

Victoria University of Bangladesh

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①

## Ans to Tm Que NO 1/A

### Digital Logic Design (DLD):

Digital logic design is a system in electrical and computer engineering that uses simple number values to produce input and output operations. As a design engineer, you may assist in developing cell phones, computers, and related personal electronic devices. Continue reading to find out what training can develop skill in function algorithms and binary conversion.

A main component of digital logic consists of five different gates:-

- # AND
- # OR
- # XOR
- # NAND
- # NOR

Ans to the Que No 1/B.

Advantage of Digital Circuits:

- # High accuracy and programmability.
- # Storage of digital data is easy.
- # Immune to noise.
- # Can be implemented in the form of integrated circuits (ICs).
- # Greater reliability and flexibility.

Ans to the Que No 2

Convert the numbers:-

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

So,  $(715)_{10} = 1313_8$  is octal notation.

Ans.

8	715
8	89 - 3
8	11 - 1
8	1 - 3
	0 - 1

Reverse order : 1313

(b) (AC09)<sub>16</sub> = ?<sub>10</sub>

Convert (AC09) from Hexadecimal to decimal

$AC09 = (A \times 16^3) + (C \times 16^2) + (0 \times 16^1) + (9 \times 16^0)$ $= 10 \times 16^3 + 13 \times 16^2 + 0 \times 16^1 + 9 \times 16^0$ $= 10 \times 4096 + 13 \times 256 + 0 + 9 \times 1$ $= 40960 + 3328 + 9$ $= 44297$	<u>We know</u> A = 10 B = 11 C = 13
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Therefore, (AC09)<sub>16</sub> = 44297<sub>10</sub> in decimal notation

Aus.

(c) (100011)<sub>2</sub> = ?<sub>10</sub>

Convert (100011) from binary to decimal

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

$$= (1 \times 32) + (0 \times 16) + (0 \times 8) + (0 \times 4) + (1 \times 2) + (1 \times 1)$$

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

$$= 35$$

Therefore, (100011)<sub>2</sub> = 35<sub>10</sub> in decimal notation.

Aus.

(a)

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

$$\begin{aligned}(12435)_8 &= (1 \times 8^4) + (2 \times 8^3) + (4 \times 8^2) + (3 \times 8^1) \\ &\quad + (5 \times 8^0) \\ &= 4096 + 1024 + 256 + 24 + 5 \\ &= 5405\end{aligned}$$

therefore,  $(12435)_8 = 5405_{10}$  Ans.

Ans to the Que NO 3/A

MSB and LSB with Example:-

MSB: MSB stands for most significant bit, while LSB is least significant bit. In binary terms, the MSB is the bit that has the greatest effect on the number, and it is the left-most bit.

for Example:- for binary number 00110101. The most significant 4 bits would be 0011, the least significant 4 bits would be 0101.

P.T.O

LSB :- Least-significant bit. In a binary number the LSB is the least weighted bit in the number -

Parameter.	CCMSB	CCLSB	Value
Gain	16	48	
Low	17	49	
Mid Freq	18	50	
MID	19	51	
High	20	52	
Level	21	53	
Expression	4	36	
" mid	1	33	

Ans to the Que No 3/B.

① Convert the numbers :-

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

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

Ans.

$$\begin{array}{r}
 6 \overline{) 37} \\
 \underline{6 \phantom{0} - 1} \\
 6 \overline{) 10} \\
 \underline{6 \phantom{0} - 0} \\
 0 - 1
 \end{array}$$

= 101

$$\begin{aligned}
 \textcircled{\text{ii}} \quad (53)_6 &= ?_{10} \\
 &= 5 \times 6^1 + 3 \times 6^0 \\
 &= 30 + 3 \\
 &= 33.
 \end{aligned}$$

Hence,  $(53)_6 = 33_{10}$  Ans.

$$\begin{aligned}
 \textcircled{\text{iii}} \quad (10762)_8 &= ?_{16} \\
 &= (1 \times 8^4) + (0 \times 8^3) + (7 \times 8^2) + (6 \times 8^1) \\
 &\quad + (2 \times 8^0) \\
 &= 4096 + 0 + 448 + 48 + 2 \\
 &= 4594.
 \end{aligned}$$

Hence,  $(10762)_8 = 4594_{16}$

Ans

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

$$= A \times 16^4 + B \times 16^3 + 9 \times 16^2 + E \times 16^1 + F \times 16^0$$

$$= 10 \times 16^4 + 11 \times 16^3 + 9 \times 16^2 + 14 \times 16^1 + 15 \times 16^0$$

$$= 655360 + 45056 + 2304 + 224 + 15$$

$$= 702959$$

No. know

- A = 10
- B = 11
- C = 12
- D = 13
- E = 14
- F = 15

Therefore,  $(AB9EF)_{16} = 702959_8$

Ans.

END .