PVP 20

Code: 20IT3501

III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2023

OPERATING SYSTEMS
(INFORMATION TECHNOLOGY)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Discuss the services provided by the operating system for efficient system operation.	L2	CO1	7M
	b)	Describe computer system architecture.	L2	CO1	7M
OR					
2	a)	Define system call. Explain different kinds of system calls.	L2	CO1	7M
	b)	Explain the operating system structure and its functions.	L2	CO1	7M
UNIT-II					
3	a)	Distinguish between short term scheduler and long term scheduler.	L2	CO1	7M

	b)	Discuss the structure of Process Control Block and show how CPU switches from one process to other process with a neat diagram.	L2	CO1	7M
		OR			
4	a)	Consider the following set of process, with the length of the CPU burst given in Milliseconds. Process Burst time Arrival Time P1 5 0 P2 3 2 P3 6 3 P4 2 6 Draw the Gantt chart that illustrates the execution of these processes using the FCFS and SJF. Analyze the waiting time for each of the scheduling algorithms.	L3	CO3	10M
	b)	Explain different multithreading models in detail.	L2	CO1	4M
		UNIT-III			
5	a)	Describe critical section problem. List the requirements for the solutions of critical section problem.	L2	CO2	7M

	b)	Illustrate Dining-Philosophers problem with neat diagram.	L3	CO2	7M
OR					
6		Consider the following snapshot of a system: Allocation Max Available --- --- --- A B C D A B C D A B C D Po 0 0 1 2 0 0 1 2 1 5 2 0 P1 1 0 0 0 1 7 5 0 P2 1 3 5 4 2 3 5 6 P3 0 6 3 2 0 6 5 2 P4 0 0 1 4 0 6 5 6 Apply Banker's Algorithm and determine whether the system is in safe state or not?	L3	CO2	14M
UNIT-IV					
7	a)	Define fragmentation and explain the concept of paging to avoid external fragmentation.	L3	CO4	7M
	b)	Define Virtual Memory. Explain the process of converting virtual addresses to physical addresses with a neat diagram.	L3	CO4	7M
OR					

8	a)	Define Demand Paging. Explain the steps in handling a page fault.	L3	CO4	7M
	b)	Consider the following reference string. 1,7,8,9,2,3,6,5,3,2,1,6,7,8,0,7,8,4,5,3,7,4,2 Analyze page fault rate using FIFO and LRU algorithms, with four page frames.	L3	CO3	7M
		UNIT-V			
9	a)	Compare and contrast the tree structured directories and acyclic graph directories with neat sketches.	L4	CO4	7M
	b)	Explain and compare the SCAN and LOOK disk scheduling algorithms.	L3	CO4	7M
		OR			
10	a)	Discuss any two allocation method in a file system.	L3	CO4	7M
	b)	Analyze the performance of FCFS disk scheduling algorithm on the following queue.66,143,157,22,14,124,95,97,44. Considering the initial head at 20.	L3	CO4	7M