## http://www.rtmnuonline.com B.E. (Computer Science Engineering) Fourth Semester (C.B.S.) Operating System

P. Pages: 3 Time: Three Hou				Max. Marks : 80		
	Notes	5: 1. 2. 3. 4. 5. 6. 7. 8. 9.	All questions carry marks as indicated. Solve Question 1 OR Questions No. 2. Solve Question 3 OR Questions No. 4. Solve Question 5 OR Questions No. 6. Solve Question 7 OR Questions No. 8. Solve Question 9 OR Questions No. 10. Solve Question 11 OR Questions No. 12. Assume suitable data whenever necessary. Illustrate your answers whenever necessary with the help of neat sketch	ches.		
1.	a)	Disting	uish between multi-tasking, multi-programming and multi-processor sy	stem. 6		
7	b)	What is	s system call? Discuss various types of system calls.  OR	2 7		
2.	a)		s the various services provided by operating system. Justify your answer real life example.	r by <b>7</b>		
	b)	i) Di ii) Re iii) Ba	astributed system.  eal time system.  atch system  and held system	6		
3.	a)	Discuss	s various access methods for file with its advantages.	6		
	b)	Explain	on linked allocation and indexed allocation strategies.  OR	7		
4.	a)	occur) i) Ex	f the disk scheduling disciplines, except FCFS, is truly fair (saturation raplain why this assertion is true.  Applain why fairness is an important goal in a time sharing system.	may 6		
	b)	currentl 124.	e a disk drive has 400 cylinders, numbered from 0 to 399. The drive is ly serving a request at cylinder 142, and the previous request was at cylinder of pending request in FIFO order is,	1+2+2+2 inder		
52	5	84, 147, starting moves t	(, 99, 176, 94, 150, 102 175, 130); from the current head position. What is the total distance that the disk sto satisfy all the pending requests for the following algorithm.  CFS ii) SSTF iii) SCAN iv) LOOK	arm		

5.	a)	What is context switch? Give any one example where context switch occurs.	3							
7	b)	Explain schedulers, with appropriate diagram of scheduling queues and describe it with all cases possible.	6							
	c)	Give the benefits of using thread. Why multithreading model is more useful? Justify your answer with example.	5							
		OR								
6.	a)	Calculate average waiting time, average turn around time and average response time for a given situation. Assume time quantum of 2ms for Round Robin algorithm	10							
		Process Arrival Time Burst Time Priority								
		P <sub>0</sub> 0 10 4								
		P <sub>1</sub> 1 9 3								
		P <sub>2</sub> 2 5 2								
$\Gamma$		P <sub>3</sub> 5 2 1								
M		Apply following cpu scheduling algorithms on it.								
	77	i) FCFS ii) SJF (with α without preemption)								
7		iii) Priority iv) Round Robin.								
	b)	Explain Linux threads in brief.	4							
7.	a)	Explain the concept of address binding with diag. Also explain dynamic loading.	4							
	b)	What is backing store? Swapping is an important concept used in case backing store! Are you agree with the statement? Justify your answer.	5							
	c)	Discuss the basic method used for implementing paging with example.								
		OR								
			1							
8.	a)	Explain how segmentation is achieved using hardware?	) 4							
	b)	What is Thrashing? Give an example where thrashing is occurred, while using	4							
		operating system.								
	c)	given reference string with three page frames. 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9								
		<ul><li>i) FIFO</li><li>ii) Optimal Page Replacement</li><li>iii) LRU page replacement.</li></ul>								
9.	a)	What is critical section problem? Also explain solutions to the critical section problem.	7							
G	b)	Discuss semaphores with its usage and implementation.	6							
	5	OR	1							

**10.** a) Discuss Bonded-Builder problem and Readers-Writers problem in brief.

3+4

b) Write note on monitors with its usage.

- 6
- **11.** a) Deadlocks can be described more precisely in terms of a directed graph. Justify your answer with example.
- 6

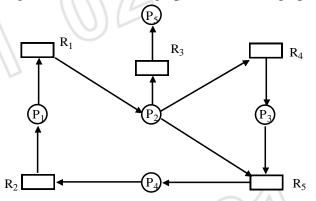
b) Explain how deadlock can be prevented.

7

## OR

12. a) Convert the following resource allocation graph into wait for graph.

5



b) Consider the following situation of system

Process	Allocation				1	Max			Available			
	Α	В	C	- D	Α	В	C	D	A	В	C	D
P <sub>0</sub>	0	0	7	2	0	0	1	2	1	4	2	0
P <sub>1</sub>	1	0	0	0	1	7	5	0				
$P_2$	1	3	5	4	2	3	5	6				
P <sub>3</sub>	0	6	3	2	0	6	5	2				
P <sub>4</sub>	0	0	1	4	0	6	5	6				

Answer the following questions using Banker's algorithm.

i) What is the content of need matrix.

2

ii) Is the system in safe state? Give the safe sequence.

3

iii) If the request from process  $P_1$  arrives for (0, 4, 2, 0) can it be granted immediately?

3

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