Code No: 134BU **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, December - 2019
OPERATING SYSTEMS
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a) List any two different views of Operating System. [2]
b) Write two Objectives of an Operating System. [3]
c) Define Process synchronization. [2]
d) How does the Semaphores help in the process Synchronization? [3]
e) What is demand paging? [2]
f) What do you mean by Internal Fragmentation? [3]
g) Why is Disk Scheduling important? [2]
h) Differentiate between Seek time and Rotational latency. [3]
i) Define Access Matrix. [2]
j) What do you mean by Dead lock? [3]

PART – B

(50 Marks)

2.a) Explain in detail the role of Operating system as a resource Manager.
b) Discuss the essential properties of Time sharing and Distributed systems. [6+4]

OR

3. How could a system be designed to allow a choice of operating systems from which to boot? What would the bootstrap program need? Explain. [10]

4. Consider the following four processes, with the length of the CPU burst time given in milliseconds.

Process	Arrival Time(ms)	Burst Time (ms)
P_1	1	6
P_2	1	5
P_3	2	5
P_4	2	3

Find Average Waiting Time and Turnaround time for given Process using FCFS and SJF Algorithms? [10]

OR

5.a) What is Round Robin Scheduling? Illustrate with an example. Can it be useful for a single user system? If yes, then explain. If no, then why not?
b) What is the role of Scheduler? What requirement is to be satisfied for a solution of a critical section problem? Explain briefly. [6+4]

6. What is the need of Page Replacement? Consider the following reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1.
Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four frames which are empty initially. Which algorithm gives the minimum number of page faults? [10]

OR

7.a) Compare Paging with Segmentation with respect to the amount of memory required by the address translation structures in order to convert virtual addresses to physical addresses.

b) Write a detailed note on Virtual Memory. [6+4]

8. Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The current head position is at cylinder 143. The queue of pending requests is: 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. What is the total distance that the disk arm moves to satisfy all the pending requests for each of the following Disk scheduling algorithms?
a) SSTF b) SCAN [10]

OR

9. What is File system and what are the various File access methods? Explain. [10]

10.a) Explain any two solutions of Recovery from Deadlock.

b) Compare and contrast the terms external and operational security in the context of operating systems. [4+6]

OR

11.a) What is Deadlock? State four necessary conditions for a Deadlock situation to arise?

b) Explain the importance of Memory protection in multiprogramming systems. [4+6]

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