

(3 Hours)

[Total marks: 100]

Note (1) Question No. 1 is compulsory.

(2) Attempt any four out of remaining six questions.

(3) Answer to sub-questions should be grouped together.

- Q1. (a) Using K-Maps, simplify the following expression in four variables A, B, C, D. Draw logic diagram for the obtained solution. 5
 $F(A, B, C, D) = \sum (0, 2, 4, 5, 6, 7, 8) + d(12, 13, 14, 15)$
- (b) Explain micro operation in detail. 5
- (c) Compare computer organization and computer architecture. 5
- (d) Explain Synchronous counters in detail. 5
- Q2. (a) What is the significance of RAID? Explain any four RAID levels in detail. 10
- (b) Why are flip-flops called as bi-stable elements? Explain S-R flip flop in detail. 10
- Q3. (a) Compare hardwired Vs micro programmed control unit. 10
- (b) Why Cache memory is needed? Name various elements of cache design. 10
- Q4. (a) Difference the following 10
 I. SRAM & DRAM
 II. Programmed I/O & Interrupt driven I/O
- (b) Discuss 1 to 8 de-multiplexer using truth table. Draw its implementation using the appropriate gates. 10
- Q5. (a) What is instruction pipelining? Write a detailed note on six stage instruction pipeline along with diagram. How conditional branching affects pipeline performance? 10
- (b) With reference to parallel processing explain SISD, SIMD, MISD and MIMD. What is their significance in practical parallel processing approaches? 10
- Q6. (a) Explain DMA technique in detail with the help of suitable diagram. (Explain Breakpoints and Cycle stealing in it) 10
- (b) Define cluster. Explain different clustering methods in detail with its benefits and limitations. 10
- Q7. Write short note on any two of the following 20
 (a) Symmetric multiprocessors
 (b) Associative memory
 (c) Instruction cycle & its sub cycles
