

1481 / III

B.C.A. (PART-II) EXAMINATION, 2024-25

(IIIrd SEMESTER)

(BCA 301 : OPERATING SYSTEM)

Paper : I



1101

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 any four of the following :
- (a) Define the Operating System (OS). List the main objectives of an operating system.
(b) Distinguish between process and program.
(c) What is Critical Section Problem ?
(d) Explain concept of virtual memory.
(e) What is difference between directory and file ?

Section-A

2. What are the functions of operating system ? Write down the different types of operating system.

3. Consider the following process :

Process	Arrival Time	Burst Time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

Draw Gantt chart and find the average waiting and turn around time for these processes with

- (i) FCFS Scheduling.
 - (ii) Preemptive SJF Scheduling.
4. State the three requirements need to solve critical section problem. Briefly describe a solution with involved steps to solve the critical section problem.
5. What is a deadlock ? Discuss the necessary conditions for deadlock with examples.

Section-B

6. Differentiate between :
- (a) Single user and multi user processing system.
 - (b) Multiprogramming and multitasking system.
7. (a) Explain various states of process with suitable diagram.
- (b) Explain the concept of process scheduling and its types.

8. (a) Explain the memory fragmentation. How to solve the fragmentation problem using paging.

(b) 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 optimal page replacement algorithm, assuming three frames and all frames are initially empty.

9. Write notes on any two of the following :

(a) Real time operating system.

(b) Inter process communication.

(c) Physical v/s logical memory addresses space.

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