Printed page: 02 Subject Code: ACSBS0403

Roll No: | | | | | | | | | | | | | |

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P. J Abdul Kalam Technical University, Uttar Pradesh, Lucknow

Course: B.Tech **Branch: CSBS**

Semester: IV **Examination-PUT** **Year- (2021-22)**

Subject Name: Operating System

Time: 2:00 Hrs **Max. Marks:60**

General Instructions:

1. This Question paper consists of 2 pages & 4 questions. It comprises of three Sections -A, B, & C.
2. Section A –Q.No- 1 is Very short answer type carrying 1 mark each, Q. No- 2 is short answer type carrying 2 mark each. You are expected to answer them as directed.
3. Section B- Q.No-3 is of 5 marks each. Attempt any four out of five questions given.
4. Section C - Q. No-4 is Long answer type carrying 6 marks each. Attempt any four out of six questions given.

SECTION-A

1.	**Attempt all parts (Very Short Answer Type)-**		**[8x1=08]**	
	1-a.	In C-SCAN, What is the meaning of C?	(1)	CO5
	1-b.	In Unix command is used for changing the current directory?	(1)	CO5
	1-c.	Which page replacement policies suffers from Belady's anamoly?	(1)	CO4
	1-d.	How does the Page Fault rate change with change in Frame number?	(1)	CO4
	1-e.	In a paged memory, the page hit ratio is 0.35. The required to access a page in secondary memory is equal to 100 ns. The time required to access a page in primary memory is 10 ns. The average time required to access a page is?	(1)	CO4
	1-f.	Define Race condition.	(1)	CO3
	1-g.	What is the use of wait() in semaphore.	(1)	CO3
	1-h.	In Resource Allocation Graph RAG, what does circles and rectangle represent?	(1)	CO3
2.	**Attempt all parts (Short Answer Type)-**		**[4×2=08]**	
	2-a.	Define Semaphore.	(2)	CO3

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	2-b.	Briefly explain Page Fault.	(2)	CO4
	2-c.	Find number of page fault in case of FIFO page replacement algorithm, if string reference is 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5 and frame size is four.	(2)	CO4
	2-d.	Define Rotational Latency.	(2)	CO5
		SECTION – B		
3.		**Attempt any four out of five questions-**	[4x5=20]	
	3-a.	Differentiate between Dead-lock Avoidance and Dead-Lock Prevention.	(5)	CO3
	3-b.	Explain the readers/writers problem and its solution	(5)	CO3
	3-c.	How does virtual memory solve the problem of memory shortage and give its advantages also.	(5)	CO4
	3-d.	Write down differences between Paging and Segmentation.	(5)	CO4
	3-e.	Define disk scheduling. Explain FCFS and SCAN disk scheduling algorithms.	(5)	CO5
		SECTION – C		
4.		**Attempt any four out of six questions-**	[4×6=24]	
	4-a.	Describe Dining philosopher Problem with its solution using semaphore.	(6)	CO3
	4-b.	Explain Banker's Algorithms in details with examples	(6)	CO3
	4-c.	Given six memory partitions of 300 KB, 600 KB, 350 KB, 200 KB, 750 KB, and 125 KB (in order), how would the first-fit, best-fit, and worst-fit algorithms place processes of size 115 KB, 500 KB, 358 KB, 200 KB, and 375 KB (in order)?	(6)	CO4
	4-d.	Consider the following page reference string: 7, 2, 3, 1, 2, 5, 3, 4, 6, 7, 7, 1, 0, 5, 4, 6, 2, 3, 0 , 1.	(6)	CO4

		Assuming demand paging with three frames, how many page faults would occur for the following replacement algorithms? • LRU replacement • Optimal replacement		
	4-e.	Explain how does SCAN and C-SCAN Disk Scheduling Algorithm different with each other with example.	**(6)**	**CO5**
	4-f.	Explain any 6 Unix system calls	**(6)**	**CO5**

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