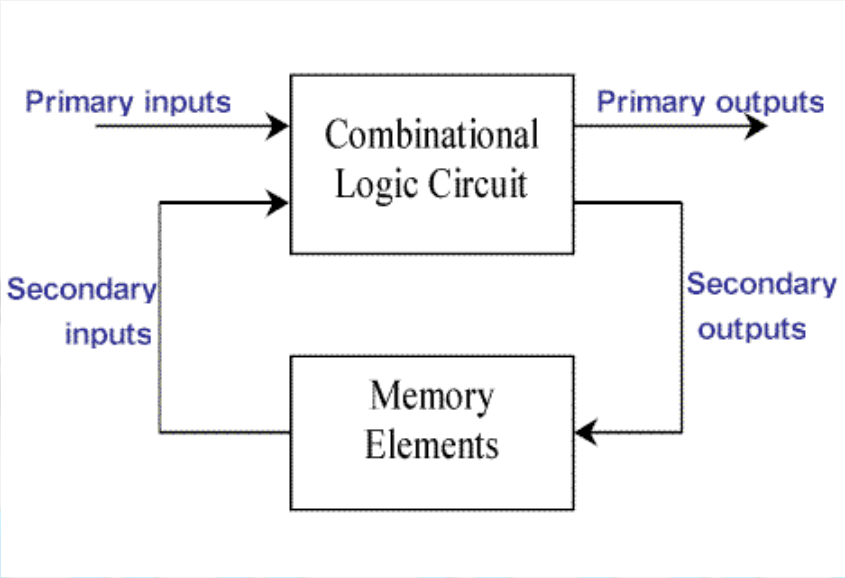
QUESTIONS AND ANSWERS ON SEQUENTIAL CIRCUITS

Q.1. What is sequential circuit?
Ans. These are defined as circuit whose output is dependent not only on the present input value but also on the past history of its input. The sequential Circuits are designed using the combinational circuits along with memory devices known as Flip-Flops. The sequential Circuits depend over the input value as well as the stored levels.



Sequential Circuits block diagram

Q.2. What is a flip flop?
Ans. Flip flop is one bit storage bistable device. Flip flop is also called latch. It stores binary value. It is the basic building block of the digital electronic systems. These are the basically the data storing devices which store the information of two stable states of the system. A flip-flop stores only a single bit of data at a time.

Q.3. What is the difference between latch and flip flop?
Ans. The difference between the latch and flip flop is the method of changing their state. The latch do not have clock input but flip flop has a clock input.

Parameter	Latch	Flip Flop
AREA	LESS	MORE
POWER	LESS	MORE
DESIGN ROBUSTNESS	DESIGN IS NOISY	DESIGN IS ROBUST

Latch Vs Flip Flop

Q.4. Does sequential circuit contain memory element?
Ans. Yes, sequential circuit contain memory element. A storing element is added to store the various stable states level information. This help in relating the feedback data from the past to the present data.

Q.5. What is the application of T flip flop?
Ans. T Flip Flops can be used as follows-

(a) Frequency divider
(b) Counters
(c) Binary Addition devices

Q.6. How race around condition can be eliminated?
Ans. It is essential to understand the race around condition before the development of edge triggered flip flop. As we know that the conditions s==1 and R==1 are not allowed in flip flop by the use of feedback correction. Under this situation when input J and K are 1 and 1 output will change from 0 to 1. To avoid race around condition, we use master slave flip flop. It has two different flip flops, which are connected serially.

Q.7. What is a counter?
Ans. Counter is a sequential circuit which is used to count the number of clock pulses of the circuit. It is also sometimes used to display the number of time any event is repeated or happening. It’s a simple counter in the digital logics and computation which calculates the number of times an assigned event is taking place.

Q.8. What is the difference between asynchronous counter and synchronous counter?
Ans. Asynchronous counter's speed is less while synchronous counter’s speed is high. In asynchronous glitch occurs while in synchronous, there is no problem of glitch. In asynchronous settling time is more while in synchronous settling time is less. Asynchronous counters are simple and straight in operation while synchronous are complex in operation.

Q.9. How many types of shift register counters are there and write their names also?
Ans. There are two types of shift register counters which are named as-

(a) Ring counter and
(b) Johnson counter.

Q.10. What is a register?
Ans. Register is a group of flip flop or binary cells which holds the binary information. Since a binary cell store a bit of information, n bit register has n flip flops and is capable of storing any information of n bit.