

TRIBHUVAN UNIVERSITY

Faculty of Education

2081-ii (New/Old Course)

Bachelor /4th Semester

Symbol No.:

ICT.Ed.445 Operating System

Group "A"

10 X 1 mark =10

Attempt all questions

Tick (√) the best answers

1. Which of the following is NOT an operating system service?
 - a. Memory management
 - b. User interaction
 - c. Process synchronization
 - d. File management
2. Which of the following is an example of an operating system structure?
 - a. Monolithic
 - b. User interface
 - c. Network stack
 - d. Compiler
3. What is process in an operating system?
 - a. A program in execution
 - b. A file stored in memory
 - c. A running thread
 - d. A set of hardware resources
4. What is the concept of swapping in memory management?
 - a. Moving processes from one memory area to another
 - b. Allocating new memory for processes
 - c. Assigning priority to processes
 - d. Sorting memory pages
5. What is virtual memory used for in an operating system?
 - a. To store user files
 - b. To provide an illusion of a larger memory space than physically available
 - c. To speed up memory access
 - d. To organize file systems
6. Which of the following is NOT a file allocation method?
 - a. Contiguous allocation
 - b. Linked allocation
 - c. Indexed allocation
 - d. Binary allocation
7. Which of the following disk scheduling algorithm minimizes seek time?
 - a. FCFS
 - b. SSTF
 - c. SCAN
 - d. LOOK
8. Which of the following is a method for managing free space in a file system?
 - a. Bit Vector
 - b. Linked List
 - c. Directory Structure
 - d. RAID
9. Which of the following is a characteristic of paging in memory management?
 - a. Memory is divided into variable-sized segments
 - b. It allows processes to access memory outside of physical limits
 - c. Memory is divided into fixed-size blocks called pages
 - d. It does not require any memory mapping
10. What is the critical section problem?
 - a. A situation where multiple processes attempt to access the same resource at the same time, leading to inconsistent results.
 - b. A problem that arises when a process fails to execute its instructions due to a lack of system resources.
 - c. A situation where a single process is locked out from accessing its required resources.
 - d. A problem that occurs when processes are unable to terminate properly after execution.



parajuli,rajesh.cm.np

BICTE NOTES & QUESTION PAPERS

TRIBHUVAN UNIVERSITY

Faculty of Education

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Symbol No.: BICTE

ICT.Ed.445 Operating System

Group "A"

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Attempt all questions

Tick (✓) the best answers

1. Which of the following service is NOT provided by an operating system?
 - a. File system management
 - b. Network communication
 - c. Database querying
 - d. Security enforcement
2. Which program is always in execution driving Computer Operation?
 - a. Kernel program
 - b. Shell program
 - c. File program
 - d. Device drivers program
3. Peterson's solution is used to solve:
 - a. Readers-writers problem
 - b. Dining philosophers problem
 - c. Producer-consumer problem
 - d. Mutual exclusion problem
4. Which scheduling algorithm is non-preemptive and serves processes based on their arrival time?
 - a. First Come First Serve (FCFS)
 - b. Shortest Job First (SJF)
 - c. Shortest Remaining Time First (SRTF)
 - d. Round Robin
5. Which of the following is deadlock advance technology?
 - a. Banker's algorithm
 - b. Resource allocation graph
 - c. Wait-die scheme
 - d. Wound-wait scheme
6. Which technique involves moving entire processes between main memory and backing store to free up memory space?
 - a. Paging
 - b. Swapping
 - c. Segmentation
 - d. Transfer
7. A memory management scheme that divides memory into fixed-sized blocks called:
 - a. Paging
 - b. Segmentation
 - c. Fragmentation
 - d. Swapping
8. Which of the following is not the directory structure?
 - a. Single level
 - b. Hierarchical
 - c. Acyclic graph
 - d. Cyclic graph
9. Which disk scheduling algorithm serves requests in the order they arrive, without considering the current position of the disk head?
 - a. FCFS
 - b. SSTF
 - c. SCAN
 - d. C-SCAN
10. Which allocation method allocates contiguous blocks of disk space to files?
 - a. Linked allocation
 - b. Indexed allocation
 - c. Contiguous allocation
 - d. Clustered allocation



PARAJULI RAJESH.COM.NP

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2081-ii (New/Old Course)

Bachelor / Education /4th Semester

ICT.Ed.445 Operating System

Full Marks: 40

Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B"

6 X 5 marks =30

1. Explain the file system concept and the different file access methods.

OR

Discuss the concept of RAID and explain its various levels.

2. What is virtual memory management? Discuss how optimal page replacement algorithm works.
3. What is race condition? Explain any two solutions to the critical section problem.
4. Explain the concept of CPU scheduling. Compare FCFS with Round Robin.
5. Describe inter-process communication and the different methods used for communication.
6. What are the different structures of operating systems? Explain each type in detail.

OR

Discuss the types of operating systems and provide examples.



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BICTE COURSE CONTENTS

TRIBHUVAN UNIVERSITY

2081 (New/Old Course)

Bachelor / Education / 4th Semester

ICT.Ed.445 Operating System

Full Marks: 40

Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B"

6 X 5 marks = 30

1. What different responsibilities does the operating system have to ensure that users can communicate with computers? Describe.

OR

Discuss the role of process control block (PCB) in managing process-related information within the operating system.

2. What is deadlock? How resource allocation graph is used to detect deadlock? Explain.

3. Consider following snapshot of a system:

Pid	Arrival Time	CPU Burst Time
P ₀	0	15
P ₁	0	5
P ₂	7	6
P ₃	5	2
P ₄	3	1

Find average waiting time of processes when FcFs and presumptive SJF algorithms are used for scheduling.

4. What is paging? Explain different types of paging.
5. What do you mean by RAID? Explain why it is needed.

OR

What are different directory structures available? Explain.

6. Consider a disk has 1000 cylinders numbered from 0 to 999. Currently head is serving at cylinder 450 and previously it was serving at cylinder 645. Following are the disk request arrives in order:
25, 145, 690, 245, 850, 360, 550
Find total seek distance when SSTF algorithm is used to service the request.

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BICTE NOTES and QUESTIONS