PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2023 - 24 Examination

Semester: 4	**Date: 29/05/2024**
Subject Code: 303105251	**Time: 10:30 am to 01:00 pm**
Subject Name: Operating System	**Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1	**Objective Type Questions** - (Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark)	**(15)**	**CO**	**PO**	**Bloom's Taxonomy**
	1. Threads of a process share a) Global Variables but not heap b) Heap but not Global Variables c) Neither Global Variable nor heap d) Both global variable and heap		1	1	1
	2. A critical section is a program segment a) Which must be enclosed by a pair of semaphore operations, P and V b) Where shared resources are accessed c) Which avoids deadlocks d) Which should run in a certain specified amount of time		2		2
	3. In Operating Systems, which of the following is/are CPU scheduling algorithms? a) Priority b) Round Robin c) Shortest Job First d) All of the mentioned		1	2	2
	4. The Virtual memory is: a) An illusion of a large main memory b) A large main memory c) A large secondary memory d) None of the above		1	2	2
	5. Operating system a) Enables the programmer to draw a flow chart b) Links a program with subroutine it references c) Provides a layer, user friendly interface d) All of these		3	2	2
	6. A memory buffer used to accommodate a speed differential is called_____? a) Stack pointer b) Cache c) Accumulator d) Disk buffer		2	2	1
	7. To access the services of the operating system, the interface is provided by the _____ a) Library b) System calls c) Assembly instructions d) API		1	2	1
	8. Program always deals with _____? a) Logical address b) Absolute address c) Physical address d) Relative address		2	2	2
	9. Physical memory is broken into fixed-sized blocks called _____ a) frames b) pages c) backing store d) none of the mentioned		3	1	3
	10. Mapping of file is managed by _____? a) File metadata b) Page table c) Virtual memory d) File system		2	2	1
	11. Why we need IPC?		1	2	3
	12. What is operating system?		1	3	2
	13. What is turnaround time?		2	2	2
	14. What is mutual exclusion?		2	3	1
	15. What is virtual memory?		1	3	2
Q.2	**Answer the following questions**. (Attempt any three)	**(15)**			
	A) Describe real-time operating system with example. ○		3	2	2

	B) What are the differences between multiprocessing and multiprogramming OS?		4	4	3
	C) What are necessary conditions for a deadlock to occur?		3	2	2
	D) What are the different disk space allocation methods?		2	6	1
Q.3	A) What is paging? What are its advantages and disadvantages of paging?	**(07)**	2	2	2
	B) Draw the process state transition diagram and explain the transitions of following state. i) running to ready ii) waiting to ready iii) running to waiting iv) blocked to ready v) running to terminated	**(08)**	3	5	2
	OR				
	B) What do you mean by deadlock avoidance? Explain the use of Banker's algorithm.	**(08)**	3	2	2
Q.4	A) Explain IPC problem-Dinning Philosopher's problem with Algorithm.	**(07)**	5	4	2
	OR				
	A) Write Difference Between Paging and Segmentation in OS.	**(07)**	4	3	1
	B) Explain reader- writer problem and explain how to solve using semaphore.	**(08)**	5	2	2