

Roll No.

Total Pages : 3

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 next 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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