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BCACACN 403

**Fourth Semester B.C.A. Degree Examination, June/July 2024
(NEP 2020) (2022 – 23 Batch Onwards)
OPERATING SYSTEM CONCEPTS**

Time : 2 Hours

Max. Marks : 60

Instruction : Answer *any six* questions from Part – A and *one full* question from *each* Unit in Part – B.

PART – A

(6×2=12)

1. a) Define multiprocessor system and mention two advantages of multiprocessor system.
- b) Give any four File Types.
- c) What are first-fit and worst-fit memory allocations ?
- d) What do you mean by logical addresses and physical addresses ?
- e) Define pre-emptive scheduling and non-pre-emptive scheduling.
- f) What do you mean by Inter Process Communication (IPC) ?
- g) Mention the two methods of handling the deadlock.
- h) What is Semaphore ?

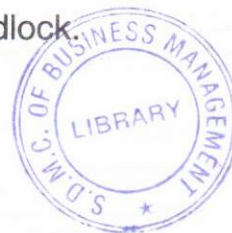
PART – B

Unit – I

2. a) Explain Operating System Resource Management in
 - i) Process Management
 - ii) Memory Management.
- b) Explain layered approach of operating system structure with a neat diagram.

(6+6)

P.T.O.





- 3. a) Explain services of an operating system.
- b) Write a note on the following :
 - i) File attributes
 - ii) System calls.

(6+6)

Unit – II

- 4. a) Write a short note on fragmentation.
- b) Consider the following page reference string
7, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
How many page faults would occur for the following replacement algorithm assuming three frames ?
 - i) LRU algorithm
 - ii) Optimal replacement algorithm.
- c) Explain SCAN disk scheduling with example.

(4+4+4)

- 5. a) Explain Contiguous Memory Allocation.
- b) Explain FIFO page replacement algorithm with an example.
- c) Explain swapping with diagram.

(4+4+4)



Unit – III

- 6. a) What is Process ? Explain process state transition with neat diagram.
- b) Consider the following set of processes, with length of the CPU-burst time given in milliseconds.

Process	CPU Burst Time
P1	24
P2	3
P3	3

Find the average turnaround and waiting time for FIFO scheduling algorithm and SJF scheduling algorithm. And also draw the Gantt chart for FIFO and SJF scheduling algorithm.

(6+6)



7. a) What is PCB ? Explain using appropriate diagram.
- b) Explain Shortest Job First Scheduling algorithm with suitable example. (6+6)

Unit – IV

8. a) What is critical section problem ? Explain. What are the requirements for a solution to critical section problem ?
- b) Explain resource allocation graph using suitable example. (6+6)
9. a) What is deadlock ? Explain the necessary conditions for deadlock to occur.
- b) Explain Banker's Algorithm. (6+6)

