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TERM END EXAMINATIONS (TEE) – August - September 2021

Programme	: B.Tech, M.Tech	Semester	: Interim 2021-22
Course Name	: Operating system	Course Code	: CSE3003
Faculty Name	: Dr. Pon Harshavardhanan	Slot / Class No	: A11+DA1 / 0086
Time	: 1½ hours	Max. Marks	: 50

Answer ALL the Questions

Q. No.	Question Description	Marks
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PART - A (30 Marks)

1	(a) Illustrate the computer system organization.	10
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OR

	(b) Elucidate the concept of process in detail.	10
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2	(a) Consider the following set of processes, with the length of the CPU burst given in milliseconds:	10
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Process	Burst Time	Priority
P_1	2	2
P_2	1	1
P_3	8	4
P_4	4	2
P_5	5	3

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

- Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non-preemptive priority (a larger priority number implies a higher priority), and RR (quantum = 2).
- What is the turnaround time of each process for each of the scheduling algorithms in part a?
- What is the waiting time of each process for each of these scheduling algorithms?
- Which of the algorithms results in the minimum average waiting time (over all processes)?

OR

- (b) Consider the following page reference string: 10
7, 2, 3, 1, 2, 5, 3, 4, 6, 7, 7, 1, 0, 5, 4, 6, 2, 3, 0, 1.

Assuming demand paging with three frames, how many page faults would occur for the following replacement algorithms?

- LRU replacement
- FIFO replacement
- Optimal replacement

- 3 (a) Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4,999. 10
The drive is currently serving a request at cylinder 2,150, and the previous request was at cylinder 1,805. The queue of pending requests, in FIFO order, is:
2,069, 1,212, 2,296, 2,800, 544, 1,618, 356, 1,523, 4,965, 3681.

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?

- FCFS
- SSTF
- SCAN
- LOOK
- C-SCAN
- C-LOOK.

OR

- (b) Compare and contrast the file allocation methods in detail. 10

PART - B (20 Marks)

- 4 Implement Banker's algorithm for deadlock avoidance in C 10
program and find a safe sequence for the following system snapshot.

	<u>Allocation</u>	<u>Max</u>	<u>Available</u>
	A B C	A B C	A B C
P_0	0 1 0	7 5 3	3 3 2
P_1	2 0 0	3 2 2	
P_2	3 0 2	9 0 2	
P_3	2 1 1	2 2 2	
P_4	0 0 2	4 3 3	

- 5 Compare and contrast paging with segmentation. 10

