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(October)

COMPUTER SCIENCE

(Honours)

(Operating System and Introduction to LINUX)

(CS-501 T)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **one** question from each Unit

UNIT—I

1. *(a)* Explain the objectives of an Operating System. 3

   (b) Explain the four principal events in which a process can be created. 4

　　　　　　　　　(*Turn Over*)

(c) Five batch jobs A through E arrive at a computer center. They have estimate running times of 2, 6, 4, 9 and 3 minutes. Use the shortest job first to determine the turnaround time for each job and the mean turnaround time. Assume that only one job at a time runs until it finishes.　　5

2. (a) Explain race condition. How is it avoided using Potesson's algorithm?　　2+4=6

(b) How is mutual exclusion taken care of using semaphores?　　4

(c) What is round robin scheduling?　　2

Unit—II

3. (a) What are the conditions for a deadlock to occur?　　5

(b) How is a deadlock detected with one resource of one type?　　3

(c) How can one recover from a deadlock?　　3

4. (a) Differentiate between preemptable and non-preemptable resources.　　4

(b) Explain Banker's algorithm for a single resource with the help of an example.　　7

Unit—III

5. (a) What is a page fault? How is it handled? Explain with the help of a diagram.　　2+5=7

(b) Differentiate between physical address space and logical address space.　　2+2=4

6. (a) If FIFO page replacement algorithm is used with four page frames and eight pages, how many page faults will occur with the reformer string 0172327103?　　6

(b) What is segmentation? How is it different from paging?　　2+3=5

Unit—IV

7. (a) Explain on the goals of the I/O software. Describe in brief the function of a device driver.　　4+3=7

(b) Describe the elevator disk arm scheduling algorithm.　　4

8. (a) Discuss any two file structures. Describe contiguous allocation scheme for file storage.　　4+3=7

(b) Explain file system backup.　　4

(4)

9. *(a)* Why is UNIX considered as a multiuser and a multitasking system? 6

(b) In pattern matching, explain the significance of the use of the character class in a pattern. Describe how to negate the character class. 3+2=5

10. *(a)* Explain the difference between /dev/null and /dev/tty. 5

(b) Write short notes on the following with an example each : 2×3=6

    (i) pr

    (ii) head

    (iii) sort

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