Seat No:_____ **Enrollment No:_____**

PARUL UNIVERSITY

FACULTY OF IT & COMPUTER SCIENCE

BCA Winter 2021 – 22 Examination

Semester: 4 **Date: 21-10-2021**
Subject Code: 05101252 **Time: 2hr:30min**
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 the followings.

A. Define the followings. **(05)**

1. Process
2. Turnaround time
3. Virtual Memory
4. Preemptive Scheduling
5. Semaphore

B. Multiple choice type questions **(10)**

1. A system is in the safe state if

a) the system can allocate resources to each process in some order and still avoid a deadlock

b) there exist a safe sequence

c) both (a) and (b)

d) none of the mentioned

2. Time quantum is defined in

a) shortest job scheduling algorithm

b) round robin scheduling algorithm

c) priority scheduling algorithm

d) multilevel queue scheduling algorithm

3 The processes that are residing in main memory and are ready and waiting to execute are kept on a list called

a) job queue b) ready queue

c) execution queue d) process queue

4. _____scheduling algorithm allocates the CPU first to the process that requests the CPU first.

5. Each platter in a Hard disk is made up of multiple sectors, which in turn are divided into several tracks?(True/False)

6. The two atomic operations permissible on semaphores are stop and wait. (True/False)

7. Memory management technique in which system stores and retrieves data from secondary storage for use in main memory is called _____

a) fragmentation b) paging

c) mapping d) none of the above

8. Semaphore is a/an _____ to solve the critical section problem.

a) hardware for a system b) special program for a system

c) integer variable d) None of these

9. Linux is _____

a) single user, single tasking b) single user, multitasking

c) multiuser, single tasking d) multiuser, multitasking

10. _____command is used to sort the lines of data in a file.

a) Sort b) st c) Sh d) sort –r

Q.2 Answer the followings. **(15)**

1. How is a Page different from a Frame? **3**
2. What is a Base register and Bound register. **3**
3. List the features of Linux operating system. **3**
4. List the objectives and basic functionalities of an Operating System. **3**
5. Explain if-else construct in Linux. **3**

Q.3 Answer the followings. (Any three) **(15)**

1. Draw and explain the Process state transitions.
2. Explain RAID Level 0 and RAID Level 1.
3. Explain Fixed and Dynamic Memory Partitioning.
4. Four processes P1,P2 and P3 are having burst time of 24,3, 3 miliseconds respectively. Their arrival times are 0, 1 and 2 milliseconds respectively. Draw a timeline and calculate the average waiting time using FCFS and Round Robin Scheduling(consider Time Quantum = 4 msec).

Q.4 Answer the followings.

A. Compare Batch Processing systems and Real-time systems **(05)**

B. What is Deadlock? Explain Dining Philosophers Problem. **(10)**

OR

B. What is Paging and Demand Paging? Explain stating an example **(10)**