[Apr-24]

GITAM (Deemed to be University)
[CSEN1101]
GST/GSS/GSB/GSHS. Degree Examination

IV Semester

OPERATING SYSTEMS

(Effective from the admitted batch 2021-22)

Time: 2 Hours **Max. Marks: 30**

Instructions: All parts of the unit must be answered in one place only.

Section-A

1. **Answer all Questions:** **(5×1=5)**
   a) Provide a definition of the kernel and elucidate its functionalities.
   b) Define what a thread is and highlight its advantages.
   c) Elaborate on the concept of a race condition, illustrating it with a specific example.
   d) Elucidate fragmentation in operating system with an Example.
   e) Enumerate several file attributes.

Section-B

Answer the following: **(5×5=25)**

UNIT-I

2. Outline the Concept of Symmetric Multi-Processing and Dual Core Design architecture.

OR

3. Summarize Mass Memory Management activity and Concept of Caching.

UNIT-II

4. Illustrate Process Control Block and its various Components.

OR

5. Discuss the priority CPU Scheduling algorithm. Consider the set of 5 Processes whose arrival time and burst time are given below:

Process ID	Arrival Time	Burst Time	Priority
P1	0	4	2
P2	1	3	3
P3	2	1	4
P4	3	5	5
P5	4	2	5

The CPU Scheduling Policy is Priority with Non-Preemptive. Calculate the Average Turnaround Time and Average Waiting Time. Here Higher number represents higher Priority.

UNIT-III

6. Explain Resource Allocation Graph with an Example.

OR

7. Elaborate Semaphore as General Synchronization Tool, with its Implementation part.

UNIT-IV

8. Express Your Understanding on Contiguous Memory Allocation.

OR

9. Given page reference string 1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3. Calculate the percentage of page faults using the FIFO page replacement algorithm with 3 frames.

UNIT-V

10. Write a Short Note on File Systems Directory Structure:
    a) Single Level Directory
    b) Two Level Directory
    c) Tree-Structured Directories

OR

11. Explain Disk Structure and Differentiate between the SCAN and CSCAN Disk Scheduling Algorithms with Examples.