Register No: .... Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FOURTH SEMESTER INTEGRATED MCA DEGREE EXAMINATION (S), AUGUST 2023
(2020 SCHEME)

Course Code: **20IMCAT206**

Course Name: **Operating Systems**

Max. Marks: **60**   **Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. Briefly describe about user operating system interface.
2. What is a distributed operating system?
3. Compare preemptive and non-preemptive scheduling.
4. Discuss the advantages and disadvantages of using threads in operating systems.
5. Explain the concept of shared memory for interprocess communication.
6. Illustrate a scenario that can result in a deadlock.
7. What is meant by virtual memory?
8. Illustrate LRU page replacement algorithm with an example.
9. Briefly describe about SSTF disk scheduling scheme.
10. Write short note on RAID.

PART B
(Answer one full question from each module, each question carries 6 marks)

MODULE I

11. Explain in detail about operating system functions.   (6)

OR

12. What is a system call? Which are the different types of system calls? Explain.   (6)

MODULE II

13. a) What are the operations that can be performed on a process?   (3)
    b) Briefly explain about long-term, short-term, and medium-term scheduling.   (3)

OR

14. Suppose you are designing a new operating system that will use a PCB to manage each process. The PCB should contain information   (6)

about the process, such as its state, priority, resources, and other relevant data. Describe the design and implementation of the PCB, including the different types of data that should be included, and how the operating system should use this information to manage processes.

MODULE III

15. a) Explain the concept of co-operating processes and give an example. (3)

    b) Briefly describe about semaphores. (3)

OR

16. Explain the Banker's algorithm with a suitable example. (6)

MODULE IV

17. Discuss thrashing. List and explain the causes of thrashing. (6)

OR

18. Illustrate optimal page replacement algorithm with the help of an example. (6)

MODULE V

19. Explain directory structures in detail. (6)

OR

20. Summarize the different file allocation methods. (6)

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