



SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

CONTINUOUS ASSESSMENT TEST - II - WINTER SEMESTER 2019-2020

Programme Name & Branch: B.TECH IT

Class Number(s): VL2019205004455

Course Name Code:

ITE2002

Course Name: Operating System

Faculty Name(s): Dr. P.J.Kumar Dr. S.Sudha

Exam Mode: Closed book

Semester: Winter 19-20

Exam Duration: 90 mins

Maximum Marks: 50

	Question .										
1.											
		ID	P1	P2	P3	P4	P5	P6			
		Size	40	20	60	30	50	75			
		Hole	1	2	3	4	5	6			
		Size	70	40	60	50	30	80			
	-										
	Given a set of processes and free holes as in the above table,										
	i) Apply first fit, best fit and worst fit algorithms to allocate processes into holes. (4 marks)										
	ii) Calculate the total amount of externally fragmented memory in each allocation scheme. (2										
	marks)										
	Iii) What happens if we partition the holes into equal size and allocate the required number of holes										
	to processes? Does it cause external fragmentation still? (2 marks)										
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	to processes	? Does it cause e	xternal f	ragment	tation sti	ll? (2 ma	rks)		red number of hole		
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Vellore Institute of Technology

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Pì	2	1	2	3	3	3	3	2	1
P2	1	3	2	5	7	8		1	
P3	2	0	2	3	2	3			
P4	3	1	1	5	3	3			
P5	4	3	2	4	5	3			

- a) Calculate the total number of resources/instances currently allocated to all processes and currently available resources/instances. (1 Mark)
- b) Calculate the need matrix (1 Mark)
- c) Find whether the system is in safe state or not. (4 Marks)
- d) If P2 request for (3, 2, 1), is it a valid request and can it be granted immediately? Provide the safe sequence if it can be granted. (4 Marks)
- 4. i) Calculate the number of bits required for pages and offset for the following cases. Derive sample address ranges for each case. (5 Marks)

8KB Address space is divided into pages of size 512 bytes.

- 64KB address space is divided into pages of size 512 bytes
- ii) What is a semaphore? Illustrate with an example implementation of semaphores with no busy waiting. (5 Marks)

5 3120451267301

For the above page reference string, calculate the number of page faults for each of the following page replacement algorithms with frame count as 3 and 5.

i) FIFO ii)OPR iii) LRU