# 23 Lecture - CS302

## **Important Subjective**

### 1. What is the basic function of an S-R latch?

Answer: An S-R latch is a memory element that can store a single bit of information. It has two inputs, S (set) and R (reset), and two outputs, Q and Q?.

## What is the application of S-R latch in control circuits?

Answer: S-R latch is commonly used in control circuits as a flip-flop to store a state or control signal.

## How is S-R latch used in data synchronization?

Answer: S-R latch is used in data synchronization to avoid glitches or errors caused by timing mismatches between different parts of a circuit.

## What is the difference between a gated S-R latch and an edge-triggered flip-flop?

Answer: A gated S-R latch can be set or reset only when a control input (such as an enable) is activated, while an edge-triggered flip-flop changes state only on the rising or falling edge of a clock signal.

## What is the function of the feedback loop in an S-R latch?

Answer: The feedback loop in an S-R latch provides the memory function by allowing the output to feed back into the input to maintain the current state.

## What is the difference between an S-R latch and a D flip-flop?

Answer: An S-R latch can be set or reset at any time, while a D flip-flop changes state only on the rising or falling edge of a clock signal.

### What is the purpose of using an S-R latch in pulse shaping?

Answer: S-R latch is used in pulse shaping to convert a noisy or distorted input signal into a clean and well-defined output signal.

## How can S-R latch be used in signal conditioning?

Answer: S-R latch can be used in signal conditioning to filter out unwanted noise or interference and to amplify or attenuate the signal as needed.

## What is the significance of the indeterminate state in S-R latch?

Answer: The indeterminate state in S-R latch occurs when both inputs S and R are low, and the output is uncertain. This state is unstable and needs to be avoided in practical circuits.

## What is the advantage of using a clock signal with a flip-flop instead of an S-R latch?

Answer: The use of a clock signal in a flip-flop eliminates the problem of the indeterminate state and provides a more reliable and predictable operation.