BT-4/M-23   **44220**

OPERATING SYSTEM
PC-CS-AIDS-212A

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. Enumerate the important functions of Operating Systems. Also, give a classification of operating systems w.r.t. advancements in technology and applications.

2. Give an overview of the Operating system structure along with a brief description of its layered and virtual machine approaches of structure.

Unit II

3. Answer the following questions in brief :

    (a) Distinguish between preemptive and non-preemptive scheduling.

(b)   Give a brief description of any one scheduling algorithm of your choice.

(c)   What is a thread ? What are its benefits ?

4.   Give an overview of the critical section problem and briefly describe the requirements of synchronization mechanisms. Why is there a need for communication between processes ?

Unit III

5.   When does a deadlock occur ? Is deadlock prevention different from deadlock avoidance ? Explain any *two* deadlock prevention approaches.

6.   Distinguish between the following :

(a)   Paging and segmentation

(b)   Internal and external fragmentation

(c)   Demand paging and page replacement.

Unit IV

7.   (a)   What is the structure of directories ? Also, describe how indexing is used to access files.

(b)   What are the advantages of the Shortest Seek Time First disk scheduling algorithm ? Is it better than the First Come First Served method ? Justify.

8. (a) How is the Direct Memory Access (DMA) concept related to device controllers ? What is 'Interleaving' ?

   (b) Describe the issues related to File systems' security and protection.