K24U 2872

Reg. No. : .....

Name : .....

**V Semester B.C.A. Degree (C.B.C.S.S. – O.B.E. – Regular/Supplementary/ Improvement) Examination, November 2024**
**(2019 to 2022 Admissions)**
**Core Course**
**5B12BCA : OPERATING SYSTEMS**

Time : 3 Hours

Max. Marks : 40

SECTION – A
**(Short Answer)**

Answer **all** the questions. **(6×1=6)**

1. What is the difference between a process and a program ?
2. How does preemptive scheduling work ?
3. What is compaction ?
4. Write an advantage of using a variable partition scheme.
5. What is the role of a controller in I/O hardware ?
6. Describe the Daisy Chain Method.

SECTION – B
**(Short Essay)**

Answer **any six** questions. **(6×2=12)**

7. Explain the kernel mode of CPU operations.
8. How does an operating system provide privacy services ?

P.T.O.

9. When does context switching happen ?

10. What does a long-term scheduler perform ?

11. What are the advantages of contiguous memory ?

12. What is seek time and rotational latency time for a disk ?

13. Discuss various implementation issues in the file system.

14. Describe an interrupt-driven I/O cycle.

## SECTION – C
**(Essay)**

Answer **any four** questions. **(4×3=12)**

15. Describe the role of an operating system in managing program execution and input-output operations.

16. Explain the necessary conditions that must be met in order to achieve deadlock.

17. The segment table consumes less space in comparison to the page table in paging. Justify.

18. What are the various free space management techniques ?

19. How does the kernel I/O subsystem support device independence, resource and concurrency management ?

20. Explain the role of a device driver in I/O operations.

## SECTION – D
**(Long Essay)**

Answer **any two** questions. **(2×5=10)**

21. Compare the modular structure and layered structure of operating systems.

22. Consider the following table of arrival time and burst time for four processes P1, P2, P3 and P4 and given Time Quantum = 2. Calculate the average waiting time using round-robin scheduling.

| Process | Burst Time | Arrival Time |
|---|---|---|
| P1 | 5 ms | 0 ms |
| P2 | 4 ms | 1 ms |
| P3 | 2 ms | 2 ms |
| P4 | 1 ms | 4 ms |

23. What is thrashing ? Explain its causes.

24. Explain the following disk management techniques used in operating systems.
    I) Partitioning
    II) Formatting
    III) File system management
    IV) Disk space allocation
    V) Disk defragmentation.