Reg. No. | | | | | | | | | | | |

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)**
