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Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall-2023
Course Code: CSE323, Course Title: Operating Systems
Level: 3 Term: 2 Batch: 59

Time: 1 Hour and 30 Minutes **Marks:25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1. a) Outline the differences between SaaS, PaaS, and IaaS with appropriate example. **2.5** **CO1**

b) Illustrate the advantages of Open-Source Operating Systems. Demonstrate the Dual-mode operation with proper diagram. **2.5**

2. a) "Program is a passive entity stored on disk, while process is an active entity"- analyze the statement with appropriate reasonings. **2.5** **CO2**

b) Distinguish between Shared Memory and Message Passing Inter-process Communication (IPC) models. **2.5**

3. a) Construct Gantt Charts for the following processes by applying the Priority Scheduling (Preemptive) and the SJF (Preemptive) algorithms. Calculate the Average Turn Around Time, Average Waiting Time, and Average Response Time for both algorithms. Identify the best algorithm among the Priority Scheduling (Preemptive) and the SJF (Preemptive) algorithms for the given scenario. **6.0** **CO3**

Process	Arrival Time	Burst Time	Priority
P1	3	8	1 (Lowest Priority)
P2	2	10	3
P3	4	6	3
P4	5	1	4
P5	9	1	5 (Highest Priority)
P6	10	4	2

b) Consider the following processes: **6.0**

Process	Arrival Time	Burst Time
P0	1	9
P1	4	10
P2	0	13
P3	5	7
P4	2	5

Construct a Gantt Chart for the above scenario using the Round Robin Scheduling algorithm by considering **Time Quantum=3**. Calculate the Average Turn Around Time, Average Waiting Time, and Average Response Time for the given scenario.

4. c) Analyze the relationship between the FCFS and the Round Robin algorithm with proper example. **3.0**