

TILAK MAHARASHTRA VIDYAPEETH, PUNE
BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)
SPECIALIZATION IN CYBER SECURITY (CS)/
BACHELOR OF SCIENCE/
BACHELOR OF SCIENCE (CYBER SECURITY)
EXAMINATION: JUNE - 2025
SEMESTER - I

Sub: Operating System

(BCA146-20/18/BCA-CS-146-20/BCA23-104/BCAC23-104/BSC24-104/ BSCC24-104)

Date : 14/06/2025

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)**

1. The kernel is the _____ of an operating system.
a) hardware
b) core
c) application
d) peripheral
2. _____ scheduling algorithm selects the process that arrives first.
a) Round Robin
b) First Come First Serve (FCFS)
c) Shortest Job Next
d) Priority
3. In round robin algorithm, the time allocated to each process is called _____.
a) cycle
b) time slot
c) quantum
d) interval
4. _____ is used to prevent deadlock in operating systems.
a) Paging
b) Banker's Algorithm
c) Virtual Memory
d) Thrashing
5. The state of a process that is currently being executed by the CPU is called the _____ state.
a) Ready
b) Waiting
c) Running
d) Terminated

Q.2. State True/False (5)

1. The kernel is the only part of the operating system that always resides in memory.
2. The Process Control Block (PCB) contains information like process state, process ID, and CPU registers.
3. A directory in a file system cannot store other directories.
4. DMA (Direct Memory Access) improves performance by allowing devices to communicate directly with the memory.
5. Semaphores are used to solve critical section problems.

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

1. Define operating Systems.
2. List all services of operating systems.
3. Define process.
4. List all file attributes.
5. What are semaphores?
6. Define Best-fit placement strategy.

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

1. Describe the operations on file system.
2. Explain the following process with neat diagram:
a) Multitasking b) Multiprogramming.
3. Explain any two types of Schedulers used in OS.
4. Explain the structure and purpose of a page table.
5. Explain in detail process control block?
6. Explain the concepts of primary and secondary memory.
7. Describe the various file access methods.

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

1. Explain fragmentation, and what are its types (internal and external)
 2. Describe the dining philosopher's problem and how it is solved.
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