7236

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

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.   Define operating system.

2.   What is Spooling?

3.   What is process control block?

4.   List the different scheduling criteria for schduling.

5.   What is Process Synchronization?

6.   List the necessary conditions for deadlock.

7.   What is address binding?

8.   What is Segmentation?

9.   List the various file operations.

10. List the different Disk Performance Parameters.

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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 components of operating system.

(OR)

(b) What is system call? Explain different types of system calls.

12. *(a)* Draw and explain process state diagram.

(OR)

(b) Consider a set of four processes P1, P2, P3 and P4 arriving all at time instant 0 and CPU burst times are shown below :

Process	Burst time
P1	21
P2	3
P3	6
P4	2

Draw Gantt Chart and find average turn around time and average waiting time using SJF Scheduling Algorithm (Non-Preemptive)

13. *(a)* Explain inter process communication.

(OR)

(b) Define deadlock. Explain various techniques for deadlock prevention.

14. *(a)* Explain paging concept with neat diagram.

(OR)

(b) Describe LRU Page Replacement Algorithm and assuming there are 3 frames and the page reference string is 1, 2, 1, 0, 3, 0, 4, 2, 4. Find the number of page faults using LRU Page Replacement Algorithm.

15. *(a)* Explain various file access methods.

(OR)

(b) Explain SCAN Disk Scheduling Algorithms with example.

PART—C

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 system with five processes P_0 through P_4 and three resources of type A, B and C. Resource type A has 10 instances, type B has 5 instances and type C has 7 instances. Suppose at time t_o following snapshot of the system has been taken :

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P_0	0	1	0	7	5	3	3	3	2
P_1	2	0	0	3	2	2			
P_2	3	0	2	9	0	2			
P_3	2	1	1	2	2	2			
P_4	0	0	2	4	3	3			

Find out the Need Martix and check the system is in safe state or not using Banker's Algorithm. If yes, then what is the safe sequence?

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