

Programme: B. Tech CSE
Course: Operating System
Course Code: 3PCCCS305
Enrolment no. _____

Full Marks: 70
Time: 3 Hrs.

Q. No.	Questions	CO	Bloom Taxonomy Category	Marks																																																																																										
Section I																																																																																														
1	Short Answer type questions			4 x 5 = 20																																																																																										
a	Differentiate between monolithic kernel and micro kernel. or Discuss the view of an operating system as a resource manager	CO1	Analyze																																																																																											
b	Explain Context switching. or State the functions of scheduler? Also list the types of Schedulers	CO2	Remember																																																																																											
c	Differentiate between logical address and physical address. or Define compaction.	CO3	Analyze																																																																																											
d	Explain the concept of directory. or List the different file accessing methods.	CO4	Remember																																																																																											
Section II																																																																																														
Long Answer type questions																																																																																														
2	Explain paging. What are its advantages and disadvantages? Also explain page fault. or Discuss contiguous memory allocation concept with advantages and disadvantages. Write the differences between contiguous allocation and non-contiguous allocation.	CO3	Understand		3 x 10 = 30																																																																																									
3	Explain the advantage of using semaphores for critical section problem. Describe the use of wait() and signal() functions on semaphore. How can these provide the solution to the Critical section problem? or Illustrate Peterson's solution for the critical section problem.	CO2	Analyze																																																																																											
4	Given the following sequences 95,180,34,119,11,123,62,64 with the track 50 and ending track 199. What is the total disk travelled by the disk arm using FCFS, SSTF, LOOK and CLOOK algorithm? or Classify different disk scheduling algorithm? Explain any two disk scheduling algorithm.	CO4	Evaluate																																																																																											
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Section III																																																																																														
Application based questions																																																																																														
5	Explain Banker's Algorithm. Consider the following snapshot of the system: Answer the following questions using Banker's algorithm: <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2"></th> <th colspan="4">Allocation</th> <th colspan="4">Max. Need</th> <th colspan="4">Available</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>P0</td> <td>0</td> <td>0</td> <td>1</td> <td>2</td> <td>0</td> <td>0</td> <td>1</td> <td>2</td> <td>1</td> <td>5</td> <td>2</td> <td>0</td> </tr> <tr> <td>P1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>7</td> <td>5</td> <td>0</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>P2</td> <td>1</td> <td>3</td> <td>5</td> <td>4</td> <td>2</td> <td>3</td> <td>5</td> <td>6</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>P3</td> <td>0</td> <td>6</td> <td>3</td> <td>2</td> <td>0</td> <td>6</td> <td>5</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>P4</td> <td>0</td> <td>0</td> <td>1</td> <td>4</td> <td>0</td> <td>6</td> <td>5</td> <td>6</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> a. What is the content of the need matrix? b. Is the system in a safe state? If yes, mention the safe sequence. If a request from process P1 arrives for (0,4,2,0) can the request be granted immediately? or a) Discuss resource-allocation graph. Explain how resource graph can be used for detecting deadlocks. b) Explain the methods involved in recovery from deadlocks.		Allocation				Max. Need				Available				A	B	C	D	A	B	C	D	A	B	C	D	P0	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					CO2	Apply	1 x 20 = 20
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P0	0	0	1	2	0	0	1	2	1	5	2	0																																																																																		
P1	1	0	0	0	1	7	5	0																																																																																						
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		CO2	Analyze																																																																																											

COURSE OUTCOME

At the end the course the candidate will able to

CO1: Understand Concepts of Operating system, processes and threads

CO2: Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time

CO3: For a given specification of memory organization develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time

CO4: Design and implement file management system