R20

SET-II

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CMR TECHNICAL CAMPUS
UGC AUTONOMOUS

B.Tech - IV Semester, Regular End Examinations, July-2022
Operating Systems (20CS404PC)
(Common to CSE, IT, CSM &CSD)

Time: 3 Hours **Max. Marks: 70**

Answer Any Five Questions
All Questions Carry Equal Marks .

5 X 14 = 70 Marks

1. a. Discuss the services provided by the operating system for efficient system operation. **[7M]**

   b. Illustrate various components of operating system structure and explain the simple and layered approach of operating system in detail. **[7M]**

2. a. What is system call? Explain about different types of system calls with their functioning. **[7M]**

   b. Explain in detail about the functionalities of operating system. **[7M]**

3. a. Discuss in detail about Inter process Communication. **[7M]**

   b. Describe the actions taken by a thread library to context-switch between user level threads. **[7M]**

4. a. Describe the differences among long-term scheduling. short-term, and medium-term Scheduling. **[7M]**

   b. Assume the following workload in a system:

Process	Arrival Time	Burst Time
P1	5	5
P2	4	6
P3	3	7
P4	1	9
P5	2	2
P6	6	3

   Draw a Gantt chart illustrating the execution of these jobs using Round robin scheduling algorithm and also Calculate the average waiting time and average turnaround time. **[7M]**

5. a. Explain Deadlock Detection scheme for Several Instances of a resource Type. **[7M]**

   b. What is Readers-Writers problem? Give a solution to Readers-Writers problem using Monitors. **[7M]**

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B.Tech. IV Semester Supply End Examinations, February-2024

Operating Systems

Common to CSE, IT, CSM, CSD, AIML, CSG

Time: 3 Hours **Max. Marks: 70**

Note

i. This Question paper contains Part- A and Part- B.
ii. All the Questions in Part A are to be answered compulsorily.
iii. All Questions from Part B are to be answered with internal choice among them.

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PART-A

10 X 02 = 20 Marks

			Marks	CO	BL
1.	a	Define system call and mention the purpose of system calls	2	CO1	1
	b	Outline the differences of batch systems and time shared systems	2	CO1	2
	c	Illustrate the use of fork and exec system calls	2	CO2	2
	d	Differentiate pre-emptive and non-pre-emptive scheduling	2	CO2	2
	e	What is critical section? Explain.	2	CO3	1
	f	Define process synchronization and why it is required	2	CO3	1
	g	Compare and contrast logical address and physical address	2	CO4	2
	h	Identify how long a paged memory reference takes if memory reference takes 200 nanoseconds. Assume a paging system with page table stored in memory	2	CO4	3
	i	Determine the most common schemes for defining the logical structure of a directory?	2	CO5	1
	j	List three ways of allocating storage, and give advantages of each	2	CO5	1

PART- B

5 X 10 = 50 Marks

			Marks	CO	BL
2.		Summarize different operating system structures with neat sketch	10	CO1	2
		OR			
3		Illustrate the various types of system calls with examples	10	CO1	2
4	a	Elaborate the various states of process of a process with the help of process state transition diagram in detail	7	CO2	2
	b	Write the difference between user thread and kernel thread	3	CO2	2

OR

5	a	Consider the following set of process with burst time (ms)	7	CO2	3

Process	Burst Time	Priority	Arrival Time
P1	50	4	0
P2	20	1	20
P3	100	3	40
P4	40	2	60

Show the schedule using non pre-emptive priority (small number =High priority) and Round Robin with Quantum of 30ms. Draw Gantt chart and calculate waiting time and turnaround time foe each process and for both algorithms

	b	Distinguish among short-term, medium-term and long-term scheduling	3	CO2	2
6		Outline the solutions using semaphores to solve the dining-philosophers problem	10	CO3	4

OR

7		Describe the various inter process communication Mechanism	10	CO3	2
8	a	When page faults will occur? Describe the actions taken by operating system during page fault.	7	CO4	2
	b	Explain about the difference between internal fragmentation and external fragmentation.	3	CO4	2

OR

9	a	Compare paging with segmentation in terms of amount of memory required by the address translator to convert virtual address to physical address	7	CO4	2
	b	What is mean by swapping? .	3	CO4	2
10		Write briefly about file attributes, operations, types and structure	10	CO5	1

OR

11		Explain in details about memory allocation strategies	10	CO5	1

CO : Course Outcomes

BL : Bloom's Taxonomy Levels **L 1 : Remembering** **L 2 : Understanding** **L 3 : Applying** **L 4 : Analysing** **L 5 : Evaluating** **L 6 : Creating**

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