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

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Winter 2021-22 Examination

Semester: 3 **Date: 06/10/2021**
Subject Code: 03105202/203105203 **Time: 2:00pm to 4:30pm**
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)**

1. Which of the following is not a system software?
   a) Operating System b) Compiler c) Microsoft Word d) Linker
2. Nuclear system requires which kind of operating system?
   a) Distributed OS b) Hard Real Time OS c) Soft Real Time OS d) None of the above
3. Which of the following is considered as voluntary process termination?
   a) Normal exit b) Fatal error c) killed by other process d) Power failure
4. _____ is considered as more expensive memory compared to other categories.
   a) Secondary Memory b) Magnetic Disk c) Magnetic Tape d) Primary Memory
5. A _____ is a collection of electronics that can operate a port, a bus, or a device.

   a) controllers b) driver c) host d) bus
6. Portability and flexibility of application software depends on operating system. (True/ False)
7. _____ is a collection of programs.
8. Effective access time is inversely proportional to the page fault rate. (True/ False)
9. Define authentication.
10. Illusion of large main memory is known as _____
11. Differentiate between pre-emptive and non-pre-emptive scheduling.
12. What are the four states of process?
13. _____ is a light weight process.
14. Define context switching.
15. Differentiate between page and frame.

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

A) What are the different categories of operating system? Explain each one of them.

B) Write a short Note on Process Control Block.

C) Explain race conditions and mutual exclusions.

D) Consider the following reference string. Calculate the page fault rates for FIFO page replacement algorithm. Assume the memory size is 4 page frame. 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2

Q.3 A) A system has five processes(p0,p1,p2,p3,p4) and three resources(A, B, C) as given below in table with resources allocation and requirements. Find out the system is deadlock free or not with justification. Note: Available resources are ABC = (332). **(07)**

Processes	Allocation(ABC)	Requirements(ABC)
P0	010	753
P1	200	322
P2	302	902
P3	211	222
P4	002	433

B) Explain segmentation in detail. **(08)**

OR

B) Explain any one page replacement algorithm with example. **(08)**

Q.4 A) List and Explain various operations performed on File? **(07)**

OR

A) Explain in brief different File Allocation Methods? **(07)**

B) Define memory mapped I/O. What are the advantages and disadvantages of memory mapped I/O? **(08)**