27 Lecture - CS302

Important Subjective

1. **What is the difference between an up counter and a down counter?**
   Answer: An up counter counts from a lower value to a higher value, while a down counter counts from a higher value to a lower value.

   What is the advantage of using a presettable down counter over a non-presettable one?
   Answer: A presettable down counter can be set to any initial value, whereas a non-presettable down counter always starts counting from its maximum value.

   What is a ripple counter?
   Answer: A ripple counter is an asynchronous down counter where the output of one flip-flop is used as the clock input of the next flip-flop.

   What is a synchronous down counter?
   Answer: A synchronous down counter is a counter where all flip-flops are clocked simultaneously using the same clock signal.

   What is a modulus-n down counter?
   Answer: A modulus-n down counter is a counter that counts down to zero and then resets to its initial value, where n is the maximum count value.

   What is the purpose of the load input in a down counter?
   Answer: The load input is used to set the initial value of the counter.

   How does a down counter differ from a timer?
   Answer: A down counter counts down from a specified initial value to zero and then stops, whereas a timer counts down from a specified initial value to zero and then starts counting up again.

   What is the difference between synchronous and asynchronous counters?
   Answer: Synchronous counters use a common clock signal to clock all flip-flops simultaneously, whereas asynchronous counters use the output of one flip-flop to clock the next flip-flop.

   What is the purpose of the clear input in a down counter?
   Answer: The clear input is used to reset the counter to its initial value.

   What is the disadvantage of using a ripple counter?
   Answer: The disadvantage of using a ripple counter is that the propagation delay through each flip-flop can cause the counter to have a longer total delay and lower maximum frequency of operation compared to a synchronous counter