CO2 QUESTIONS

1. Analyze a 4-bit shift register with an initial value of 0110. Perform six right shifts with the serial input 101110, and determine the register's contents after each shift.
2. Draw the logic diagram of a MOD-8 synchronous counter and explain its operation using the state table.
3. Compare synchronous and asynchronous counters, highlighting their key differences.
4. List and describe the different types of shift registers.
5. Provide the truth table for an SR latch and explain its operation.
6. Describe the working of an asynchronous BCD counter using JK flip-flops and explain its functionality with a state table.
7. Explain the operational principles of a JK flip-flop using NAND gates. Support the explanation with a circuit diagram and truth table.
8. Describe a 4-bit shift register with parallel loading and serial output. Use a circuit diagram to illustrate its operation.
9. Explain sequential circuits with the help of a block diagram.
10. Differentiate between latches and flip-flops.
11. Discuss various applications of shift registers.
12. Explain the advantages of a ring counter.
13. Describe level triggering and edge triggering, using diagrams for clarity.
14. Compare combinational and sequential circuits, emphasizing their key differences.
15. Examine a 4-bit serial-in parallel-out shift register with an initial state of 0000. Perform four right shifts with serial input 1011 and determine the register's contents after each shift.
16. List and describe the different types of registers in computers.
17. Determine the minimum number of flip-flops required to build a binary counter capable of counting from 0 to 84.
18. Explain the working of a shift register that supports both bi-directional shifting and parallel loading. Use a functional table to illustrate its operation.
19. Describe the operation of a serial-in serial-out shift register, including a circuit diagram and timing diagram.
20. Explain the working principles of a 4-bit ring counter with a logic diagram and state table.
21. Compare the JK flip-flop and the SR flip-flop, focusing on differences in their excitation tables.
22. Explain the truth table, characteristic table, and excitation table for a T flip-flop.
23. Design a 3-bit synchronous counter using JK flip-flops. Provide the state table and timing diagram.
24. Describe the operation of a 4-bit Johnson counter using a circuit diagram and state table. Also, illustrate its timing diagrams.

25. Explain the purpose of a register and demonstrate the operation of a 4-bit register with a circuit diagram.
26. Describe the operation of a D flip-flop using a block diagram and truth table. Additionally, derive its characteristic equation.
27. Draw the logic diagram of a MOD-8 ripple counter and outline its state table.