Seat No: _____ Enrollment No: _____

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Summer 2022 - 23 Examination

Semester: 4 **Date: 15/05/2023**

Subject Code: I03105211 **Time: 10:30am to 1:00pm**

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 Answer all the questions. **(15)**

1. Which one is not Operating System?
A) DOS B) LINUX C) Windows D) ORACLE

2. In producer-consumer problem, when buffer status is partially empty

_____ has to wait

A) Producer B) Consumer C) None D) Both

3. Logical memory is broken into blocks of the same size called _____
A) frames B) Backing Store C) Pages D) None of these

4 _____ used for representing ready queue
A) Linked List B) Binary Tree C) Stack D) Circular Queue

5. In which one of the following page replacement policies, Belady's anomaly may occur?
(A) FIFO B) Optimal C) LRU (D) MRU

6.Process termination in Operating System does by
A) Quit() B) Exit() C) Close() D) None of the Above

7.As per banker's algorithm if Allocation (1,3,5,4), Need (1,0,0,2), Available (1,5,3,2) then new available resource is _____
A) Resource is not granted B) (2,8,8,6)
C) Request is granted D) Both B & C

8. What is Interrupt?

9. What is mutual exclusion?

10. What is the use of bankers Algorithm?

11. If the page size increases, the internal fragmentation is also……..?

12. What is System call ?

13. Explain Fork() ?

14. Explain Race condition ?

15. What is a page fault ?

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Explain multiprogramming with fixed partition

B) What is deadlock? Describe in brief necessary conditions that should hold for deadlock to occur.

C) Explain Unix Commands – grep, sort, cat, chmod

D) Describe advantages and disadvantages of Real time OS.

Q.3 Differentiate between preemptive and non-preemptive scheduling. Solve following by SJF preemptive and non-preemptive. Draw Gantt Chart, Average Waiting Time and Average Turnaround Time. Which one is better as per average turnaround time? **(07)**

Process	Arrival Time	Burst Time
P1	0	6
P2	1	4
P3	3	5
P4	5	3

B) Explain and give solution for the Reader and Writer problem ? **(08)**

OR

B) What is critical section and what are the methods to solve problem of critical section? **(08)**

Q.4 A) Assume you have following jobs to execute with one processor. Apply shortest job first with preemptive scheduling algorithm. **(07)**

Process	Burst time	Arrival Time
0	5	0
1	8	1
2	7	2
3	6	3

a. Draw Gantt chart for process execution.

b. What is the average turnaround time?

c. What is the average wait time?

OR

A) What is Paging? Explain paging mechanism in MMU with example . **(07)**

B) Explain continuous memory allocation algorithms with example: **(08)**

1) First -fit 2) Best -fit 3) Worst -fit