SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
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DEPARTMENT OF MECHATRONICS ENGINEERING

19MCT201 - DESIGN OF DIGITAL CIRCUITS

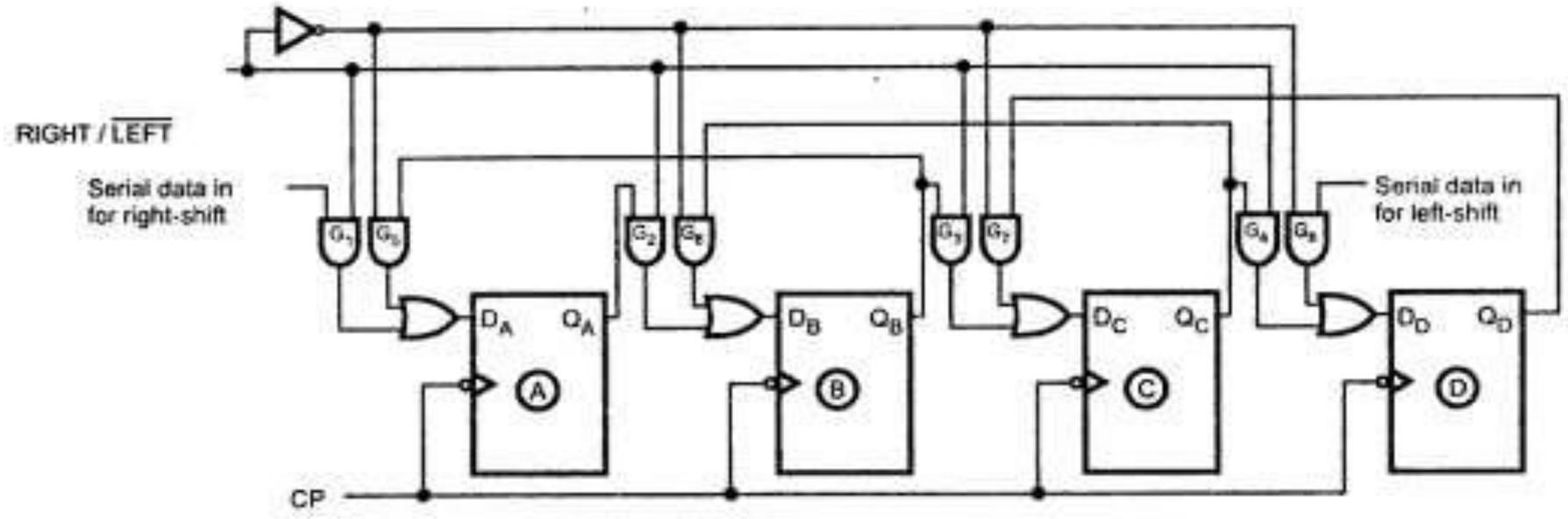
II YEAR - III SEM

UNIT 4 – DESIGN OF SEQUENTIAL CIRCUITS

TOPIC 1– Register

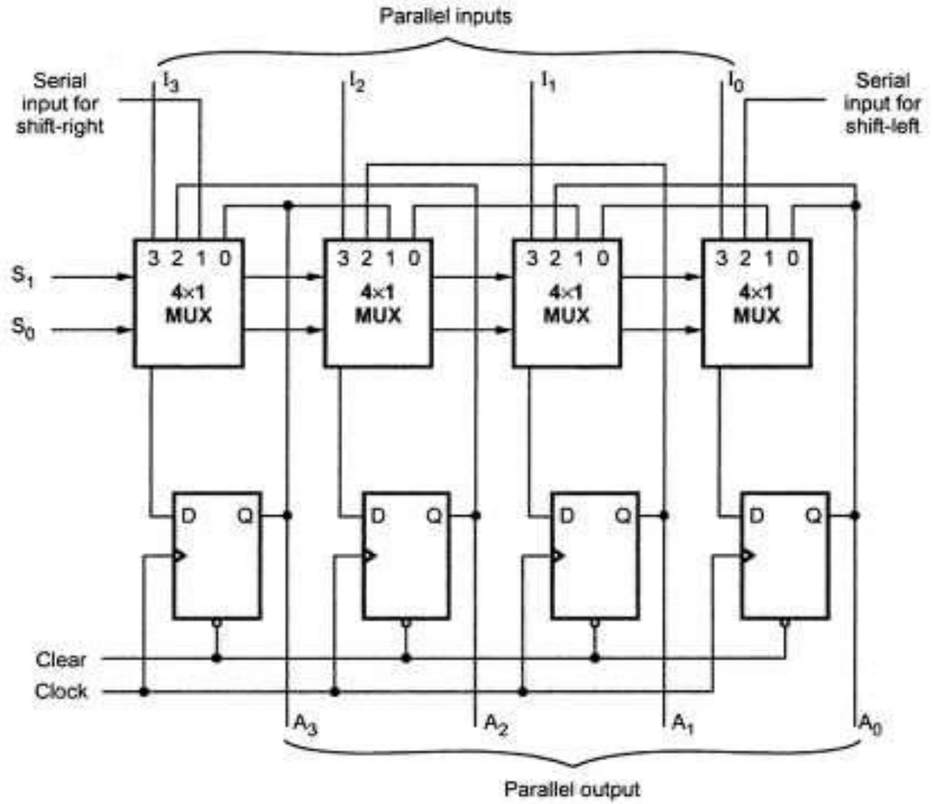
Shift registers

Bidirectional Shift Register



Universal shift register

A register capable of shifting in one direction only is a unidirectional shift register. A register capable of shifting in both directions is a bidirectional shift register. If the register has both shifts (right shift and left shift) and parallel load capabilities, it is referred to as **Universal shift register**.



Ring counters

Fig. shows the logic diagram for four-bit ring counter. As shown in the Fig. the Q output of each stage is connected to the D input of the next stage and the output of last stage is fed back to the input of first stage. The $\overline{CLR}$ followed by $\overline{PRE}$ makes the output of first stage to '1' and remaining outputs are zero, i.e. Q_A is one and Q_B, Q_C, Q_D are zero.

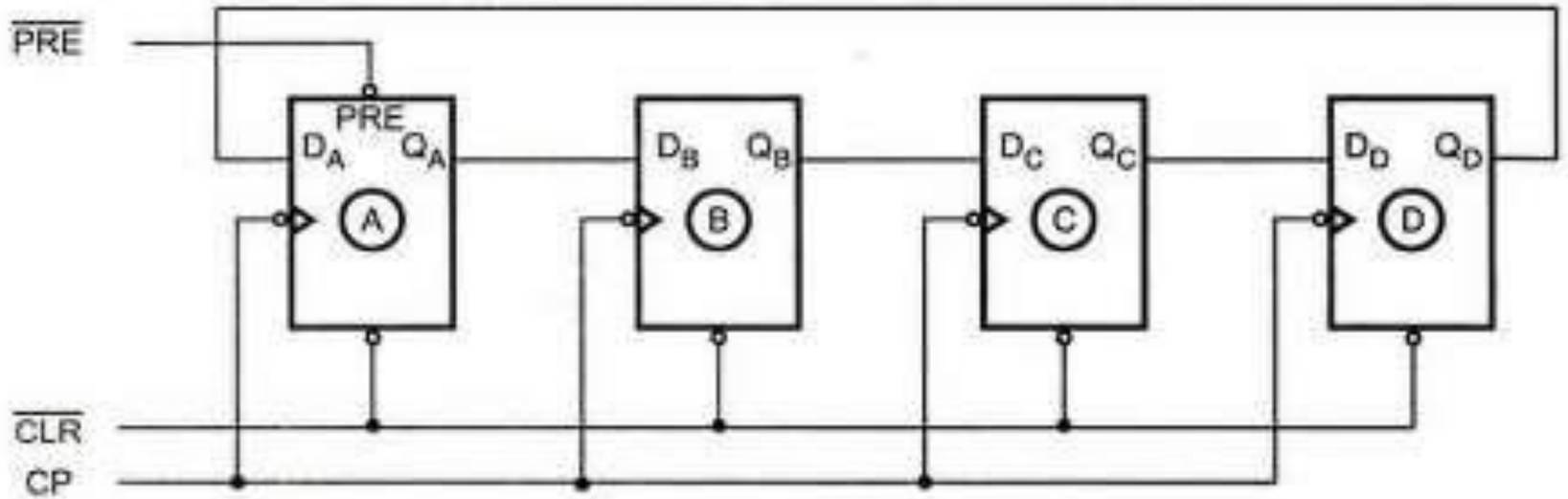


Fig. Four-bit ring counter

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

- https://brilliant.org/wiki/de-morgans-laws/
- https://circuitglobe.com/demorgans-theorem.html
- https://www.electrical4u.com/