This set of Digital Electronics/Circuits Multiple Choice Questions & Answers (MCQs) focuses on “Latches”.

1. A latch is an example of a _____
a) Monostable multivibrator
b) Astable multivibrator
c) Bistable multivibrator
d) 555 timer

View Answer

Answer: c

Explanation: A latch is an example of a bistable multivibrator. A Bistable multivibrator is one in which the circuit is stable in either of two states. It can be flipped from one state to the other state and vice-versa.

2. Latch is a device with _____

a) One stable state

b) Two stable state

c) Three stable state

d) Infinite stable states

View Answer

Answer: b

Explanation: Since a latch works on the principal of bistable multivibrator. A Bistable multivibrator is one in which the circuit is stable in either of two states. It can be flipped from one state to the other state and vice-versa. So a latch has two stable states.

3. Why latches are called memory devices?

a) It has capability to stare 8 bits of data

b) It has internal memory of 4 bit

c) It can store one bit of data

d) It can store infinite amount of data

View Answer

Answer: c

Explanation: Latches can be memory devices, and can store one bit of data for as long as the device is powered. Once device is turned off, the memory gets refreshed.

4. Two stable states of latches are _____

a) Astable & Monostable

b) Low input & high output

c) High output & low output

d) Low output & high input

View Answer

Answer: c

Explanation: A latch has two stable states, following the principle of Bistable Multivibrator. There are two stable states of latches and these states are high-output and low-output.

5. How many types of latches are _____

a) 4

b) 3

c) 2

d) 5

View Answer

Answer: a

Explanation: There are four types of latches: SR latch, D latch, JK latch and T latch. D latch is a modified form of SR latch whereas, T latch is an advanced form of JK latch.

6. The full form of SR is _____

a) System rated

b) Set reset

c) Set ready

d) Set Rated

View Answer

Answer: b

Explanation: The full form of SR is set/reset. It is a type of latch having two stable states.

7. The SR latch consists of _____

a) 1 input

b) 2 inputs

c) 3 inputs

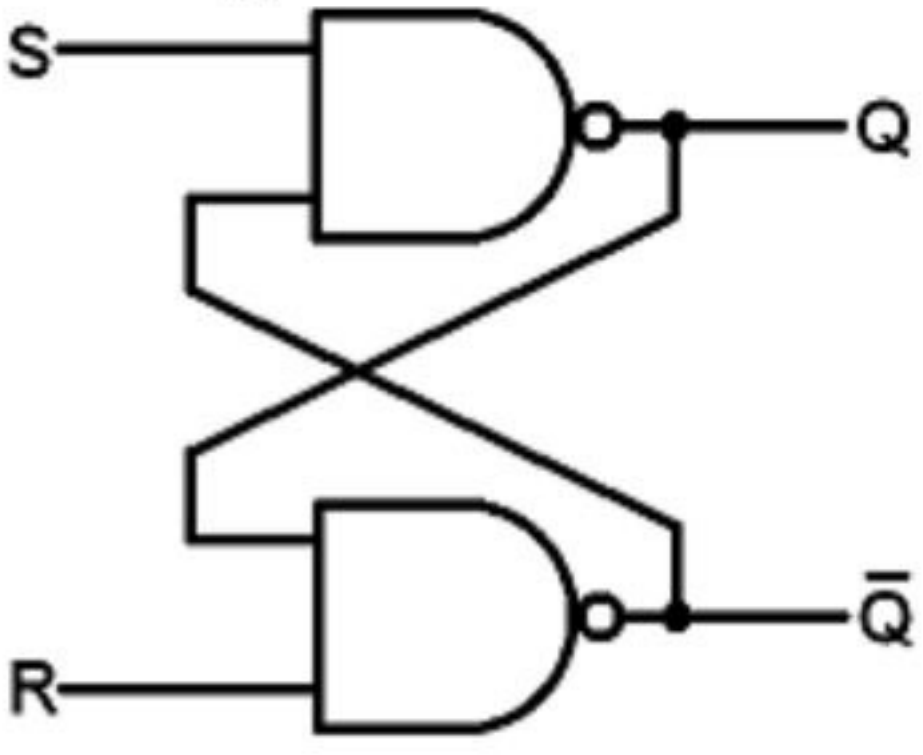
d) 4 inputs

View Answer

Answer: b

Explanation: SR or Set-Reset latch is the simplest type of bistable multivibrator having two stable states.

The diagram of SR latch is shown below:



8. The outputs of SR latch are _____

a) x and y

b) a and b

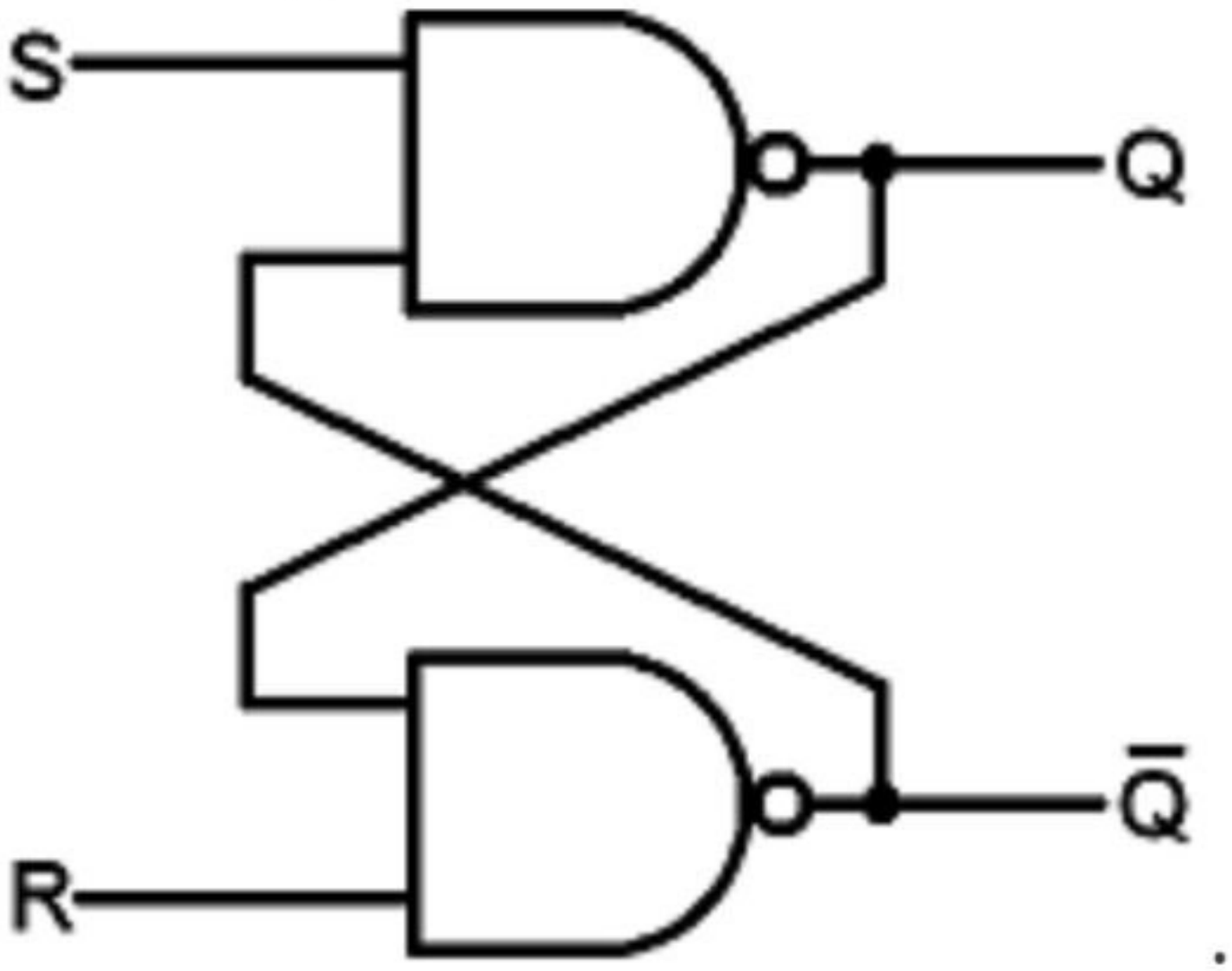
c) s and r

d) q and q’

View Answer

Answer: d

Explanation: SR or Set-Reset latch is the simplest type of bistable multivibrator having two stable states. The inputs of SR latch are s and r while outputs are q and q’. It is clear from the diagram:



9. The NAND latch works when both inputs are _____

a) 1
b) 0
c) Inverted
d) Don’t cares

View Answer

Answer: a
Explanation: The NAND latch works when both inputs are 1. Since both of the inputs are inverted in a NAND latch.

10. The first step of the analysis procedure of SR latch is to _____

a) label inputs

b) label outputs

c) label states

d) label tables

View Answer

Answer: b

Explanation: All flip flops have at least one output labeled Q (i.e. inverted). This is so because the flip flops have inverting gates inside them, hence in order to have both Q and Q complement available, we have atleast one output labelled.

11. The inputs of SR latch are _____

a) x and y

b) a and b

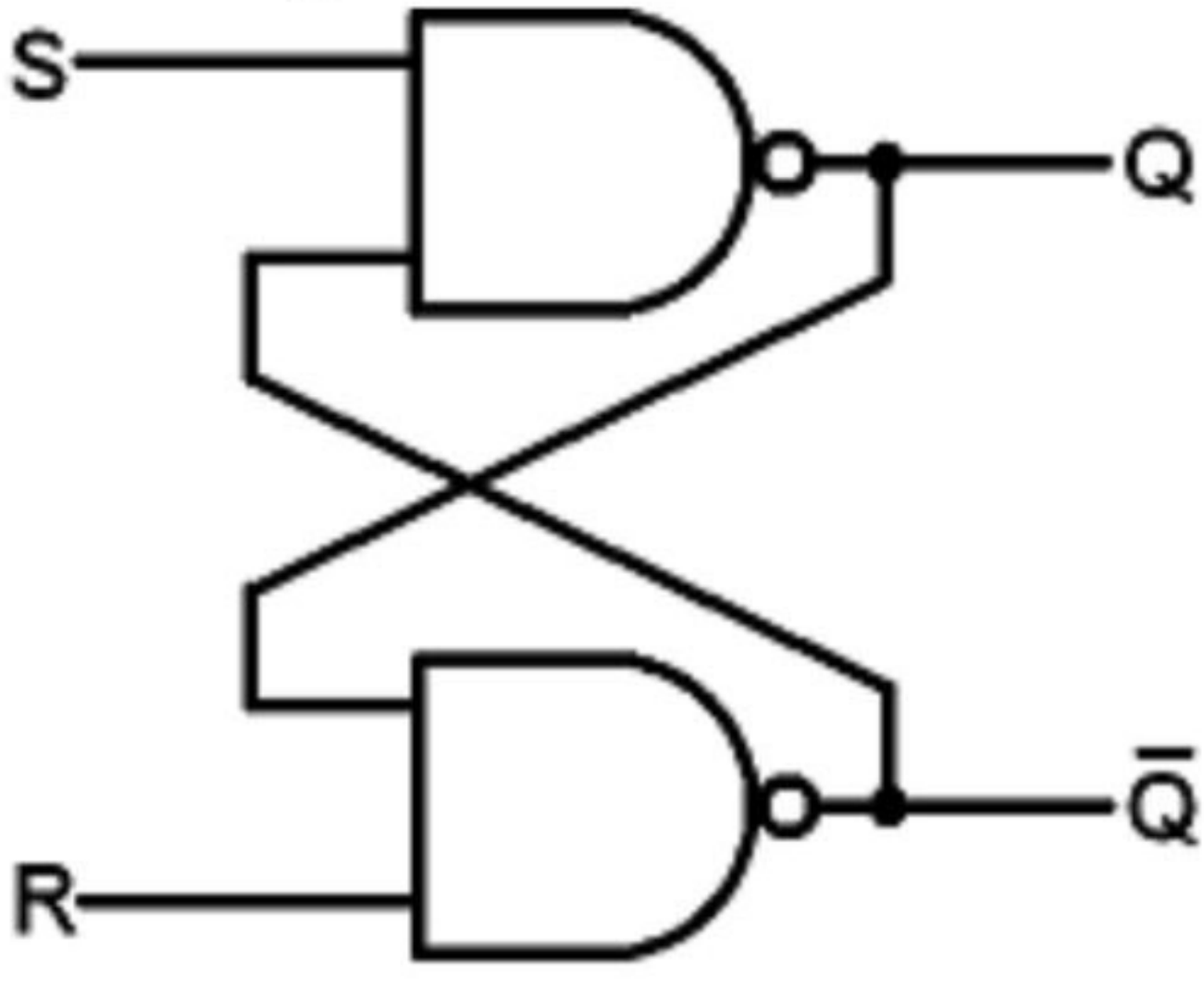
c) s and r

d) j and k

View Answer

Answer: c

Explanation: SR or Set-Reset latch is the simplest type of bistable multivibrator having two stable states. The inputs of SR latch are s and r while outputs are q and q'. It is clear from the diagram:



12. When a high is applied to the Set line of an SR latch, then _____

a) Q output goes high

b) Q' output goes high

c) Q output goes low

d) Both Q and Q' go high

View Answer

Answer: a

Explanation: S input of an SR latch is directly connected to the output Q. So when a high is applied Q output goes high and Q' low.

13. When both inputs of SR latches are low, the latch _____

a) Q output goes high

b) Q' output goes high

c) It remains in its previously set or reset state

d) it goes to its next set or reset state

View Answer

Answer: c

Explanation: When both inputs of SR latches are low, the latch remains in it's present state. There is no change in output.

14. When both inputs of SR latches are high, the latch goes _____

a) Unstable

b) Stable

c) Metastable

d) Bistable

View Answer

Answer: c

Explanation: When both gates are identical and this is “metastable”, and the device will be in an undefined state for an indefinite period.