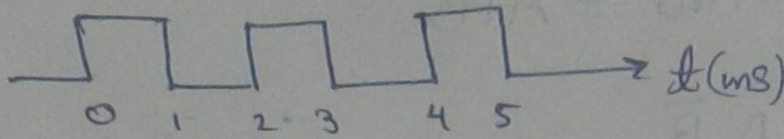
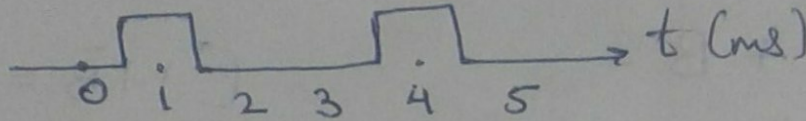


Q. 1]

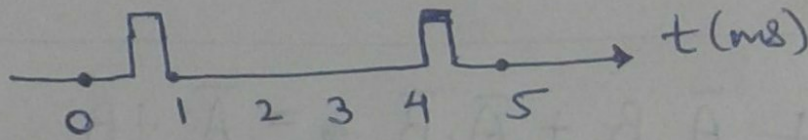
wave 1



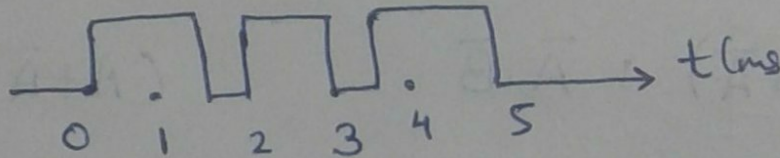
wave 2



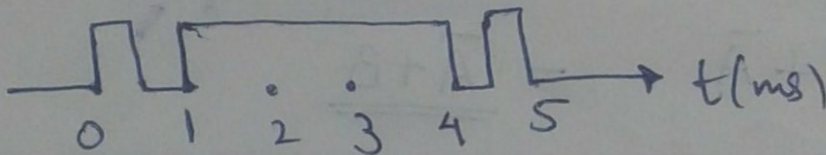
AND gate



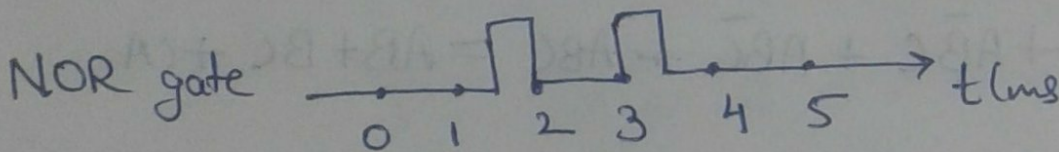
OR gate



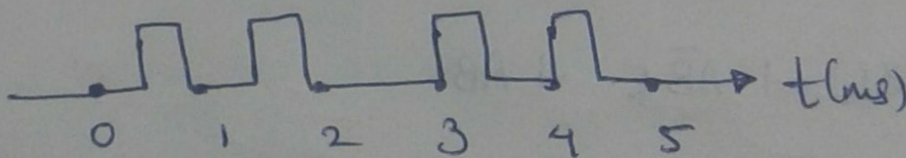
NAND gate



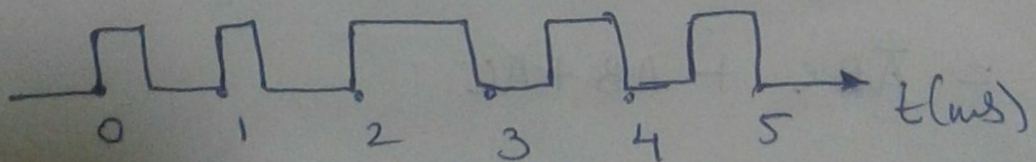
NOR gate



EX-NOR gate



EX-OR gate

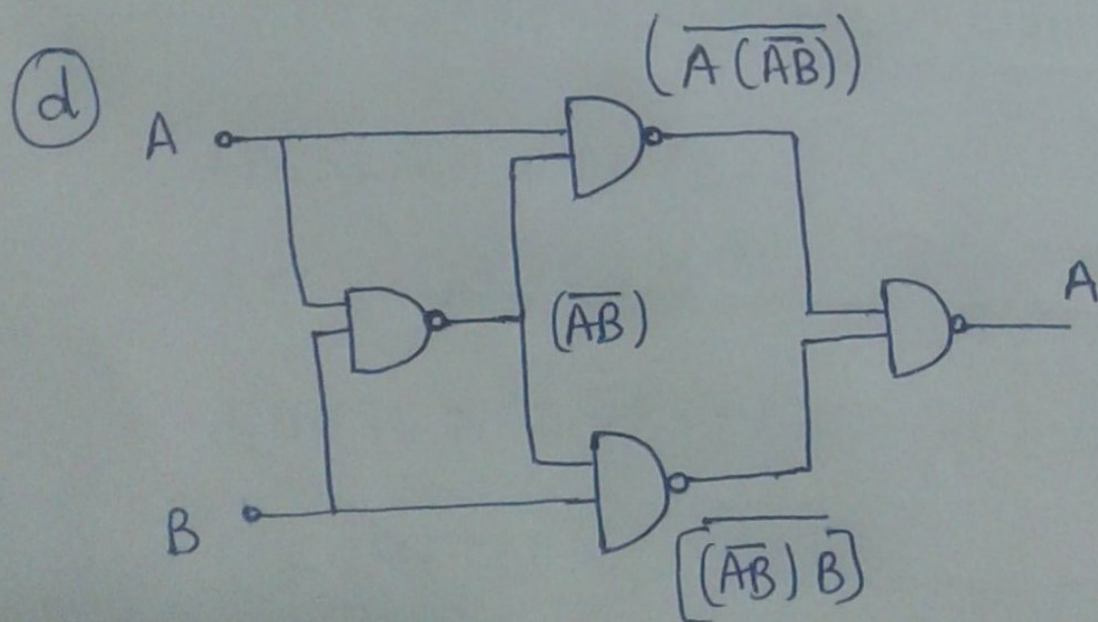
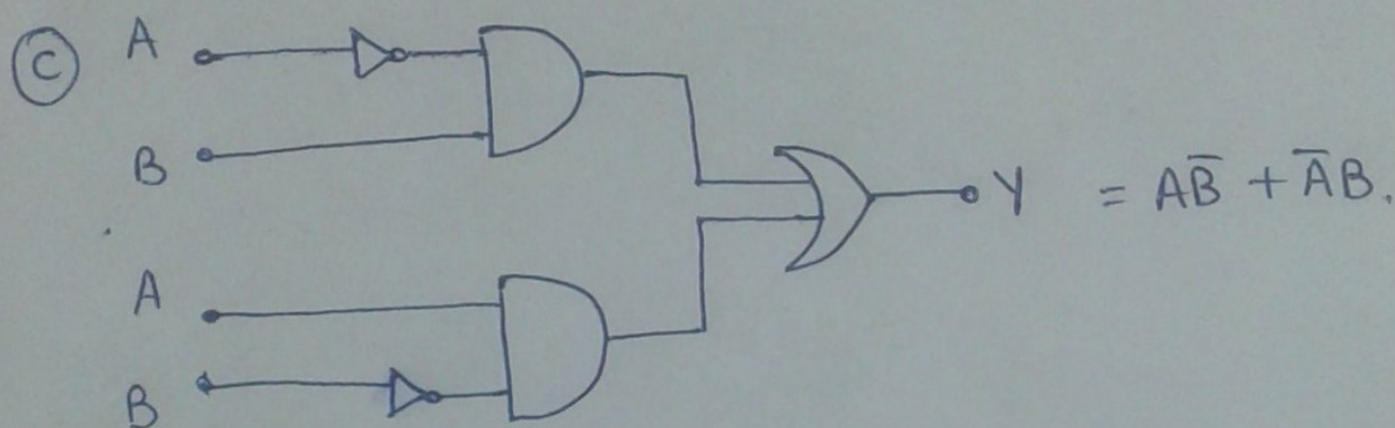


Q.2) $A\bar{B} + \bar{A}B = Y$ $A \wedge \neg B$

(a) Truth table

A	B	$A\bar{B}$	$\bar{A}B$	$A\bar{B} + \bar{A}B = Y$
0	1	0	1	1
1	0	1	0	1

(b) NOT, AND, OR



Q3]

$$a) A + \bar{A} \cdot B + A \cdot \bar{B} = A + B$$

→

$$A + B + A \cdot \bar{B}$$

$$[A + \bar{A} \cdot B = A + B]$$

$$= A(1 + \bar{B}) + B$$

$$[1 + \bar{B} = 1]$$

$$= \underline{A + B}$$

$$b) A \cdot B + \bar{A} \cdot B + \bar{A} \cdot \bar{B} = \bar{A} + B$$

→

$$B(A + \bar{A}) + \bar{A} \cdot \bar{B}$$

$$(A + \bar{A} = 1)$$

$$= B + \bar{A} \cdot \bar{B}$$

$$= B + \bar{A} = \underline{\underline{\bar{A} + B}}$$

$$c) \bar{A}BC + A\bar{B}C + AB\bar{C} + ABC = AB + BC + CA$$

$$\rightarrow \bar{A}BC + A\bar{B}C + AB(\bar{C} + C)$$

$$= \bar{A}BC + A\bar{B}C + AB$$

$$= \bar{A}BC + A(B + \bar{B}C)$$

$$[\because A + \bar{A}B = A + B]$$

$$= \bar{A}BC + AB + AC$$

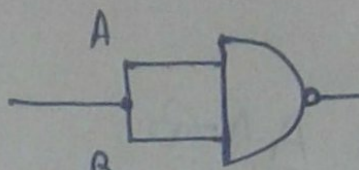
$$= B(A + \bar{A}C) + AC$$

$$= B(A + C) + AC$$

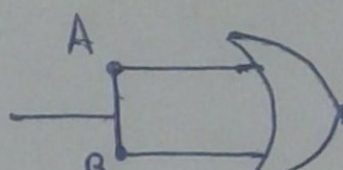
$$[\because A + \bar{A}B = A + B]$$

$$= \underline{\underline{AB + BC + AC}}$$

Q 4]

a) NAND: input  Y (Output)

$$\text{Input } A=B=A, \quad Y = \overline{A \cdot B} = \overline{A \cdot A} = \overline{A}.$$

b) NOR: input  Y (Output)

$$Y = \overline{A+B} = \overline{A+A} = \overline{A}.$$