

Course Name : BSCIT

Subject Name : Fundamental of Operating System

Subject Code : BSCITRMA-102

Date : 17-02-2026

Time : 11:30AM TO 01:45PM

Max Marks : 70

Section A

Q.-1. Respond to any three of the following questions in brief. (30)

- (1) Explain the evolution of operating systems from serial processing to distributed processing in detail.
- (2) Discuss the four necessary conditions for a deadlock to occur and the various methods for handling deadlocks.
- (3) Explain the concept of Paging in memory management and how logical addresses are translated into physical addresses.
- (4) Discuss the different page replacement algorithms used in virtual memory management.
- (5) What is a file system? Explain the different layers found in a file system hierarchy.

Section B

Q.-2. Write short notes on any four of the following topics. (20)

- (1) Explain the concept of Spooling in batch processing.
- (2) What are the major design issues considered for an OS internal structure?
- (3) Explain the Resource-Allocation Graph (R-A Graph) and its role in deadlock detection.
- (4) Explain the concept of Swapping in memory management.
- (5) Differentiate between Internal and External fragmentation.
- (6) What is Direct Memory Access (DMA) and what are its advantages?

Section C

Q.-3. Tick (✓) the correct alternative (10)

(1) Which system guarantees that critical tasks complete on time?

- | | |
|-------------------|-------------------|
| A) Soft Real-time | B) Hard Real-time |
| C) Time-sharing | D) Distributed |

(2) Where is the information about a process state stored?

- | | |
|--------|--------|
| A) RAM | B) PCB |
| C) CPU | D) ROM |

(3) What do threads within the same process share?

- | | |
|------------------|--------------------|
| A) Register sets | B) Stack |
| C) Address Space | D) Program counter |

(4) Which memory management scheme divides processes into fixed-size pieces?

- | | |
|-----------------|-------------|
| A) Segmentation | B) Paging |
| C) Partitioning | D) Spooling |

(5) What does DMA stand for?

- | | |
|--------------------------|-------------------------|
| A) Digital Memory Access | B) Direct Memory Access |
| C) Dual Mode Access | D) Data Manage Area |

(6) A "named collection of related information" is called a:

- | | |
|-----------|-------------|
| A) Buffer | B) Process |
| C) File | D) Register |

(7) Which file type consists of ASCII characters and is readable?

- | | |
|------------------------|----------------|
| A) Binary file | B) Directory |
| C) Regular (Text) file | D) System file |

(8) Which allocation method suffers from external fragmentation?

- A) Linked
- B) Indexed
- C) Contiguous
- D) FAT

(9) Which program can replicate itself over a network?

- A) Virus
- B) Worm
- C) Logic Bomb
- D) Trojan

(10) Which Windows version is mentioned as the latest in the text?

- A) Windows 7
- B) Windows 8
- C) Windows 10
- D) Windows XP

Section D

Q.-4. Decide whether the statements given below are True or False.

(10)

- (1) An Operating system is an example of system software.
- (2) The operating system functions as a middle man between hardware and users.
- (3) Hard real-time systems guarantee that critical tasks complete on time.
- (4) Process and program are terms that mean exactly the same thing in an OS.
- (5) Internal fragmentation occurs when the allocated memory is slightly larger than requested.
- (6) Virtual memory allows execution of processes that are not completely in main memory.
- (7) Direct Memory Access (DMA) increases the CPU load during I/O operations.
- (8) The Master Boot Record (MBR) is located at the end of the hard disk.
- (9) A "Worm" is a program that can replicate itself over a network.
- (10) Role-Based Access Control (RBAC) assigns permissions to individuals directly.