Paper / Subject Code: 54902 / Operating System

Thursday, May 23, 201910:30 am - 01:30 pm 1T00142 - M.C.A. (Sem. II)(Choice Based) / 54902 - Operating System. 72175

> (3 Hours) **Total Marks: 80**

N.B.: (1) Q.1 is compulsory.

- (2) Attempt any three out of remaining five.
- (3) Figures to the right indicate full marks.

Q 1A) Consider the following snapshot:

[10]

Processes	Allocation			Max			Ava	Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3	
P0	0	1	0	7	5	3	3	3	2	
P1	0	0	0	3	2	2				
P2	3	0	2	9	0	2				
P3	2	1	1	2	2	2			- 1	
P4	0	0	2	4	3	3				

Using Banker's algorithm

- What is the context of matrix need?
- Is the system in safe state? Give the sequence.

Consider the request from process P1 arrives for (1,0,2). Can the request be immediately granted?

- What is Operating System? Write the functions of Operating System. What are the B) [10] different types of Operating System?
- What is Thread? Explain various kinds of threads in detail. Q 2 A)

[10]

What do you mean by concurrency control? Explain the use of semaphore and B) monitors in concurrency control with example.

[10]

- Q 3A) Given a reference string to the following pages by a program [10] 2,1,3,3,2,8,7,8,1,2,3,1,4,1,5,6,2,6,3,5,6,7,8,7,8,3,5,3,8,4,4,3,4. How many page faults will occur for the following page replacement algorithms, assuming three frames?
 - LRU replacement
 - FIFO replacement

Optimal replacement

Explain the different file allocation methods. B)

[10]

Suppose a disk drive has 200 cylinders, numbered 0 to 199. The driver is currently 4A) [10] serving request at cylinder 100 and previous request was a cylinder 150. The queue is pending request in FIFO order is:-

27,129,110,186,147,41,10,64,120

What is the total head movement under following scheduling algorithm?

(i)FCFS ii) SSTF iii) SCAN iv) C-SCAN

- What is a scheduler? Explain the primary objective of scheduling. How many types 4 B) [10] of scheduler coexist in an Operating System? Explain it with the help of diagram.
- 5A) What is dynamic and fixed partition? What are the problems with them and how can [10] Q we solve these problems? Explain with suitable example.

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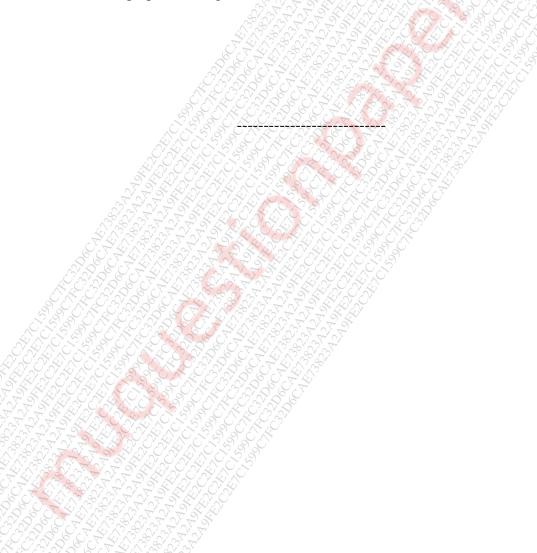
- **B)** For the processes listed below the table, draw Gantt chat and calculate average waiting time and average turnaround time using:
 - FCFS (first come first serve)
 - SJF (Shortest Job First) in both condition pre-emptive and non-pre-emptive
 - Round robin (Quantum = 2)

Processes	Arrival time(ms)	Burst time(ms)
P1	0	9
P2	1	5
P3	2	7
P4	3	3

[10]

[20]

- Q 6A) Write short notes on: (Any Four)
 - · Buffering and Spooling
 - Process Control Block
 - Clock Hardware and clock software
 - Linker and Loader
 - Swap-space management



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