[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 system calls and enumerate some examples.

b) Enumerate several attributes associated with the Process Control Block (PCB).

c) Provide an overview of the concept of semaphores.

d) Provide a definition of virtual memory and support it with a relevant example.

e) Enumerate the objectives of protection in an operating system.

Section-B

Answer the following: **(5×5=25)**

UNIT-I

2. Bring out the Difference between Multi Programming and Real Time Operating System.

OR

3. Write a C Program for Linux system Calls.
   a. Fork() b. Exec()

UNIT-II

4. Consider 5 Processes use Time Quantum = 3ms. Write the GANTT chart & Find Average turnaround time and Average Waiting Time using Round Robin Scheduling.

Process ID	Arrival Time	Burst Time
P1	0	8
P2	1	1
P3	2	3
P4	3	2
P5	4	6

OR

5. What criteria are considered when selecting the optimal scheduling algorithms? Please provide an explanation of the factors influencing the choice of the best scheduling algorithm.

UNIT-III

6. Define process synchronization and provide an example of the Producer-consumer Problem, including a snippet to illustrate the concept.

OR

7. Summarize Deadlock Recovery.

UNIT-IV

8. Illustrate the Concept of Paging with an Example.

OR

9. Explain about the Inverted Page Table.

UNIT-V

10. Suppose that a disk drive has 5000 cylinders numbered 0 to 4999.

    The drive is currently serving a request at cylinder 143. The queue of pending requests in FIFO order 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130 starting from current head position.

    What is the total distance that disk arm moves to satisfy all the pending request for FCFS and SSTF disk scheduling algorithm.

OR

11. Detail the concept of Access Matrix in operating system protection mechanisms.