Sri Siddhartha Institute of Technology, Tumkur

(A Constituent College of Sri Siddhartha Academy of Higher Education, Tumkur)

CS4TH3: Operating Systems

Date:10/05/2022 **TEST I** Time: 9.15am to 10.15am

Max. Marks: 30

Answer all the questions:

Q.No		M	C	B
1.	Define an Operating System. Explain the various components of a computer system.	6	1	2
2.	What are Clustered Systems? Compare symmetric and asymmetric clustering.	6	1	2
3.	List the categories of system calls.	6	1	1
4.	Discuss the advantages and disadvantages with layered approach of designing operating system.	6	1	2
5.	Illustrate the different types of information associated with Process Control Block.	6	2	1

Note: M: Marks, C:CO, B: Blooms Level

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Date: 07/06/2022 **TEST II** Time: 9.15am to 10.15am

Max. Marks: 30

Answer all the questions:

Q.No		M	C	B
1	Explain different multithreading models.	6	3	2
2	Consider the following set of processes , with the length of the CPU burst given in milliseconds:	6	2	3

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The process are assumed to have arrived in the order p1, p2, p3, p4, p5, at all-time 0.

a) Draw four Gantt charts that illustrate the execution of these processes using scheduling algorithm; FCFS, SJF, nonpreemptive priority (a smaller priority number implies a higher priority).
b) Which of the algorithms results in the minimum average waiting time (over all processes)?

3	Explain different types of scheduler.	6	2	2
4	Write an algorithm for producer and consumer problem with a bounded buffer.	6	2	1
5	Explain Peterson's solution for critical section problem.	6	2	2

Note: M:Marks, C:CO, B:Blooms Level

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Date:28/06/2022 **TEST III** Time: 9.15am to 10.15am

Max. Marks: 20

Answer all the questions:

Q.No		M	C	B
1.	Explain the implementation of semaphores with respect to process synchronization.	5	3	2
2.	What is a deadlock? Explain the necessary conditions for a deadlock to occur.	5	3	2
3.	Describe the data structures and safety algorithm with respect to Banker's algorithm.	5	4	2
4.	Illustrate the swapping of two processes using disk as a backing store.	5	4	2

Note: M: Marks, C:CO, B: Blooms Level