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.