**ESSAY TYPE QUESTIONS**

1. Draw the circuit diagram for 4-bit combinational circuit shifter.
2. Explain in brief timing and control in a basic computer organization
3. Explain memory-reference instructions
4. Draw the flowchart for interrupt cycle.
5. Describe the address sequencing of micro programmed control unit
6. Explain microprogram control organization with neat diagram
7. Explain the microprogram sequencer for a control memory with a neat diagram.
8. Specify the instruction formats of basic computer.
9. Evaluate the given expression using three address and two address instructions.

**SHORT ANSWER QUESTIONS**

1. Define internal hardware organization of a digital computer.
2. What is the significance of three state buffer gates?
3. List the phases of an instruction cycle.
4. Define the terms microoperation, microinstruction and microprogram**.**
5. Specify the format of microinstruction.
6. Write RTL statements for STORE instruction.
7. What is binary adder?
8. What is mapping process?