7236

C20-CM-WD-AIM-CCN–303

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BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2024

DCME – THIRD SEMESTER EXAMINATION

OPERATING SYSTEMS

Time : 3 hours] [*Total Marks* : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State the primary goals of operating system.

2. List different types of system calls.

3. What is sequential process?

4. Differentiate between thread and process.

5. What is inter process communication?

6. Define semaphore.

7. What is swapping?

8. State the causes for thrashing.

9. List the various file access methods.

10. Define latency time and seek time.

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PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain the concept of spooling and buffering.

(OR)

(b) Explain multiprogramming and time sharing operating systems.

12. *(a)* Explain CPU scheduling and scheduling criteria.

(OR)

(b) Consider a set of three processes P1, P2, P3 arriving all at time instant 0 and CPU burst times are shown below :

Process	Burst time
P1	24
P2	3
P3	3

Draw Gantt chart and find average turn around time and average waiting time using FCFS scheduling algorithm.

13. *(a)* Explain how deadlocks can be avoided and detected.

(OR)

(b) Explain necessary conditions for deadlock. How to recover from deadlock?

14. *(a)* Explain single partition allocation and multiple partition allocation.

(OR)

(b) Describe FIFO page replacement Algorithm and assuming there are 4 frames and the page reference string is

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3

Find the number of page faults using FIFO page replacement algorithm.

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15. *(a)* Explain various disk space allocation methods.

(OR)

(b) Explain directory structure organization.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Consider a disk system with 100 cylinders. The requests to access the cylinders occur in following sequence :

4, 34, 10, 7, 19, 73, 2, 15, 6, 20

Assuming that the head is currently at cylinder 50. What is the time taken to satisfy all requests if it takes 1 ms to move from one cylinder to adjacent one using Shortest Seek Time First (SSTF) disk Scheduling algorithm?

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