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Dept : B.Sc in CSE

Course title : Digital Logic Design



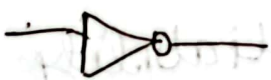
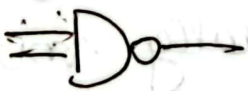
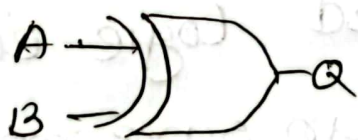
Course code : CSE 213

Semester : Summer 2023

Ans to the Ques no: 01 (a)

Ans: DLD: Digital Logic is the basic of electronic system such as computers and cell phones. Digital logic is rooted in binary code, a series of zeroes and one each having an opposite value. The system facilitates the design of electronic circuit that convey information including logic gate functions include and or and not. The value system translates input signals into specific output. Digital logic facilitates computing, robotics and other electronics application.

DLD List the fields:

- ① AND → 
- ② OR → 
- ③ Not → 
- ④ NAND → 
- ⑤ XOR → 

Ans to the Qus no: 01 (b)

Ans : Advantage of DLD:

The advantage of using a ROM in this way is that any conceivable functions of the inputs can be made to appear at any of the output, making this the general purpose, combinatorial logic device available.

- High accuracy and programmability.
- Storage of Digital data is easy.
- Immune to noise.
- Can be implemented in the form of integrated circuits.
- Greater reliability and flexibility.
- They are usually much slower than dedicated logic circuit.
- They can save more and.

Ans to the Ques No: 02 (a)

Ans: (a) Ans:

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

$$\Rightarrow (1295)_8 \quad \underline{\underline{\text{Ans}}}$$

$$\begin{array}{r} 8 \overline{) 715} \\ \underline{8 \cdot 89 = 712} \\ 3 \\ \underline{8 \cdot 10 = 80} \\ 2 \\ \underline{8 \cdot 1 = 8} \\ 4 \\ \underline{8 \cdot 0 = 0} \\ 4 \end{array} \quad \uparrow$$

(b) Ans:

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

$$\Rightarrow (A \times 16) + (C \times 16) + (0 \times 16) + (9 \times 16)$$

$$\Rightarrow 10 \times 16^3 + 13 \times 16^2 + 0 \times 16^1 + 9 \times 16^0$$

$$\Rightarrow 10 \times 4096 + 13 \times 256 + 0 + 9 \times 1$$

$$\Rightarrow 40960 + 3328 + 9$$

$$\Rightarrow (AC09)_{16} = (44297)_{10} \quad \underline{\underline{\text{Ans}}}$$

we know,

$$A = 10$$

$$B = 11$$

$$C = 13$$

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

$$\Rightarrow 1 \times 2^5 + 0 \times 2^4 + 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$$

$$\Rightarrow 1 \times 32 + 0 + 0 + 0 + 2 + 1$$

$$\Rightarrow 32 + 2 + 1$$

$$\Rightarrow 35$$

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

Ans//

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

$$\Rightarrow 1 \times 8^4 + 2 \times 8^3 + 4 \times 8^2 + 3 \times 8^1 + 5 \times 8^0$$

$$\Rightarrow 4096 + 1024 + 256 + 24 + 5$$

$$= 5405$$

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

Ans//

Ans to the Ques No: 03 (a)

Ans: LSB (Least Significant Bit) and MSB (Most Significant Bit) are terms used in binary representation to refer to the bit positions within a binary number. In a binary number, each bit holds a specific value based on its position.

→ LSB: The LSB is the rightmost bit in a binary number and represents the smallest value. For example, in the binary number 10110, the rightmost bit (0) is the LSB.

parameter	CCMSB	CCLSB	Values
Gain	16	48	
Low	17	49	
Mid Freq	18	50	
Mid	19	51	
high	20	52	
Level	21	53	
Expression	4	36	
Expression - Mid	1	33	

→ MSB ! The MSB is the leftmost bit in a binary number and represents the smallest value. For example, in the binary number 10110, the leftmost bit (1) is the MSB.

In the binary number 10110:

→ MSB = 1

→ LSB = 0.

Ans to the Ques NO: 03(b)

Ans:

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

$$\begin{array}{r} 6 \overline{) 37} \\ \underline{6 \cdot 6} \\ 1 \\ \underline{6 \cdot 1} \\ 0 \end{array}$$

↑
Low bit

$= 101$

(ii) $(53)_6 = ?$
 $= 5 \times 6^1 + 3 \times 6^0$
 $= 30 + 3$
 $= 33$
 $\Rightarrow (53)_6 = (33)_{10}$

$$(iii) (10762)_8 = ?$$

$$= (1 \times 8^4 + 0 \times 8^3 + 7 \times 8^2 + 6 \times 8^1 + 2 \times 8^0)$$

$$= 4096 + 0 + 448 + 48 + 2$$

$$= 4594$$

$$\Rightarrow (10762)_8 = (4594)_{16} \text{ Ans} //$$

$$(iv) (A B 9 E F)_{16} = ?$$

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

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

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

$$= 702959$$

$$\Rightarrow (A B 9 E F)_{16} = (702959)_{10}$$

Ans //