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(20525) Roll No.
BCA-IV Sem.

18017

B.C.A. Examination, May-2025

OPERATING SYSTEM

(BCA-402)

Time : Three Hours] [Maximum Marks : 75

Note : Attempt **all** the sections as per instructions.

Section-A

(Very Short Answer Type Questions)

Note : Attempt **all** the **five** questions. Each question carries **3** marks. Very short answer is required not exceeding **75** words. $3 \times 5 = 15$

1. Why do we need operating system?
2. What do you mean by process control block of a process? Discuss.

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3. What do you understand by the term quantum? Where it is used?
4. Define Critical Section Problem.
5. What is Deadlock? Name the four essential conditions for a deadlock to occur.

Section-B

(Short Answer Type Questions)

Note : Attempt any **two** questions out of the following **three** questions. Each question carries **7½** marks. Short answer is required not exceeding **200** words. $2 \times 7\frac{1}{2} = 15$

6. What do you mean by scheduler? Explain different types of Schedulers.
7. Explain secondary storage structure. Name few disk scheduling algorithms.

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8. What is contiguous memory allocation scheme? Also differentiate physical and logical address space.

Section-C

(Detailed Answer Type Questions)

Note : Attempt any **three** questions out of the following **five** questions. Each question carries **15** marks. Answer is required in detail. $15 \times 3 = 45$

9. What do you mean by demand paging? Consider the following reference string?
1,2,3,4,5,3,4,1,6,7,8,7,8,9,5,4,5,4,2.
How many page fault occurs using FIFO, optimal and LRU page replacement algorithms (Assume with 4 frames).
10. Consider a file system that support the strategies of contiguous, linked and indexed allocation. Explain all the three strategies.

11. What do you understand by CPU scheduling? Explain the following scheduling algorithms:
(a) FCFS-algorithm
(b) SJF algorithm
(c) Round Robin algorithm
12. Discuss the strategies of handling deadlocks. How deadlocks can be detected and once detected, how system can be recovered from deadlock?
13. Discuss the following (Any **three**):
(1) Process states
(2) Thrashing and its causes
(3) Fragmentation
(4) Performance measures for CPU scheduling
(5) Semaphores and monitors
(6) Segmentation