

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2064)

14724

B. Tech 6th Semester Examination

Operating System

EC-6005

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting one question each from sections A, B, C and D. Section - E is compulsory.

SECTION - A

1. (a) What are virtual machines? Explain their model with functioning. Also discuss its advantages and disadvantages.
- (b) What are the functions of a real time operating system?
- (c) Explain in detail about the threading issues.(8+6+6=20)
2. (a) What is a Process Scheduling? Explain any three policies for process scheduling that uses resource consumption information. What is response ratio?
- (b) Explain how critical region concept is used for solving CSP. Discuss its syntax and implementation.
(10+10=20)

SECTION - B

3. (a) Give a detailed description about deadlocks and its characterization.

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- (b) Explain the Banker's algorithm for deadlock avoidance.
 - (c) What are the four necessary conditions of deadlock prevention? (8+6+6=20)
4. (a) What is the use of Access Matrix to protect the resources? Explain its implementation.
- (b) How security can be achieved using Authentication? Explain MAC (Message Authenticate Code). (10+10=20)

SECTION - C

5. (a) Why is segmented paging important as compared to a paging system? What are the different pieces of the virtual address in a segmented paging?
- (b) Explain with the help of examples FIFO and LRU page replacement algorithms. (10+10=20)
6. (a) What is SCAN algorithm for disk scheduling?
- (b) Explain the different page replacement policies. What are the main requirements, which should be satisfied by a page replacement policy? (10+10=20)

SECTION - D

7. (a) Write notes about the protection strategies provided for files. Write in brief about File-System Implementation.
- (b) What is the difference between absolute and relative path name of a file? (12+8=20)
8. (a) Describe various directory implementation techniques.
- (b) Explain the various schemes used for defining the logical structure of a directory. (10+10=20)

SECTION - E

9. (i) What are the various operations on directories?
- (ii) What are the benefits of multithreaded programming?
- (iii) What are the advantages of Contiguous allocation?
- (iv) What are the various types of fragmentation?
- (v) Give the difference between multiprogramming and multiprocessing.
- (vi) How interrupts are handled by the operating system?
- (vii) Compare user threads and kernel threads.
- (viii) What are the various scheduling criteria for CPU scheduling?
- (ix) What is logical address space and physical address space?
- (x) What are the major problems to implement demand paging? (2×10=20)