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DCCA301

Reg. No.

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III Semester B.C.A. Degree Examination, April - 2023

COMPUTER APPLICATION

Operating Systems

Paper : CA - CIIT

(NEP Scheme)

Time : 2½ Hours

Maximum Marks : 60

Instructions to Candidates:

Answer all the questions.

PART - A

I. Answer any four questions. Each carries 2 marks.

1. Define
 - a. Process.
 - b. Thread.
2. What do you mean by critical section?
3. What is safe state?
4. What is page fault?
5. What are the various file operations?
6. Define Rotational latency.



(4×2=8)

PART - B

II. Answer any four questions. Each question carries 5 marks.

7. Explain the states of a process with a block diagram.
8. What is a system call? Explain its types.
9. Explain producer - consumer problem using semaphores.

(4×5=20)

[P.T.O.]



10. Consider the following set of process with CPU burst time and arrival time.

PID	Arrival time	Burst time (in ms)
P ₁	0	5
P ₂	1	7
P ₃	2	4
P ₄	3	2

Draw the Gantt chart illustrating the execution of the process using Round robin algorithm with a time slice of 2 ms. Find average waiting time and turn around time.

- 11. What is fragmentation? Discuss the different types of fragmentation.
- 12. Briefly explain the different types of network - based operating system.

PART - C

III. Answer any **four** questions. Each carries **8** marks. (4×8=32)

- 13. Define operating system. Explain the operating system structure with a block diagram.
- 14. Explain necessary conditions of deadlock. Discuss the methods of handling deadlock recovery.
- 15. Explain interprocess communication in detail.
- 16. Consider the following page reference string.
1,3,0,5,6,3 with 3 page frames. Find the number of page faults using FIFO page replacement algorithm.
- 17. Explain disk scheduling algorithms SCAN and look with suitable graphs.
- 18. Write short notes on :
 - a. Resource - Allocation graph. (4)
 - b. Segmentation. (4)