1481/III

B.C.A. (Part-II) EXAMINATION, 2023-24

(Third Semester)

Paper : I

(BCA 301: Operating System)

Time : Three Hours]   [Maximum Marks : 70

Note: (i)   Answer **five** questions in all.

     (ii)   Question No. **1** is **compulsory**.

     (iii)   Answer remaining **four** questions, selecting **two** from each Section **A** and **B**.

     (iv)   All questions carry equal marks.

1.   Answer all parts of the following :

     (a)   What are the objectives of operating system ?

     (b)   What are disadvantages of multi-processor systems ?

     (c)   What is process control block ?

     (d)   What is a thread ?

Section-A

2.   Consider the following page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 How many page faults would occur for the following replacement algorithms :

     (i)   FIFO

     (ii)   LRU

Assuming there are three frames that are initially empty ?

3. Explain the following memory management techniques :
   (i) Contiguous allocation
   (ii) Paging and segmentation

4. Define Process. Explain various steps involved in change of a process states with neat transition diagram.

5. Explain Banker's deadlock-avoidance algorithm with an illustration.

Section-B

6. (a) Explain different operating system structures with neat sketch.
   (b) What are the various scheduling criteria for CPU scheduling ?

7. (a) What are the requirements that a solution to the critical section problem must satisfy ?
   (b) What are the conditions under which a deadlock situation may arise ?

8. (a) What is the difference between SJF and SRTF scheduling algorithms ?
   (b) Define deadlock with suitable example. Explain deadlock handling strategies in details.

9. Write notes on any two of the following :
   (i) File system protection and security
   (ii) Linked File allocation methods
   (iii) Demand paging and swapping

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