



Seat No. : _____

NM-121

November-2025

BS (BCA), Sem.-III

DSC-C-BCA-231 : Operating System Concepts (NEP-2020)

Time : 2:00 Hours]

[Max. Marks : 50

1. Answer the following :

- (1) Discuss: Dynamic Partition in Memory Management. 5
(2) Explain Demand Paging in detail. 5

OR

1. (1) What is Operating System ? State and explain different types of operating systems. 5
(2) Explain : Segmented Memory Allocation . 5

2. Answer the following :

- (1) Write a note on Process Control Block. 5
(2) Explain the functions of a Process Scheduler. Why is it essential in a multitasking environment ? 5

OR

2. (1) Explain process states in an operating system with the help of a diagram. 5
(2) Given the following processes with their burst times, and assuming all processes arrive at time = 0. Draw a time - line, calculate average turnaround time and calculate average waiting time for the following algorithms : (a) FCFS (b) Round-Robin (time slice – 4 ms) 5

Process	Burst Time
P1	10
P2	4
P3	5
P4	3

3. Answer the following :
- (1) What is meant by deadlock ? What are necessary conditions for a deadlock to occur ? 5
 - (2) Explain the Dining Philosophers Problem in context of Starvation. 5
- OR**
3. (1) Explain process co-operation using the Producer-Consumer problem. 5
- (2) Discuss: Semaphores. 5
4. Answer the following :
- (1) List and explain types of system devices. 5
 - (2) Explain Elevator (LOOK) disk scheduling algorithm with a suitable example. 5
- OR**
4. (1) Explain the role of the File Manager in an operating system. 5
- (2) Discuss : Data Compression. 5
5. Answer the following : [Any Ten] 10
- (1) Which part of the OS is responsible for managing input and output devices ?
 - (a) File Manager
 - (b) Scheduler
 - (c) I/O Sub-system
 - (d) Memory Manager
 - (2) Which file allocation method stores files in adjoining blocks on disk ?
 - (a) Linked allocation
 - (b) Indexed allocation
 - (c) Contiguous allocation
 - (d) All of these
 - (3) Access Control Lists are used for :
 - (a) Disk Formatting
 - (b) User Authentication
 - (c) File naming
 - (d) User Access Management
 - (4) In which deadlock strategy are processes rolled back to a safe state ?
 - (a) Prevention
 - (b) Avoidance
 - (c) Detection and Recovery
 - (d) All of these
 - (5) Communication between processors using a common system bus and common memory takes place in _____ system.
 - (a) Loosely coupled
 - (b) tightly coupled system.
 - (c) Both (a) and (b)
 - (d) None of these
 - (6) In _____ two or more CPU's are executing instructions simultaneously.
 - (a) Parallel Processing
 - (b) Scheduling
 - (c) Serial Processing
 - (d) None of the above
 - (7) Which scheduling policy can lead to starvation of lower priority processes ?
 - (a) FCFS
 - (b) Round Robin
 - (c) SJF
 - (d) Priority Scheduling

- (8) The interval from the time of submission of a process to the time of completion is termed as _____
- (a) Turnaround time (b) Waiting Time
(c) Response Time (d) Throughput
- (9) The unused space within the fixed partition is called _____.
- (a) External Fragmentation (b) Compaction
(c) Internal Fragmentation (d) None of these
- (10) What is the main role of the Job Scheduler ?
- (a) Allocate memory to processes
(b) Schedule I/O devices
(c) Select jobs from job pool to be loaded into memory
(d) Handle hardware interrupts
- (11) Virtual memory is :
- (a) A secondary memory
(b) Part of the hard disk only
(c) An illusion of having more memory than physically present
(d) The actual RAM size
- (12) Which of the following is NOT a page replacement algorithm ?
- (a) FIFO (b) LRU
(c) SCAN (d) All of these
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