Roll No.

Total Pages : 03

BT-4/J-22 44153 OPERATING SYSTEMS

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

- (a) What are the functions of an operating system? Write a short note on multi-programmed operating system.
 - (b) Distinguish between client-server and peer-to-peer models of distributed systems.
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- (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.

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

Unit III

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

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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

5*3=15

8. Write notes on the following:

- a) Interrupt and spooling.
- b) UNIX file system.
- c) Program and system threats.