

TILAK MAHARASHTRA VIDYAPEETH, PUNE
BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)(044)/
SPECIALIZATION IN CYBER SECURITY (464)/
BACHELOR OF SCIENCE (CYBER SECURITY-760)/
BACHELOR OF SCIENCE (COMPUTER APPLICATIONS-750)/
BCA DATA SCIENCE AND MACHINE LEARNING (786)/
BSC DATA SCIENCE & ARTIFICIAL INTELLIGENCE (799)
EXAMINATION: MAY/JUNE - 2026
SEMESTER - I
Sub: Operating System
(BCA146-20/BCA-CS-146-20/BCA23-104/BCAC23-104/BSC24-104/ BSCC24-
104/46425-104/78625-104/79925-104/76025-104)

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)

- _____ Scheduler reduces the degree of multiprogramming.
 - Long-Term Scheduler
 - Short-Term Scheduler
 - Medium-Term Scheduler
 - Dispatcher
- In paging pages are of _____ size
 - Variable
 - Fixed
 - Both variable and fixed
 - None of these
- The user program deals with _____ addresses
 - physical
 - memory
 - logical
 - None of these
- A _____ device is one with which the driver communicates by sending and receiving single characters
 - block device
 - character
 - I/O Bus
 - cylinder
- _____ operating system is also called as server operating system
 - Single process
 - Desktop operating system
 - Server operating system
 - Network operating system

Q.2. State True/False (5)

1. Binary semaphores provide locks for mutual exclusions
2. Multi user is similar to multitasking.
3. One program may have at least one thread.
4. Short-term schedulers are faster than long-term schedulers
5. Each critical section is terminated by Remainder section.

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

1. Discuss virtual memory and their benefits
2. Differentiate multiprogramming and time sharing operating system
3. Name the different file access methods
4. Define Logical and Physical Address in Operating System
5. What is dispatcher?
6. What is thread?

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

1. What is Process Control Block? Design basic framework of process control block
2. Explain in detail about paging in memory management
3. What is disk scheduling? Explain Shortest Seek Time First and C-LOOK disk scheduling
4. Discuss 'Readers - Writers' problem with the help of semaphores
5. Explain Segmentation in detail
6. Explain IPC in detail.
7. Explain SAN and NAS in detail.

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

1. Consider the following reference string:
1, 2, 3, 4, 2, 1, 6, 5, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6
How many page faults will occur for: (i) Optimal replacement?
(ii) FIFO replacement?

Note- Consider 3 frames.

2. Calculate the Average turnaround time using with time slice of 3ms FCFS and RR Scheduling.

Process	Burst lime in ms.
P1	24
P2	3
P3	3
