D1ACS2505 **(1 Page)** **Name.....**
Reg. No.....

FIRST SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2025
(Regular/Improvement/Supplementary)
COMPUTER SCIENCE
FCSS1C05 – COMPUTER ORGANIZATION & ARCHITECTURE

Time: 3 Hours **Maximum Weightage: 30**

Section A: Short answer questions. Answer any *four* questions. Each carries *two* weightage.

1. Explain how K-Map can be used to simplify Boolean expressions.
2. Give a note on straight-line sequencing.
3. Explain the steps in the memory READ operation.
4. Describe the concept of bit pair recoding.
5. Explain memory interleaving.
6. Write a short note on ‘daisy chaining’.
7. List and explain any four addressing modes.

(4 × 2 = 8 weightage)

Section B: Short essay questions. Answer any *four* questions. Each carries *three* weightage.

8. Outline the working of the 4-to-1 multiplexer with a suitable diagram.
9. Explain the working of the J K flip-flop with the help of a labeled block diagram and excitation table.
10. Identify the steps in the execution of a branch instruction.
11. How will you convert Full Adder to a Subtractor ?
12. With a block diagram, illustrate the working of the array multiplier.
13. What is virtual memory? With the help of neat diagram explain the method of virtual to physical address translation.
14. Explain different arithmetic instructions of 8086 microprocessor.

(4 × 3 = 12 weightage)

Section C: Essay questions. Answer any *two* questions. Each carries *five* weightage.

15. Differentiate between synchronous and asynchronous counters. Draw the block diagram and explain the working of 4-bit binary counter.
16. With the help of neat diagram explain single bus and two bus organization.
17. Explain the organization and operations of the DMA mechanism.
18. Demonstrate the architecture of 8051 microcontrollers.

(2 × 5 = 10 weightage)