97669

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

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.

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

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