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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.*

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

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. 10

(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

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