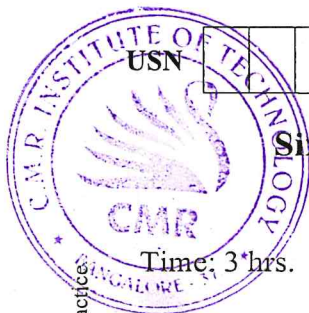


CBCS SCHEME



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15CS64

Sixth Semester B.E. Degree Examination, Aug./Sept. 2020 Operating Systems

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- Define operating systems. What are multiprocessor systems? Explain their three main advantages. (05 Marks)
 - Compare multi-programming and time sharing systems. (05 Marks)
 - Point out and explain the various operating system services. (06 Marks)

OR

- What are microkernels? Point out their advantages. (05 Marks)
 - What are the two models of inter process communications? What are the strengths and weakness of the two approaches? (05 Marks)
 - Compare and contrast, short term, medium term and long – term scheduling. (06 Marks)

Module-2

- Point out and explain the various benefits of multi threaded programming. (04 Marks)
 - Consider the five processes arrive at time 0, in the order given, with the length of the CPU burst given in milliseconds.

Process	Burst time
P ₁	10
P ₂	29
P ₃	3
P ₄	7
P ₅	12

Consider the FCFS, SJF and RR (quantum = 10ms) scheduling, draw the Gantt chart for each of the scheduling. Determine average waiting time and turnaround time for all the 3 scheduling algorithm. Which algorithm would give the minimum average waiting time? (12 Marks)

OR

- What is the critical section problem point out and explain its three requirements. (05 Marks)
 - What are semaphores, explain how mutual exclusion is implemented with semaphores. (05 Marks)
 - What is Dimming philosopher problem explain its monitor solution. (06 Marks)

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Module-3

- 5 a. What are deadlocks? Point out and explain its necessary conditions. (04 Marks)
 b. Explain the various methods of recovery from deadlock. (05 Marks)
 c. Consider a system with five processes P_0 through P_4 and three resources types A, B and C. Resource type A has 10 instances, resource type B has 5 instances and resource type C has 7 instances suppose that, at time T_0 , the following snapshot of the system.

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P_0	0	1	0	7	5	3	3	3	2
P_1	2	0	0	3	2	2			
P_2	3	0	2	9	0	2			
P_3	2	1	1	2	2	2			
P_4	0	0	2	4	3	3			

Draw the need matrix.

The sequence $\langle P_1, P_3, P_4, P_2, P_0 \rangle$ is safe state or not.

(07 Marks)

OR

- 6 a. Define paging. Explain paging hardware with a neat block diagram. (08 Marks)
 b. What is segmentation? Explain basic method of segmentation with an example. (08 Marks)

Module-4

- 7 a. What is demand paging? Explain the steps in handling a page fault with a neat diagram. (08 Marks)
 b. Consider the following sequence
 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
 How many page faults occurs with three page frames :
 i) FIFO
 ii) Optimal page replacement
 iii) LRU page replacement algorithm. (08 Marks)

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OR

- 8 a. What is a file? What are its attributes, explain file operations. (06 Marks)
 b. Explain what are the different types of files. (05 Marks)
 c. Explain file system mounting. (05 Marks)

Module-5

- 9 a. Explain various disk scheduling algorithm with an example. (10 Marks)
 b. Explain access matrix protection system of O.S. (06 Marks)

OR

- 10 a. Explain the various. Components of the Linux system. (08 Marks)
 b. Explain the process management in Linux. (08 Marks)
