

Practical-2

Q.1 (a) $(0101)_2$

$$1 \times 2^0 = 1$$

$$0 \times 2^1 = 0$$

$$1 \times 2^2 = 4$$

$$0 \times 2^3 = 0$$

$$\underline{5}_{10}$$

(b) $(0111)_2 \rightarrow$

$$1 \times 2^0 = 1$$

$$1 \times 2^1 = 2$$

$$1 \times 2^2 = 4$$

$$0 \times 2^3 = 0$$

$$\underline{7}_{10}$$

(c) $(0011)_2 \rightarrow$

$$1 \times 2^0 = 1$$

$$1 \times 2^1 = 2$$

$$0 \times 2^2 = 0$$

$$0 \times 2^3 = 0$$

$$\underline{3}_{10}$$

(d) $(1001)_2 \rightarrow$

$$1 \times 2^0 = 1$$

$$0 \times 2^1 = 0$$

$$0 \times 2^2 = 0$$

$$1 \times 2^3 = 8$$

$$\underline{9}_{10}$$

$$(e) (1011)_2 = 1 \times 2^0 = 1$$

$$1 \times 2^1 = 2$$

$$0 \times 2^2 = 0$$

$$1 \times 2^3 = 8$$

$$\underline{11}_{10}$$

$$(f) (1111)_2 = 1 \times 2^0 = 1$$

$$1 \times 2^1 = 2$$

$$1 \times 2^2 = 4$$

$$1 \times 2^3 = 8$$

$$\underline{15}_{10}$$

$$(g) (0000)_2 = 0 = 0$$

$$0 = 0$$

$$0 = 0$$

$$0 = 0$$

$$\underline{0}_{10}$$

$$(h) (1101)_2 = 1 \times 2^0 = 1$$

$$0 \times 2^1 = 0$$

$$1 \times 2^2 = 4$$

$$1 \times 2^3 = 8$$

$$\underline{13}_{10}$$

Q.2 (a) $(00010101)_2 \rightarrow$

$$\begin{array}{rcl} 1 \times 2^0 & = & 1 \\ 0 \times 2^1 & = & 0 \\ 1 \times 2^2 & = & 4 \\ 0 \times 2^3 & = & 0 \\ 1 \times 2^4 & = & 16 \\ 0 \times 2^5 & = & 0 \\ 0 \times 2^6 & = & 0 \\ 0 \times 2^7 & = & 0 \\ \hline & & 21_{10} \end{array}$$

(b) $(10110101)_2 \rightarrow$

$$\begin{array}{rcl} 1 \times 2^0 & = & 1 \\ 0 \times 2^1 & = & 0 \\ 1 \times 2^2 & = & 4 \\ 0 \times 2^3 & = & 0 \\ 1 \times 2^4 & = & 16 \\ 1 \times 2^5 & = & 32 \\ 0 \times 2^6 & = & 0 \\ 1 \times 2^7 & = & 128 \\ \hline & & 181_{10} \end{array}$$

(c) $(11010011)_2 \rightarrow$

$$\begin{array}{rcl} 1 \times 2^0 & = & 1 \\ 1 \times 2^1 & = & 2 \\ 0 \times 2^2 & = & 0 \\ 0 \times 2^3 & = & 0 \\ 1 \times 2^4 & = & 16 \\ 0 \times 2^5 & = & 0 \\ 1 \times 2^6 & = & 64 \\ 1 \times 2^7 & = & 128 \\ \hline & & 211_{10} \end{array}$$

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$$(d) (01101000)_2 \rightarrow$$

0	$\times 2^0$	= 0
0	$\times 2^1$	= 0
1	$\times 2^2$	= 4
0	$\times 2^3$	= 0
1	$\times 2^4$	= 16
1	$\times 2^5$	= 32
0	$\times 2^6$	= 0
0	$\times 2^7$	= 0

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$$Q.3 (a) (1011010100010101)_2 \rightarrow$$

~~$$1 \times 2^{15} + 1 \times 2^{13} + 1 \times 2^{12} + 1 \times 2^{10} + 1 \times 2^8 +$$~~

$$1 \times 2^{15} + 1 \times 2^{13} + 1 \times 2^{12} + 1 \times 2^{10} + 1 \times 2^8 +$$
$$1 \times 2^4 + 1 \times 2^2 + 1 \times 2^0$$

$$= 32768 + 8192 + 4096 + 1024 + 256 + 16 + 4 + 1$$

$$= (46357)_{10}$$

$$(b) (0110100011010011)_2 \rightarrow$$

$$1 \times 2^{14} + 1 \times 2^{13} + 1 \times 2^{11} + 1 \times 2^7 + 1 \times 2^6 + 1 \times 2^4 +$$
$$1 \times 2^1 + 1 \times 2^0 =$$

$$= 16384 + 8192 + 2048 + 128 + 64 + 16 + 2 + 1$$

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

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- Q.3 (a) False
 (b) False
 (c) True
 (d) False
 (e) True
 (f) True
 (g) As $0=0$ False
 (h) True