



# CBCS SCHEME

17CS64

## Sixth Semester B.E. Degree Examination, Feb./Mar. 2022 Operating System

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Explain the roles of operating system from different viewpoints. (06 Marks)
- b. Discuss the modular Kernel approach and layered approach with neat diagram. (08 Marks)
- c. Demonstrate the concept of virtual machine with an example. (06 Marks)

OR

- 2 a. Explain the process states with neat diagram. (06 Marks)
- b. What is system call? Illustrate the working of open() system call with neat diagram. (06 Marks)
- c. What are two types of interprocess communication? Discuss the strength and weakness of these approaches. (08 Marks)

### Module-2

- 3 a. What is light weight process? Illustrate how it is better than heavy weight process. (06 Marks)
- b. Discuss the need of scheduling algorithm? Explain shortest-job first scheduling with example. (08 Marks)
- c. Write a multithread program to implement summation of N natural number using Java program. (06 Marks)

OR

- 4 a. Calculate the average turnaround time and average waiting time by drawing Gantt chart using FCFS(First Come First Serve) algorithm.

Process	Arrival time (AT)	Burst Time
P <sub>1</sub>	2	2
P <sub>2</sub>	0	1
P <sub>3</sub>	2	3
P <sub>4</sub>	3	5
P <sub>5</sub>	4	4

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- b. What is semaphore? Discuss how it provides solution for reader writers problem. (10 Marks)

### Module-3

- 5 a. What is resource allocation graph? Discuss how it can be used to detect dead lock? (10 Marks)
- b. Determine whether the following system is in safe state by using Banker's algorithm.

Process	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P <sub>0</sub>	0	1	0	7	5	3	2	3	0
P <sub>1</sub>	3	0	2	3	2	2			
P <sub>2</sub>	3	0	2	9	0	2			
P <sub>3</sub>	2	1	1	2	2	2			
P <sub>4</sub>	0	0	2	4	3	3			

(10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 6 a. Explain basic method of paging with neat diagram. (06 Marks)  
b. Analyze the problems in simple paging technique and show how TLB [Translation Look aside Buffer] is used to solve the problem. (08 Marks)  
c. What is segmentation? Discuss the hardware implementation of segment table with neat diagram? (06 Marks)

**Module-4**

- 7 a. Explain demand paging with neat diagram. (10 Marks)  
b. Explain different types of directory structure. (10 Marks)

OR

- 8 a. Discuss the need of page replacement algorithm. Consider page reference string 1, 2, 3, 4, 2, 5, 3, 4, 2, 6, 7, 8, 7, 9, 7, 8, 2, 5, 4, 9, calculate the page faults using FIFO and LRU algorithm for page frame size is 3. (10 Marks)  
b. Discuss Kernal memory allocating techniques with neat diagram. (10 Marks)

**Module-5**

- 9 a. For the given sequences 98, 183, 37, 122, 14, 124, 65, 67 with head initially at track 53 and ending at 202, what is the total disk travelled by disk arm to satisfy the request using FCFS, SSTF, Look and Clook algorithm. (10 Marks)  
b. Demonstrate the way process is managed in LINUX platform. (10 Marks)

OR

- 10 a. Discuss the different disk attachment techniques. (09 Marks)  
b. Explain implementation of access matrix. (05 Marks)  
c. Explain the booting from disk in windows 2000. (06 Marks)

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