14313

B.C.A. EXAMINATION

(For Batch 2021 to 2023 Only)

(Second Semester)

COMPUTER ORGANIZATION

BCA-23

Time : Three Hours   *Maximum Marks : 80*

Note :   Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1.   Explain the following : $8 \times 2 = 16$

   (a)   What is a state table ? Define it and illustrate with a diagram.

(b) Enumerate the different types of flip-flops.

(c) Define a shift register and explain its purpose.

(d) What is meant by an asynchronous counter ?

(e) Define cache memory and describe its significance.

(f) Describe optical storage devices.

(g) Describe the structure of an instruction format.

(h) What do you understand by an I/O channel ?

Unit I

2. Explain the concept of a Master-Slave flip-flop, illustrate it with a diagram, and discuss its operational characteristics. 16

3. Describe Clocked RS and D flip-flops. Compare their behavior and features. 16

Unit II

4. Design a Mod-6 asynchronous counter. Provide the logic diagram and explain the state transitions. 16

5. Compare the SISO, SIPO, PISO and PIPO shift registers. Support your explanation with diagrams and suitable examples. 16

Unit III

6. What are the main challenges in managing memory hierarchies in computer systems ? 16

7. Discuss the roles of I/O devices and their controllers with relevant examples. 16

Unit IV

8. Explain the concept of machine instructions. How is an instruction set determined ?   16

9. Define IOP (Input/Output Processor). How does it support I/O operations ?   16

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