

No. of Printed Pages : 5

MCS-203

**POST GRADUATE DIPLOMA IN
COMPUTER APPLICATIONS
(PGDCA-NEW)**

Term-End Examination

June, 2025

MCS-203 : OPERATING SYSTEMS

Time : 3 Hours

Maximum Marks : 100

Weightage : 70%

Note : *Question No. 1 compulsory. Attempt any
three questions from the rest.*

1. (a) For the following given 5 processes
arrived at the same time in the order

B-1087/MCS-203

P. T. O.

with the length of their CPU time in milliseconds :

Process	Processing Time
P ₁	7
P ₂	6
P ₃	9
P ₄	4
P ₅	3

calculate the turnaround time, average waiting time, throughput and processor utilization for FCFS, SJF and RR (quantum = 2) scheduling algorithms.10

- (b) Define paging technique. With the help of a diagram, explain the principles of its operation. Also, discuss the hardware support required for paging.

- (c) Write and explain dining philosopher's problem. Also, provide the solution for the problem using semaphores. 10
- (d) With the help of a diagram, explain the layered architecture of iOS. 10
2. (a) Explain Batch processing, Time sharing Real-time and Distributed operating systems with suitable examples. 10
- (b) Describe the operating system's view of file management. In this context, explain two-level directory structure, acyclic-graph directory structure and general graph directory structure. 10

3. (a) Discuss the following processes in Android mobile operating system : 10
- (i) Foreground process
 - (ii) Visible process
 - (iii) Service process
 - (iv) Background process
 - (v) Empty process
- (b) Explain memory management in LINUX with the help of a diagram. 10
4. (a) Write and explain Ricart and Agrawal's mutual exclusion algorithm for distributed systems. 10
- (b) In context to multiprocessor operating systems, explain the following types : 10
- (i) Separate supervisor
 - (ii) Master-Slave

5. Write short notes on the following : 4×5=20

- (a) Demand segmentation
- (b) Deadlock detection and Recovery
- (c) Security features in LINUX
- (d) Rule-based access control and role-based access control security models

x x x x x