BT-4/J-22   **44153**

OPERATING SYSTEM

Paper : PC-CS-206A

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) What are the functions of an operating system? Write a note on multi-programmed operating system.

   (b) Distinguish between client-server and peer-to-peer models of distributed systems.   (8+7=15)

2. (a) With a neat sketch, describe the services that an operating system provides to users, processes and other systems.

   (b) What is meant by storage structure? Discuss storage hierarchy.

   (c) Write the advantages and disadvantages of using the same system call interface for manipulating both files and devices.   (5+5+5=15)

UNIT–II

3. (a) What are the criteria for evaluating the CPU scheduling algorithms? Why do we need it?

   (b) Define Process. Explain various steps involved in change of a process state with process state neat transition diagram. (8+7=15)

4. (a) What is synchronization? Explain how semaphores can be used to deal with n-process critical section problem.

   (b) Define a Thread. Give the benefits of multithreading. What resources are used when a thread is created? (8+7=15)

UNIT–III

5. (a) How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail.

   (b) Differentiate between external fragmentation and internal fragmentation. How to solve the fragmentation problem using paging? (8+7=15)

6. (a) What is the purpose of paging the page tables? Consider the following page reference string 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5 for a memory with three frames. How many page faults would LRU and FIFO replacement algorithm?

   (b) What are the disadvantages of single contiguous memory allocation? Explain. (10+5=15)

UNIT-IV

7. (a) Briefly explain about single-level, two-level and Tree-Structured directories.

   (b) What is disk scheduling? Explain the C-SCAN scheduling by giving an example. (8+7=15)

8. Write notes on the following :
   (a) Interrupt and spooling.
   (b) UNIX file system.
   (c) Program and system threats. (5×3=15)

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