

Code: CS5T5

**III B.Tech - I Semester – Regular/Supplementary Examinations
October 2019**

**OPERATING SYSTEMS
(COMPUTER SCIENCE AND ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1. a) Draw the neat diagram of Abstract view of the components of a computer system.
- b) What is asymmetric clustering and symmetric clustering?
- c) Define the term “Interprocess Communication”.
- d) What is a “Process”? Draw the structure of a process in memory.
- e) Which requirements should be satisfied by the critical-section problem’s solution?
- f) List out the four conditions that cause deadlock situation when they hold simultaneously in a system.
- g) What do you mean by Swapping?
- h) Is there any reason that the page sizes are always powers of 2?
- i) List different attributes of a File.

- j) Write any 2 differences between Magnetic Disks and Solid State Disks.
- k) Define Sequential Access Method and Direct Access Method.

PART – B

Answer any **THREE** questions. All questions carry equal marks.
3 x 16 = 48 M

- 2. a) Describe in-detail about various types of system calls available in OS. 10 M
- b) Explain about Operating System operations. 6 M
- 3. a) Discuss different benefits of multithreaded programming. 8 M
- b) Compare and Contrast Preemptive Scheduling with Non-Preemptive Scheduling. 8 M
- 4. a) Describe the Readers-Writers Problem. Find the solution for Readers-Writers Problem using Semaphores concept. 8 M

b) Consider the following snapshot of a system: 8 M

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	2	0	0	1	4	2	1	2	3	3	2	1
P1	3	1	2	1	5	2	5	2				
P2	2	1	0	3	2	3	1	6				
P3	1	3	1	2	1	4	2	4				
P4	1	4	3	2	3	6	6	5				

Answer the following questions using the banker's algorithm:

- i) Apply Banker's Algorithm and find whether the above system is safe or not. And also identify the safe sequence that meets the safety requirement.
- ii) If a request from process P3 arrives for (0, 1, 0, 1), can the request be granted immediately?

5. a) Consider the Page Frame as 3 and Find the count of Page Faults for the given string below using FIFO Page Replacement Technique. 10 M

1, 2, 1, 3, 6, 2, 7, 9, 2, 0, 4, 7, 0, 8, 3, 6, 2, 1, 9, 3

b) Explain Hierarchical Paging with a neat example. 6 M

6. a) Discuss different File Operations in OS. 6 M

b) Summarize FCFS Disk Scheduling and SCAN Scheduling with example. 10 M