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 answerbook (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)
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)