

Q. 1). A transistor-oscillator using a resonant circuit with an inductor L (of negligible resistance) and a capacitor C in series produce oscillations of frequency f . If L is doubled and C is changed to $4C$, the frequency will be :-

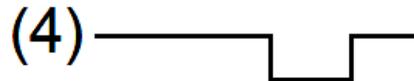
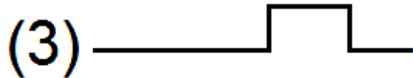
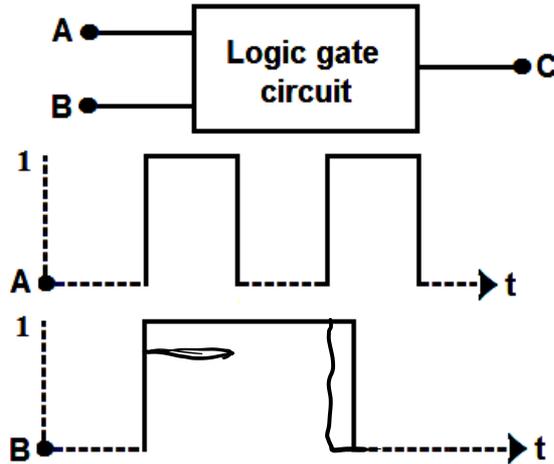
(1) $\frac{f}{4}$

(2) $8f$

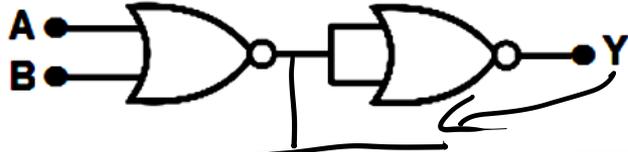
(3) $\frac{f}{2\sqrt{2}}$

(4) $\frac{f}{2}$

Q. 2). The following figure shows a AND logic gate circuit with two inputs A and B and the output C. The voltage waveforms of C will be -



Q. 3). In the following circuit, the output Y for all possible inputs A and B is expressed by the truth table :-



✓ (1)

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

$$\overline{A+B} + \overline{A+B} \quad (2)$$

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

#

$$(A+B) \cdot (A+B) \quad (4)$$

$$(A+B)$$

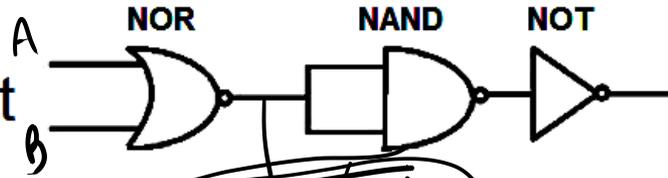
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

(3)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

Q. 4). The circuit



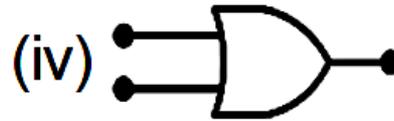
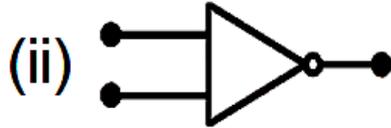
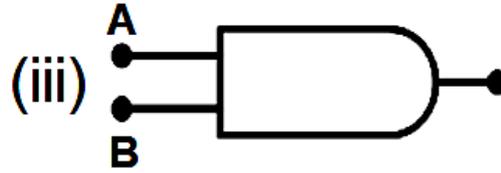
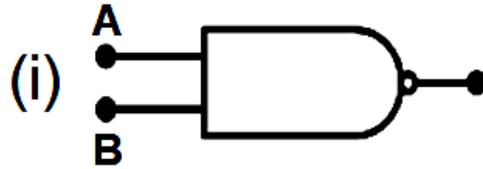
is equivalent to

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

- (1) NOR gate
- (2) OR gate
- (3) AND gate
- (4) NAND gate

$$\begin{aligned} & \overline{\overline{\overline{A+B}} + \overline{\overline{A+B}}} \\ & \overline{(A+B) + (A+B)} \\ & \overline{A+B} \\ & \text{NOR gate} \end{aligned}$$

Q. 5). The symbolic representation of four logic gates are given below :



The logic symbols for OR, NOT and NAND gates are respectively :-

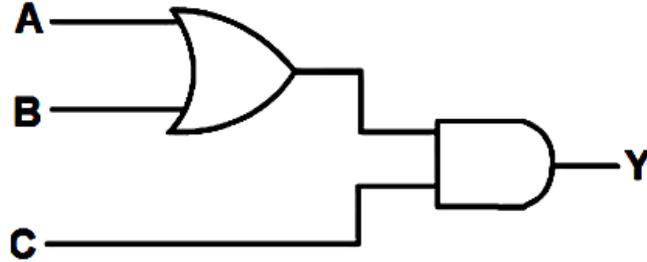
(1) (i), (iii), (iv)

(2) (iii), (iv), (ii)

(3) (iv), (i), (iii)

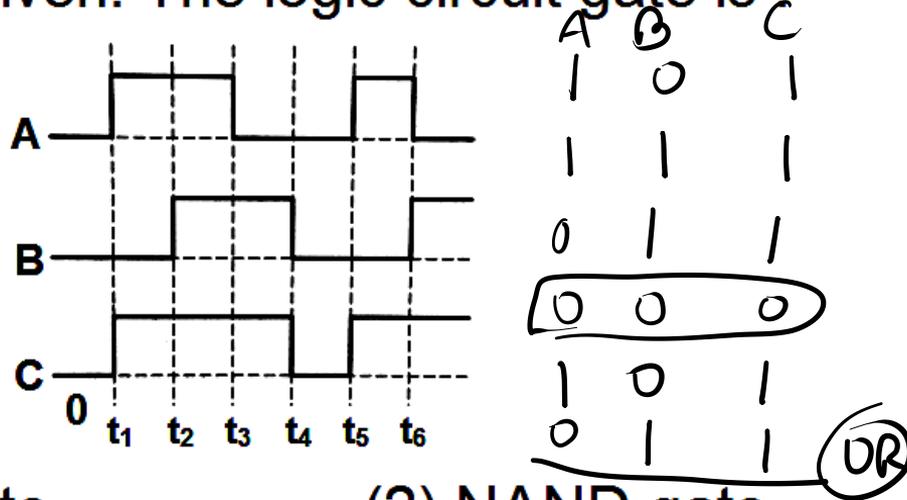
✓ (4) (iv) (ii) (i)

Q. 6). To get an output $Y = 1$ in given circuit which of the following input will be correct :



	A	B	C
(1)	1	1	0
(2)	0	1	0
(3)	1	0	0
<input checked="" type="checkbox"/> (4)	1	0	1

Q. 7). The figure shown a logic circuit two inputs A and B and the output C. The voltage wave forms across A, B and C are as given. The logic circuit gate is :



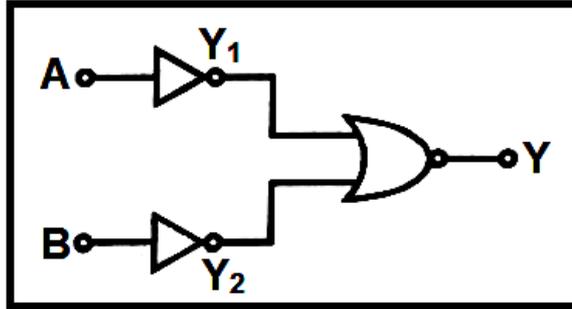
(1) AND gate

(2) NAND gate

(3) OR gate

(4) NOR gate

Q. 8). Which logic gate is represented by the following combination of logic gates ?



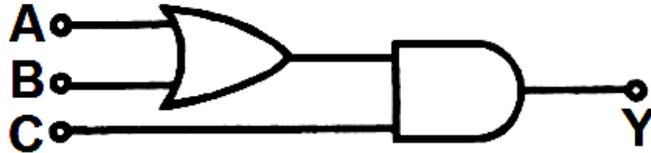
(1) NAND

(3) NOR $y = \overline{\overline{A} + \overline{B}}$
 $= A \cdot B$

✓ (2) AND

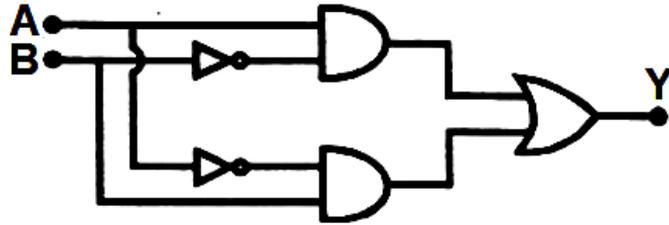
(4) OR

Q. 9). To get output 1 for the following circuit, the correct choice for the input is.



- (1) $A = 0, B = 1, C = 0$
- (2) $A = 1, B = 0, C = 0$
- (3) $A = 1, B = 1, C = 0$
- ✓ (4) $A = 1, B = 0, C = 1$

Q. 10). In the combination of the following gates the output Y can be written in terms of inputs A and B as :-



(1) $\overline{A} \cdot \overline{B}$

✓ (2) $A \cdot \overline{B} + \overline{A} \cdot B$

(3) $\overline{A \cdot B} + A \cdot B$

(4) $\overline{A + B}$

$$Y = A \cdot \overline{B} + \overline{A} \cdot B = (A + B) \cdot (\overline{A} + \overline{B})$$

XOR Gate

1	2	3	4	5	6	7	8	9	10
3	1	1	1	4	4	3	2	4	2

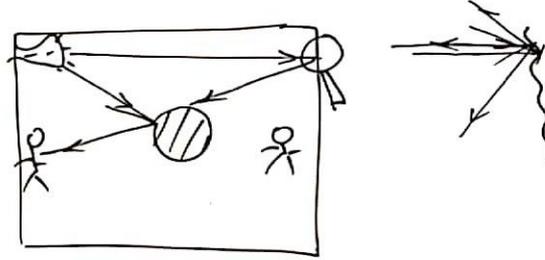
Session-3-Optics- object & Image

Recap →

Q.1. Which of the following don't exhibit reflection

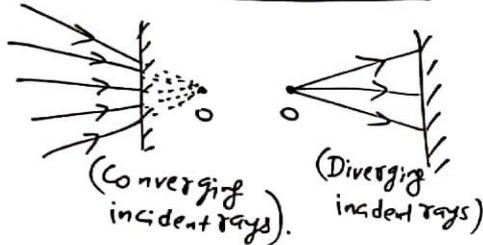
- 1). Mirror
- 2). Glass
- 3). Metal surface
- 4). Sand particles.

Q.2. How do we see an obj



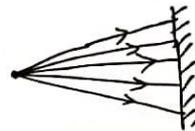
What is an object →

* Always associated with incident rays.



Regular reflection → Reflection due to the regular surface of an object due to which an object is visible from multiple directions.

→ Light from an object \equiv Light striking on an object goes in multiple directions.



Session-3-Optics- object & Image

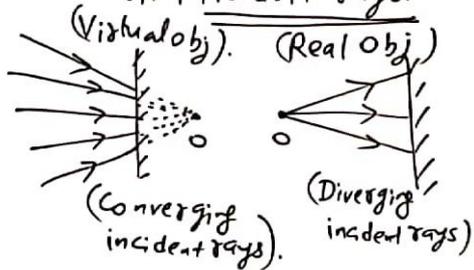
Recap →

Q.1) Which of the following don't exhibit reflection

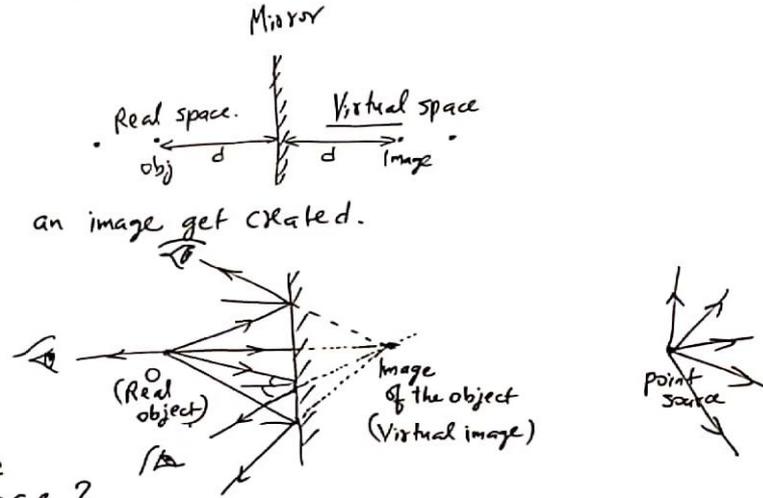
- 1) Mirror
- 2) (glan)
- 3) Metal surface
- 4) Sand particles.

What is an object →

* Always associated with incident rays.



Q. How does an image get created.

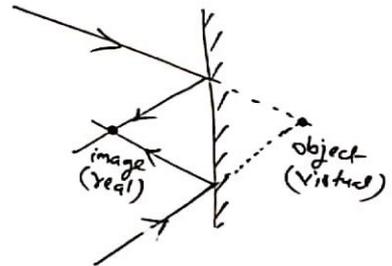


What is an Image?

* Always associated with reflected rays.

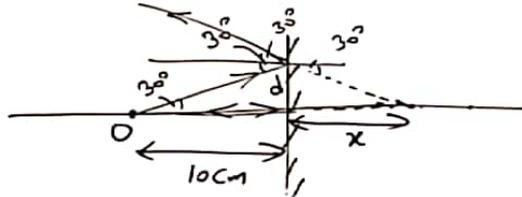
(Diverging ref. rays
≡ Virtual image)

(Converging ref. rays
≡ Real image)



Session-3-Optics- object & Image

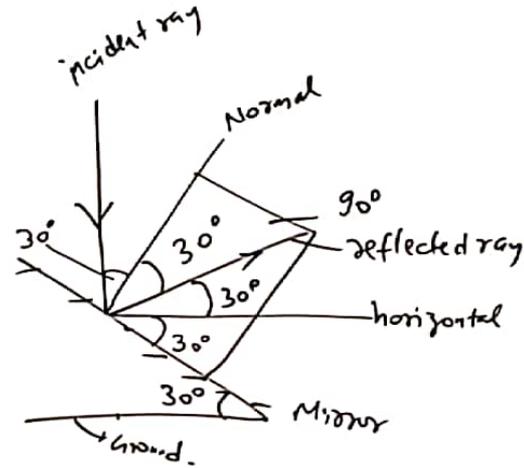
Ex.



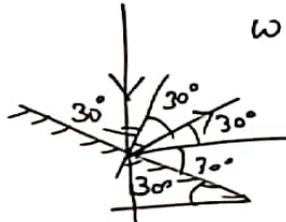
$$\tan 30^\circ = \frac{d}{10}$$

$$\tan 30^\circ = \frac{d}{x}$$

$$\Rightarrow x = 10 \text{ cm.}$$



Ex.



What is the angle b/w
reflected ray &
horizontal.

30°.