

Internal Assessment

Techno Main Salt Lake, India

Course: Computer System Organization (CST207)

Date: 13.11.2025

Time: 50 min

Total marks: 20

$$1 \times 5 = 5$$

1. Virtual memory allows:
 - A) Programs to run only when fully loaded in main memory
 - B) Execution of programs larger than physical memory
 - C) Direct execution from secondary storage
 - D) Removal of the need for RAM entirely
2. In a paging system, the page table stores:
 - A) Logical to physical address mappings
 - B) Page replacement algorithms
 - C) Cache-to-memory mappings
 - D) Process control information
3. Which of the following addressing modes uses the contents of a register as a pointer to the operand?
 - A) Immediate addressing
 - B) Direct addressing
 - C) Register indirect addressing
 - D) Indexed addressing
4. Consider the assembly instruction: `ADD R1, R2, #10`.
What does it perform?
 - A) Adds the contents of memory location 10 to R2 and stores in R1
 - B) Adds immediate value 10 to R2 and stores in R1
 - C) Adds R1 and R2 and stores the result in memory location 10
 - D) Adds R1, R2, and 10 and stores in memory
5. In virtual memory systems, what is a **page fault**?
 - A) When a page is present in main memory but marked invalid
 - B) When the CPU references a page not currently in main memory
 - C) When two processes access the same page simultaneously
 - D) When a page table entry is modified by the operating system
6. What is the concept of locality of reference in cache memory. 3
7. Add -9 with -13 using 2's complement arithmetic. 4
8. Calculate the number of page faults for the following reference string with frame size = 3 by using (a) LRU and (b) FIFO page replacement algorithm:

5, 0, 2, 1, 0, 3, 0, 2, 4, 3, 0, 2, 3, 1, 0, 1, 5

(4 + 4)