 16$$

$$= (22)_{10}$$

Q3 Binary to decimal

$$(a) (1011010100010101)_2 \rightarrow (?)_{10}$$

$$= 1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2 + 1 \times 2^3 + 0 \times 2^4 + 1 \times 2^5 + 1 \times 2^6 + 0 \times 2^7 + 1 \times 2^8 + 0 \times 2^9 + 0 \times 2^{10} + 0 \times 2^{11} + 1 \times 2^{12} + 0 \times 2^{13} + 1 \times 2^{14}$$

$$= 1 + 4 + 16 + 32 + 256 + 1024$$

$$= 1323$$

$$= (1323)_{10}$$

(16)  $(01101\ 00011010011)_2 \rightarrow (?)_{10}$

$$= 1 \times 2^0 + 1 \times 2^1 + 1 \times 2^2 + 1 \times 2^3 + 1 \times 2^4 + 2 \times 2^5 + 2 \times 2^6 + 2 \times 2^7 + 2 \times 2^8 + 2 \times 2^9 + 2 \times 2^{10} + 2 \times 2^{11} + 2 \times 2^{12} + 2 \times 2^{13} + 2 \times 2^{14} + 2 \times 2^{15}$$

$$= 1 + 2 + 4 + 8 + 16 + 32 + 64 + 128 + 256 + 512 + 1024 + 2048 + 4096 + 8192 + 16384$$

$$= (26835)_{10}$$

Q3 True / False

(a) False

(b) False

(c) True

(d) False

(e) True

(f) True

(g) False

(h) True