[Total No. of Questions - 9] [Total No. of Printed Pages - 3] (2125)

15116

B. Tech 4th Semester Examination

Operating System Concepts (OS)

IT-4002

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 from each section A, B, C and D of question paper. Section E is compulsory.

SECTION - A

1. How does a clustered system differ from a multicore system? Explain different ways for structuring an operating system. (20)

2. What are cooperating processes? Why inter process communication is required? Explain different models of inter process communication. (20)

SECTION - B

3. What is deadlock? Explain "ensuring that at least one of the four necessary conditions for deadlock cannot hold, can prevent the occurrence of a deadlock". (20)

4. What you understand by system protection? Why it is important? Explain different methods to implement access matrix. Give comparison of these methods also. (20)

[P.T.O.]

SECTION - C

5. What is paging? Explain implementation of paging hardware with TLB. Compare it with segmentation. (20)

6. (a) Discuss three methods of allocating disk space with their advantages and disadvantages.

   (b) Suppose that the head of moving head disk with 200 tracks, numbered 0 to 299, is currently serving a request at track 143 and has just finished a request at track 125. The queue of requests is kept in FIFO order:

   88, 145, 176, 97, 152, 100, 178, 133, 135.

   What is the total number of the movements needed to satisfy these requests for the following disk scheduling algorithms?

   (i) FCFS scheduling

   (ii) SSTF scheduling

   (iii) SCAN scheduling (20)

SECTION - D

7. a) Explain the concept of file? What is the difference between absolute and relative path name of a file?

   (b) Explain and compare the different disk space management methods. (20)

8. Explain how (and whether) buffering and blocking of records would be beneficial for files with following organizations:

   (i) Sequential organization

   (ii) Index Sequential organization

   (iii) Direct organization. (20)

SECTION - E
(Each carry 4 marks)

9. (a) Give a write-up on evolution of the I/O function.

   (b) Is disk scheduling, other than FCFS scheduling, useful in a single-user environment? Explain your answer.

   (c) Compare sequential and random file access methods with respect to their usefulness in today's applications.

   (d) Compare fixed partition allocation strategy with variable partition scheme for contiguous memory allocation.

   (e) Explain critical section. Why we use it? (5×4=20)