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BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)/
BACHELOR OF SCIENCE (COMPUTER APPLICATIONS)/
BACHELOR OF COMPUTER APPLICATIONS (CYBER SECURITY)/
BACHELOR OF SCIENCE(CYBER SECURITY)/
BCA Data Science and Machine Learning/
BSC Data Science & Artificial Intelligence

EXAMINATION: DECEMBER-2025

SEMESTER - I

Sub: Operating System

(78625-104/BCA146-20/BCA23-104/BSC24-104/79925-104/46425-104/BCA-CS146-20/BCAC23-104/BSCC24-104)

Date : 27/12/2025

Total Marks : 60

Time: 10.00am to 12.30pm

Instructions:

1. All questions are compulsory unless and otherwise stated.
2. Bold figures to the right of every question are the maximum marks for that question.
3. Candidates are advised to attempt questions in order.
4. Answers written illegibly are likely to be marked zero.
5. Use of scientific calculators, Log tables, Mollier Charts is allowed.
6. Draw neat and labelled diagrams wherever necessary.

Q.1. Fill in the blanks

(5)

- _____ in operating systems occurs when process is waiting indefinitely for a resource.
 - Starvation
 - Deadlock
 - Overuse of CPU
 - Disk failure
- _____ is a valid synchronization tool.
 - Emulator
 - Compiler
 - Assembler
 - Semaphore
- _____ algorithm is used to avoid deadlock.
 - Banker's
 - SJF
 - Round Robin
 - Dijkstra's
- _____ is the program that loads the operating system into memory.
 - Loader
 - Compiler
 - Bootloader
 - Assembler
- _____ scheduling algorithm is non-preemptive.
 - Round Robin
 - Multilevel Queue
 - SJF
 - FCFS

Q.2. State True/False

(5)

1. Paging and segmentation are memory management techniques.
2. Context switching is expensive in terms of time and system resources.
3. Interrupts are used to improve processor efficiency.
4. Operating systems do not handle network communication.
5. The bootloader is part of the operating system that starts up after the OS is loaded.

Q.3. Answer the following (Solve any 5) (10)

1. Define the term "paging".
2. Define the term "Multiprocessing".
3. What is Non-Volatile Memory?
4. Define the term "Interrupts".
5. What are Atomic transactions?
6. Define the term "Thread".

Q. 4. Answer the following in detail. (Solve any 6) (30)

1. Describe the Functions of Operating System.
2. Describe various file access methods.
3. Explain any two types of CPU scheduling algorithms.
4. Describe critical section problem with example.
5. Explain process state with diagram and example.
6. Explain various components of OS.
7. What are the five major categories of System Calls?

Q. 5. Answer the following in detail. (Solve any 1) (10)

1. Explain process control block with diagram.
 2. What are semaphores? Explain solution to producer-consumer problem using semaphores
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