Set-A

1. What is race around condition in JK flip-flop? Explain how to overcome this with necessary diagram. (5 marks)
2. Design a sequential machine that detects 1101 using JK flip-flop. (10 marks)
3. What is shift register? Draw the block diagram of parallel in serial out(PISO) shift register using shift/load line. (5 marks)

Set-B

1. What is glitch? Explain how to remove glitch in D flip-flop with necessary diagram. (5 marks)
2. Design a sequential machine that detects 3 or more consecutive ones using JK flip-flop. (10 marks)
3. Design 4-bit asynchronous up counter using JK flip-flop. (5 marks)

Set-C

1. Verify that master-slave flip-flop is same as the negative edge-triggered flip-flop (use the T flip for explanation). (5 marks)
2. Design a sequential machine that detects 1011 using JK flip-flop. (10 marks)
3. Describe the serial in serial out (SISO) register using timing waveform. (5 marks)