2.) What is the significance of three state buffer gates?

Three-state buffers used to enable multiple devices to communicate on a data bus can be functionally replaced by a multiplexer. That will help select output from a range of devices and write one to the bus.

3.) List the phases of an instruction cycle.

It is composed of three main stages: the fetch stage, the decode stage, and the execute stage.

4.) Define the terms micro-operations, micro instructions, and

micro program.

 Micro-operation: an elementary digital computer operation.

Micro-operations (also known as a micro-ops or μops) are detailed low-level instructions used in some designs to implement complex machine instructions (sometimes termed macro-instructions in this context).

Micro-instruction: an instruction stored in control memory
A micro-instruction is a simple command that makes the hardware operates properly. The format is unique to each computer

Micro-program: Sequence of microinstructions.

5.) Specify the format of microinstruction.

3	3	3	2	2	7
F1	F2	F3	CD	BR	AD
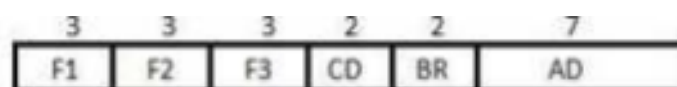
F1, F2, F3: Microoperation fields

Figure 4.5: Microinstruction Format

7.) What is binary adder?

A Binary Adder is a digital circuit that performs the arithmetic sum of two binary numbers provided with any length.

8.) What is mapping process?

The transformation from the instruction code bits to an address in control memory where the routine is located is referred to as a mapping process.