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Ans 1) a) DLD full form is digital logic design. Digital logic design is a system in electrical and computer engineering that uses simple number valves to produce input and output operations. Digital logic design is used to develop hardware such as circuit bo-ards and microchip processors. The Field of digital logic design include navigation system computing. Medical equipment robotics etc.

Ans 1) b) Advantage of Digital Logic design are - (1) Accuracy and preci-sion are greater

(2) Easier to design

(3) operation can be programmed

(4) Less affected by noise.

Ans 2) a) $(715)_{10} = ?_8$

$$
\begin{array}{r}
8\ \underline{|715} \quad 3 \\
8\ \underline{|89} \quad 1 \\
8\ \underline{|11} \quad 3 \\
\underline{|1} \quad 1 \\
\end{array}
$$

$(1313)_8$

$(715)_{10} = (1313)_8$

Ans 2) b) $(AC09)_{16} = ?_{10}$

$(AC09)_{16}$
$= (10 \times 16^3) + (12 \times 16^2) + (0 \times 16^1) + (9 \times 16^0)$
$= 40960 + 3072 + 0 + 9$
$= 44041$

$(AC09)_{16} = (44041)_{10}$

Ans 2) c) $(100011)_2 = ?_{10}$

$(100011)_2$
$= (1 \times 2^5) + (0 \times 2^4) + (0 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$
$= 32 + 0 + 0 + 0 + 2 + 1$
$= 35$

$(100011)_2 = (35)_{10}$

Ans 2) d) $(12435)_8 = ?_{10}$

$(12435)_8$
$= (1 \times 8^4) + (2 \times 8^3) + (4 \times 8^2) + (3 \times 8^1) + (5 \times 8^0)$
$= 4096 + 1024 + 256 + 24 + 5$
$= 5405$

$(12435)_8 = (5405)_{10}$

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Ans 3) a) In a binary number the bit furthest to the right is called the least significant bit (LSB) and the bit furthest to the left is called the most significant bit (MSB). In binary number 1000 msb is 1 and lsb is 0.

Ans 3) b) ii) $(37)_{10} = ?_6$

$$6 \overline{)37} \, 1$$
$$6 \overline{)6} \, 0$$
$$6 \overline{)11} \, 1$$

$$= (101)_6$$

$$(37)_{10} = (101)_6$$

(ii) $(53)_6 = ?_{10}$

$$(53)_6$$
$$= 5 \times 6^1 + 3 \times 6^0$$
$$= 30 + 3$$
$$= 33$$

$$(53)_6 = (33)_{10}$$

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Aus 3) b) (iii) $(10762)_8 = ?_{16}$

$(10762)_8$

7	0	7	6	2
1	000	111	110	010

1	0001	1111	0010
1	1	F	2

11 F 2

$(10762)_8 = (11F2)_{16}$

(iv) $(AB9EF)_{16} = ?_8$

$(AB9EF)_{16}$

A	B	9	E	F
2	1011	1001	1110	1111
1010				

10	101	011	100	111	101	111
2	5	3	4	7	5	7

2 5 3 4 7 5 7

$(AB9EF)_{16} = (2534757)_8$

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