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BCA 3rd Semester (Full & Re-appear)

Examination, December-2024

Introduction to Operating System

Paper : BCA-201

Time allowed : 3 hours]

[Maximum marks : 80

Note : Question No. 1 is compulsory. Attempt four questions by selecting one question from each unit. All questions carry equal marks.

1. (a) What is the concept of thrashing?
(b) What is process states diagram?
(c) What is Critical Section?
(d) What is Queue scheduling algorithm?
(e) What is Real-time Scheduling?
(f) What do you mean by free space management?
(g) What are Bernstein's Conditions?
(h) What should be page size? Justify your answer.

8×2=16

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[P.T.O.]

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Unit-I

2. (a) What are operating system services? Discuss their significance. 6
(b) What is an operating system? What are important characteristics of a good operating system? Also discuss the responsibilities of an operating system as a resource manager. 10
3. Differentiate between the following :
(a) Program, process and thread 6
(b) Multitasking and Batch processing 5
(c) Time-sharing and Multiprogramming 5

Unit-II

4. Differentiate 'Deadlock-Avoidance', 'Deadlock-Prevention' and 'Deadlock-Detection'. What is Banker's algorithm and indicate for which of the above three the same is used? Illustrate the same through a suitable example. 16
5. What do you mean by a scheduler? What should be the performance criteria for a scheduler? Compare and contrast importance scheduling techniques. 16

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Unit-III

6. (a) What is fragmentation? What are different types of fragmentation? How each of these can be overcome? Explain. 7
(b) What is paging? How address mapping is performed in paging technique? Also enumerate the advantages and disadvantages of paging. 9
7. (a) What is memory management? Discuss objectives of memory management. 6
(b) What is a Swapping System? Consider a swapping system in which memory of the following hole sizes in memory order : 10K, 4K, 20K, 18K, 7K, 9K, 12K and 15K. Which hole is taken for successive requests of : 10
(i) 12K
(ii) 10K
(iii) 9K
for first-fit? Repeat the same for Best-Fit, Worst-Fit and Next-Fit.

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Unit-IV

8. What is meant by disk scheduling? Explain why disk scheduling is necessary? Enumerate the principal differences among various disk-scheduling techniques. 16
9. What is a file-system? Give the general model of a file-system? What are the main responsibilities of a file-system? Where is file-system located in layered organization of operating system? 16