

BT-5/D-24

45244

**COMPUTER ORGANIZATION AND
ARCHITECTURE**

EC-305A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt any *Five* questions, selecting at least *one* question from each Unit.

Unit I

1. (a) Draw and explain the Von Neumann architecture in detail.
- (b) What is Memory stack ? How is it different from register stack ? Discuss. 15
2. (a) What are addressing modes ? Find the operand using :
 - (i) Register direct
 - (ii) Register indirect
 - (iii) Relative mode
 - (iv) Auto increment

- (v) Auto decrement.

Two word instruction is load to Accumulator and address field is 500. Initial Value of program counter (PC) is 200 and general register (R1) is 400. 10.

Address	Memory
200	Load to AC
201	Address=500
202	Next instruction
399	450
400	700
401	800
702	325

- (b) What is Single Accumulator instruction ? Explain with the help of an example. 5

Unit II

3. (a) Differentiate between horizontal and vertical micro-programmed control unit.
- (b) What is multiplier control unit ? Draw its block diagram and discuss its working. 15

4. (a) What is Decimal Arithmetic Unit ? Discuss three different ways of addition in decimal unit.
- (b) What is parallel processing ? Discuss SIMD and MIMD forms of parallel processing. 15

Unit III

5. (a) Draw a memory address map for a given memory system which has RAM's capacity of 128×8 And ROM's capacity of 512×8 . Calculate the number of RAM and ROM chips required. Also. draw a connection diagram to the CPU. 10
- (b) What is Virtual memory ? Discuss with the help of an example. 5
6. (a) Discuss the Direct Mapping and Set associative mapping case of cache memory.
- (b) What is memory hierarchy ? Draw its diagram. Also explain types of auxiliary memory. 15

Unit IV

7. (a) Discuss the working of an instruction pipeline.
- (b) What is RISC pipeline ? Discuss its working. 15

8. (a) What is DMA ? Discuss the process of DMA transfer in detail.
- (b) What is Asynchronous data transfer ? Discuss strobe control and handshaking in detail. 15

