SRM

SRM Institute of Science and Technology
College of Engineering and Technology
School of Computing
SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Offline Mode
SET A

Academic Year: 2021-22 (EVEN) **Reg No:**

Test: CLA-T3
Course Code & Title: 18CSC205J - Operating Systems
Year & Sem: II Year / IV Sem

Date: 22.06.2022
Duration: 2 Period
Max. Marks: 50 Marks

Course Articulation Matrix:

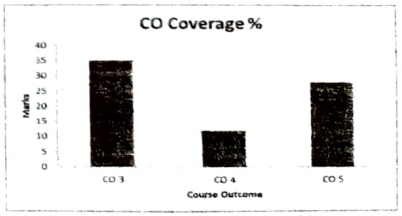
S.No.	Course Outcome	At the end of this course, learners will be able to:
1	CO3	Understand the need of Memory Management functions of an Operating system
2	CO4	Find the significance of Device management role of an Operating system
3	CO5	Recognize the essentials of File Management part of an Operating system

S.No.	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO3	1	3		3								
2	CO4	1	3		3								
3	CO5	1	3	2	3								

Part – A (10 x 1 = 10 Marks)
Instruction: Answer all

Q. No	Question	Mark	BL	CO	PO	PI Code
1)	If hardware does not support _____ then a multi - user and multi - processing operating system cannot be implemented. a) At least two modes of CPU execution b) Demand paging c) DMA for disk transfer d) Address translation	1	2	3	1	1.5.1
2)	After allocating the frames to the process the left-over frames can be used as a free frame buffer pool. This scheme is called as_____ a) Equal allocation b) Proportional allocation c) Dynamic allocation d) Static allocation	1	2	3	2	2.5.1
3)	Memory allocation based on Process size is called as _____ a) Equal Allocation b) Dynamic allocation c) Proportional allocation d) Static allocation	1	1	3	1	1.6.1
4)	PFF stands for ---------- a) Page Find Frequency b) Page Fault Frequency c) Peak Fault Frequency d) Peak Find Frequency	1	1	3	2	2.5.1
5)	Operating system supports different page replacement policy. From the given below option which is not a valid page replacement policy? a) Least Recently Used b) First in first out c) Currently used policy d) Optimal page replacement policy	1	2	3	1	1.6.1
6)	The surface of a platter is logically divided into circular _____, which are Sub divided into sectors. a) Platters b) Disk arm c) Read write head d) Tracks	1	1	4	1	1.5.1
7)	Random access in magnetic tape is _____ compared to magnetic disks a) Fast b) very fast c) slow d) very slow	1	2	4	1	1.5.1
8)	Identify the directory structure in which two users keep a subdirectory in their own directories a) tree structure b) cyclic graph directory structure c) two level directory structure d) acyclic graph directory	1	2	5	1	1.7.1
9)	When you rename a file five times then the number of files in the disk is a) 1 b) 2 c) 3 d) 5	1	1	5	4	4.6.2
10)	It is _____ to reread a page from the file system than to write it to swap space and then to reread it from there. a) useless b) less efficient c) more efficient d) more protective	1	2	5	1	1.6.1
	PART B (4 X 5 = 20 Marks) **Instruction: Answer any 4**					
11)	Describe the steps involved in handling page fault with neat sketch	5	2	3	2	2.6.1
12)	What is the cause of thrashing? How does the system detect thrashing? Once it detects thrashing, what can the system do to eliminate this problem?	5	1	3	1	1.6.1
13)	Explain how to manage Consistency semantics of shared files in distributed environment	5	2	5	2	2.8.3
14)	Discuss the importance of Swap space Management.	5	2	5	2	2.6.2
15)	How file protection is provided in Unix system. Explain with access control matrix.	5	1	5	1	1.6.1
	PART C (2 X 10 = 20 Marks) **Instruction: Answer All**					
16) A)	Given page reference string: 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 . Compare the number of page faults for LRU, FIFO and Optimal page replacement algorithm with 3 frames. (OR)	10	3	3	2	2.5.3
16) B)	Explain about the frame allocation strategies in detail.	10	1	3	2	2.5.1
17) A)	Read Request sequence = {176, 79, 34, 60, 92, 11, 41, 114} . Initial head position = 50. Implement Apply any 4-disk scheduling algorithm and find the total head movement for fetching the content from the given track numbers. (OR).	10	3	4	4	4.6.1
17) B)	Consider a disk with a rotational rate of 10,000 RPM, an average seek time of 8 ms, and an average of 500 sectors per track. Estimate the average time to read a random sector from disk. Do this by summing the estimates of the seek time, rotational latency, and transfer time	10	4	5	2	2.8.1

BL Coverage (%)



CO Coverage (%)

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SET B

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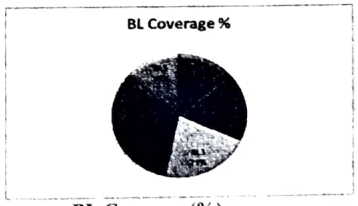
Part – A (10 x 1 = 10 Marks)
Instruction: Answer all

Q. No	Question	Mark	BL	CO	PO	PI Code
1)	The situation where the processor spends most of its time swapping process pieces rather than executing instructions is called: a) Paging b) The Principle of Locality c) Thrashing d) Swapping	1	1	3	1	1.6.1
2)	The hardware implementation of LRU page replacement policy can be done through: a) Counters b) RAM & Registers c) Stack & Counters d)Registers	1	2	3	1	1.6.1
3)	Which is a technique to efficiently copy data resources in a computer system a) Copy-on-write b) Swapping c) Thrashing d) Paging	1	2	3	1	1.6.1
4)	_____ algorithm associates with each page, the time when the page was brought into memory. a) Optimal page replacement b) FIFO c) LRU replacement algorithm d) Counting based replacement	1	1	3	2	2.8.1
5)	Which of the following is the main drawback of FIFO page replacement algorithm? a) Requirement of large memory b) Frame allocation c) Reduction in multiprogramming d) Reduced optimality	1	1	3	1	1.6.1
6)	Consider a disk queue with requests for I/O to blocks on cylinders. 98 183 37 122 14 124 65 67 Considering FCFS (first cum first served) scheduling, the total number of head movements is, if the disk head is initially at 53 is? a) 600 b) 620 c) 630 d)640	1	3	4	2	2.8.1
7)	Identify the tag used to call the file which is not the human readable name. a) File Name b)File Identifier c) Size d)Location	1	2	5	1	1.6.1
8)	Which is not executable file? a) .com b).exe c) .bat d.txt	1	1	5	1	1.5.1
9)	Batch file is used to a) Run program b) Show the contents c) run commands automatically d) execute step by step	1	2	5	2	2.5.1
10)	Swapping a) Works best with many small partitions b) Allows many programs to use memory simultaneously c) Allows each program in turn to use the memory d) Does not work with overlaying	1	1	5	1	1.5.1
	PART B (4 X 5 = 20 Marks) **Instruction: Answer any 4**					
11)	How does the number page faults are reduced by the algorithm which uses both reference bit and modify bit? Explain with an example	5	4	3	2	2.8.1
12)	Given: Memory access time = 200 ns Average page-fault service time = 8 ms Calculate the effective access time when one access out of 1,000 causes a page fault. Also explain how to reduce performance degradation of the memory access	5	2	3	1	1.6.1
13)	Why must the bit map for file allocation be kept on mass storage rather than in main memory? Explain in detail.	5	2	5	3	3.7.1
14)	List the different file operations and explain each of them.	5	1	5	1	1.6.1
15)	The SSTF disk scheduling favor the middle cylinders over the innermost and outermost cylinders. Justify this statement	5	3	4	4	4.6.4
	PART C (2 X 10 = 20 Marks) **Instruction: Answer All**					
16) A)	Given the reference string: 0 1 5 3 0 1 4 0 1 5 3 4. Find the number of page faults for frame size 3 and frame size 4. Does the increase in number of frames reduces page fault. If not state the reason	10	4	3	1	1.6.1
16) B)	Define thrashing. Justify the statement " "Working set model reduces thrashing of locality based references." Describe how to set optimal working set window size with an example	10	4	3	2	2.8.1
17) A)	The disk contains 100 cylinders. The request to access the cylinder occur in the following sequence: 4,34,10,7,19,73,2,15,6,20. Currently the head is at position 50. The time taken for single head movement is 2 ms. Calculate the total time taken according to scheduling policies FCFS, SSTF, SCAN and LOOK (OR)	10	3 4	5	3	3.6.1
17) B)	Write the significance of file protection in muti user environment. Explain different remote file system sharing with an example for each model	10	3	5	3	3.6.1



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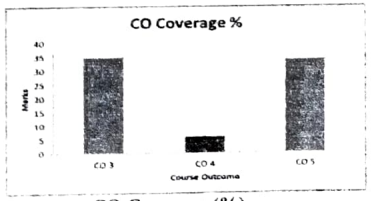

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