POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

(PGDCA_NEW)

PGDCA-NEW/ASSIGN/SEMESTER-I

ASSIGNMENTS

(January – 2025 & July – 2025)

MCS-201, MCS-202, MCS-203, MCSL-204, MCSL-205



SCHOOL OF COMPUTER AND INFORMATION SCIENCES INDIRA GANDHI NATIONAL OPEN UNIVERSITY MAIDAN GARHI, NEW DELHI – 110 068

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Important Notes

- 1. Submit your assignments to the Coordinator of your Study Centre on or before the due date.
- 2. Assignment submission before due dates is compulsory to become eligible for appearing in corresponding Term End Examinations. For further details, please refer to PGDCA_NEW Programme Guide.
- 3. To become eligible for appearing the Term End Practical Examination for the lab courses, it is essential to fulfill the minimum attendance requirements as well as submission of assignments (on or before the due date). For further details, please refer to the PGDCA_NEW Programme Guide.
- 4. The viva voce is compulsory for the assignments. For any course, if a student submitted the assignment and not attended the viva-voce, then the assignment is treated as not successfully completed and would be marked as ZERO.

Course Code	:	MCS-203
Course Title	:	Operating Systems
Assignment Number	:	PGDCA(I)/203/Assignment/2025
Maximum Marks	:	100
Weightage	:	30%
Last Date of Submission	:	30 th April, 2025 (for January session)
		31st October, 2025 (for July session)

Job#

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В С

D

This assig arks are for viva voce. You may Please go through the guidelines

Question 1:

Consider the following jobs.

- a) Using the SRTF method, compute the completion times of the above jobs, average turn around time and average waiting time.
- b) Using the SJF (Shortest Job First) method, compute the completion times of the above jobs, the average turn around time and the average waiting time.

Arrival time

0

2

3

5

Run time

4

5

6

5

c) Using the Round Robin method (with Quantum = 2), compute the completion times of the above jobs and the average waiting time.

Question 2:

Discuss the different techniques for I/O management in an operating system. Explain how buffering, spooling, and caching improve I/O performance. Give examples to illustrate their practical applications.

Question 3:

Describe the structure of a disk in an operating system and explain the concept of disk scheduling. Compare the FCFS, SSTF, and SCAN scheduling algorithms. Provide an example to demonstrate the working of these algorithms.

Question 4:

Compare and contrast contiguous and non-contiguous memory allocation methods. Explain the First-Fit, Best-Fit, and Worst-Fit algorithms for memory allocation with examples. Which method is more efficient and why?

8

gnment has eight questions. Answer all questions. Rest 20 m
use illustrations and diagrams to enhance the explanations.
s regarding assignments given in the Programme Guide.

(12 Marks)

(08 Marks)

(10 Marks)

(10 Marks)

Question 5:

Consider the following page-reference string: 1, 3, 4, 2, 7, 8, 6, 2, 3, 9, 6, 4, 2, 1, 3, 5, 9, 10, 4, 1, 5, 3, 4

How many page faults would occur for following replacement algorithms assuming four frames? Remember that all frames are initially empty, so your first unique pages will all cost one fault each.

- i. FIFO replacement.
- ii. LRU replacement.
- iii. Optimal replacement.

Question 6:

Differentiate between processes and threads. Explain the advantages of multithreading in an operating system. Propose a threading algorithm using a producer-consumer problem and explain how synchronization is achieved using semaphores.

Question 7:

Explain the concept of virtual memory and its importance in modern operating systems. Describe the working of demand paging and how page faults are handled. Provide an example to demonstrate the process.

Question 8:

Describe the architecture of a mobile operating system such as Android or iOS. Discuss the key features, differences from desktop operating systems, and challenges associated with mobile OS development.

(10 Marks)

(10 Marks)

(10 Marks)

(10 Marks)