SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
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DEPARTMENT OF MECHATRONICS ENGINEERING

19MCT201 - DESIGN OF DIGITAL CIRCUITS

II YEAR - III SEM

UNIT 4 – DESIGN OF SEQUENTIAL CIRCUITS

TOPIC 1– Register

Register

A flip-flop is nothing but a binary cell capable of storing one bit information, and can be connected together to perform counting operations. Such a group of flip-flops is called **counter**. We have also seen that group of flip-flops can be used to store a word, which is called **register**.

A flip-flop can store 1-bit information. So an n-bit register has a group of n flip-flops and is capable of storing any binary information/number containing n-bits.

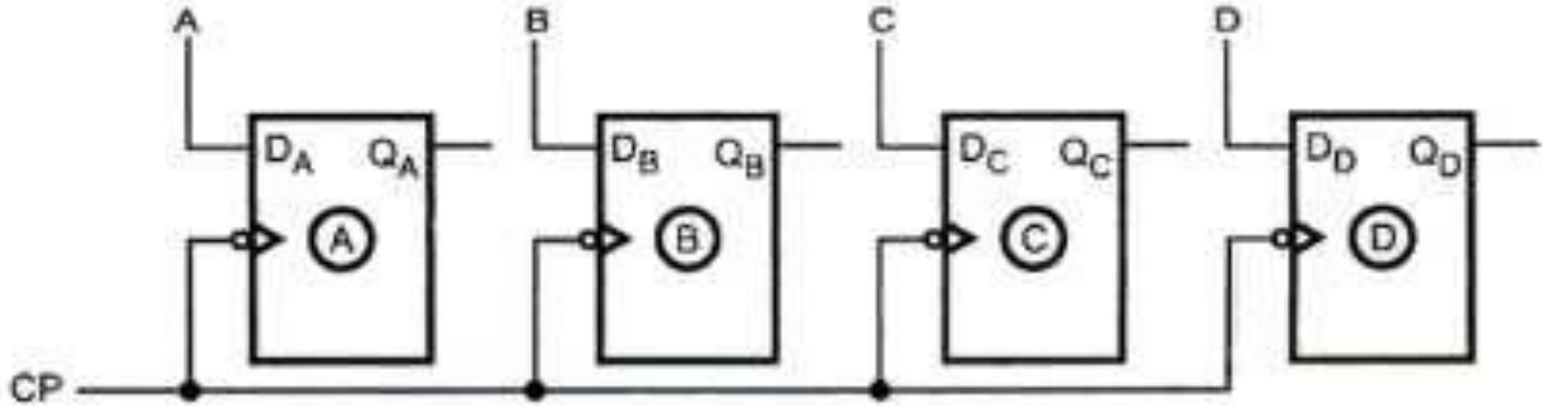


Fig. Buffer register

Shift registers

Shift Registers

The binary information (data) in a register can be moved from stage to stage within the register or into or out of the register upon application of clock pulses. This type of bit movement or shifting is essential for certain arithmetic and logic operations used in microprocessors. This gives rise to a group of registers called '**shift registers**'. They are very important in applications involving the storage and transfer of data in a digital system.

Fig. gives the symbolical representation of the different types of data movement in shift register operations.

According to the data movement in a register, let us see some of the types of shift registers.

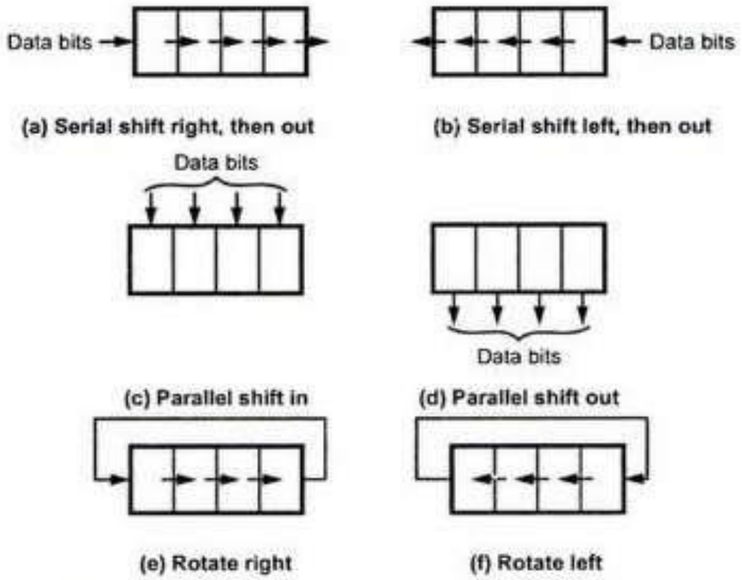
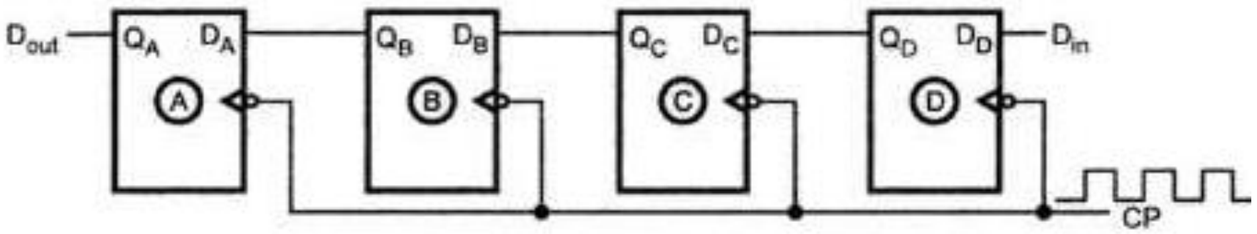


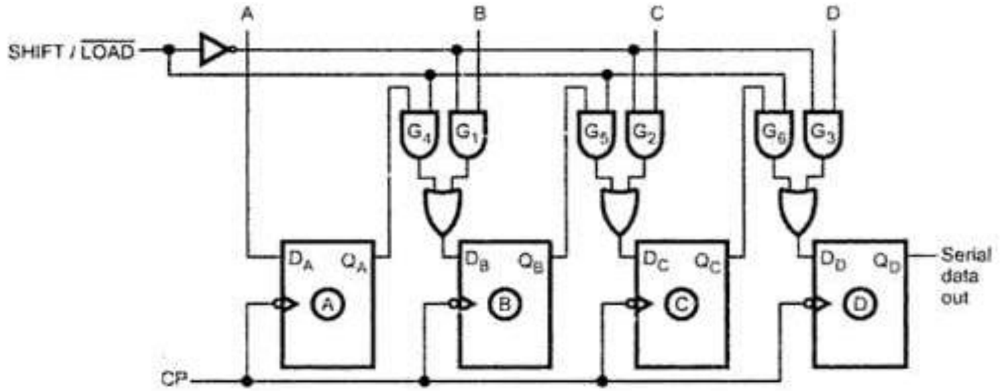
Fig. Basic data movement in registers

Shift registers

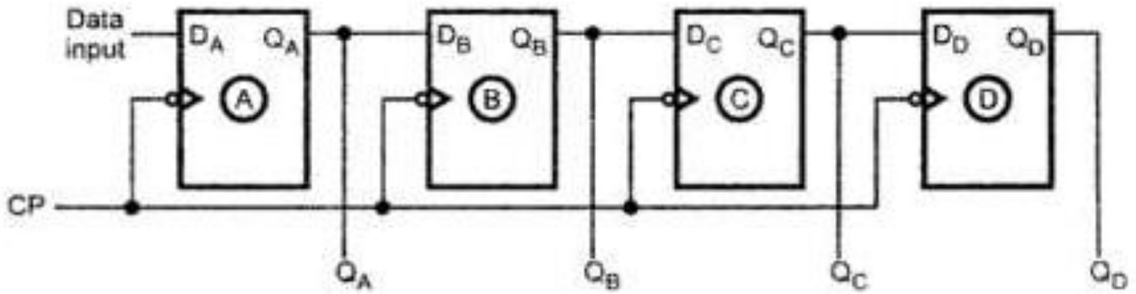
Serial In Serial Out Shift Register



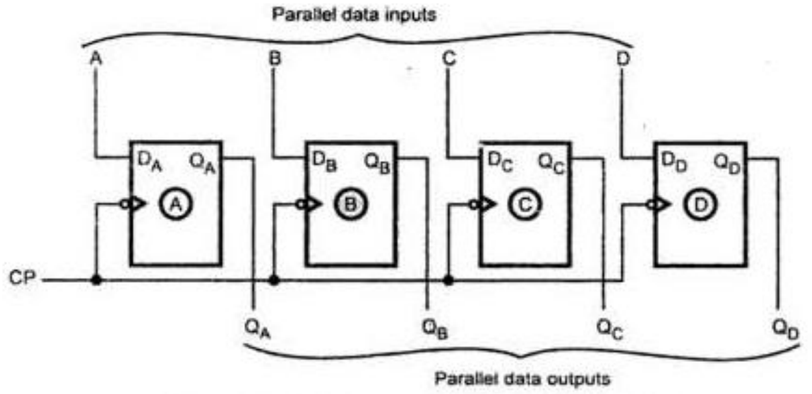
Parallel In Serial Out Shift Register



Serial In Parallel Out Shift Register



Parallel In Parallel Out Shift Register



ASSESSMENT - 1

Mux relates with us….

Question 1

Which combinational circuit is renowned for selecting a single input from multiple inputs & directing the binary information to output line?

- a) Data Selector
- b) Data distributor
- c) Both data selector and data distributor
- d) DeMultiplexer

Question 2

Which is the major functioning responsibility of the multiplexing combinational circuit?

- a) Decoding the binary information
- b) Generation of all minterms in an output function with OR-gate
- c) Generation of selected path between multiple sources and a single destination
- d) Encoding of binary information

References

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