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CBCS SCHEME

USN | | | | | | | | | | |

18CS43

Fourth Semester B.E. Degree Examination, Jan./Feb. 2023
Operating Systems

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Define Operating System. Explain briefly multiprogramming and time sharing system. **(08 Marks)**

b. Explain various OS services. **(05 Marks)**

c. What are system calls? Briefly explain types of system call. **(07 Marks)**

OR

2 a. With a neat diagram, explain the different state of process. **(07 Marks)**

b. Explain scheduler in a process execution. **(05 Marks)**

c. Explain direct and indirect communication with respect to message passing systems. **(08 Marks)**

Module-2

3 a. Discuss multithreading models. **(05 Marks)**

b. Discuss the benefits of multithreaded programming. **(05 Marks)**

c. Consider the following set of four process with length of CPU burst given in MS:

Process	Burst time
P1	24
P2	3
P3	3

Compute the waiting time and avg. turnaround time for the above process using FCFS scheduling algorithm. **(10 Marks)**

OR

4 a. Explain requirements must satisfy to critical section problem. **(04 Marks)**

b. Illustrate with an example Peterson's solution problem. **(08 Marks)**

c. Explain syntax and schematic view of monitors. **(08 Marks)**

Module-3

5 a. What are necessary conditions for deadlock? **(04 Marks)**

b. Explain different methods to recovery from deadlocks. **(08 Marks)**

c. Consider the following snapshot of system:

Process	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Find the need matrix and calculate safe sequence using bankers algorithm-mention the above is safe or not safe. **(08 Marks)**

OR

6 a. What is paging hardware with TLB? **(07 Marks)**
b. Explain structure of page table with respect to hierarchical paging. **(08 Marks)**
c. Explain the process of segmentation. **(05 Marks)**

Module-4

7 a. Describe the steps in handling a page fault. **(06 Marks)**
b. Explain copy on write process in virtual machine. **(06 Marks)**
c. Explain FIFO and optimal page replacement algorithm. **(08 Marks)**

OR

8 a. Explain with a diagram any two disk allocation method in detail. **(08 Marks)**
b. List the different operations performed on a directory. **(06 Marks)**
c. Explain tree structured directory structure. **(06 Marks)**

Module-5

9 a. Explain SCAN, CSCAN and LOOK scheduling techniques. **(08 Marks)**
b. Explain access matrix model of implementing protection in OS. **(06 Marks)**
c. Explain bad-block recovery in detail. **(06 Marks)**

OR

10 a. With a diagram, explain the component of LINUX system. **(08 Marks)**
b. Explain the IPC mechanisms in LINUX. **(06 Marks)**
c. Discuss passing of data among process in LINUX system. **(06 Marks)**

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