

(3 Hours)

[Total Marks : 80]

- N.B. :**
- 1) **Question No.1** is **compulsory**.
 - 2) Attempt **any three** from the remaining **five** questions.
 - 3) Answers to **sub-questions** should be grouped together.

- Q1. (a)** Discuss the use of Memory Buffer Register, Memory Address Register and Instruction Register in instruction execution. **05**
- (b)** Explain with an example, how are Karnaugh Maps useful in simplifying logic circuits. **05**
- (c)** Discuss the construction and working of a J-K Flip Flop. **05**
- (d)** Explain in brief memory hierarchy with a suitable diagram. **05**
- Q2. (a)** How are Cache Memories useful? Explain the cache organisation in detail with an example. **10**
- (b)** What are RAID's? Explain all RAID levels with their advantages and disadvantages. **10**
- Q3. (a)** Discuss the functions of an Input-Output module with its block diagram. **10**
- (b)** What is instruction pipelining? Discuss Six-stage instruction pipelining with and without branches. **10**
- Q4. (a)** Explain the construction and working of a static random access memory. **10**
- (b)** Discuss the organisation and working of a control unit in the CPU with its generic model. **10**
- Q5. (a)** Discuss various instruction addressing modes with suitable examples. **10**
- (b)** What is a Bus? Explain various bus interconnection schemes in detail with their architecture. **10**
- Q6. Write short note on any four of the following : 20**
- (a) Differentiate between RISC and CISC.
 - (b) De-Multiplexers.
 - (c) DMA.
 - (d) Clusters.
 - (e) Instruction cycle with interrupts.