[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) Enumerate various system calls within an operating system.

   b) Distinguish between Kernel Threads and User Threads, highlighting their contrasting characteristics.

   c) Give three instances of deadlock scenarios unrelated to computer system environments.

   d) Explain the concept of demand paging.

   e) Outline about Rotational Latency.

Section-B

Answer the following: **(5×5=25)**

UNIT-I

2. Illuminate the roles and responsibilities carried out by an Operating System.

OR

3. Elucidate different structures employed in Operating Systems.

UNIT-II

4. Explore diverse methods for Inter-Process Communication (IPC) within an Operating System.

OR

5. Consider the following process & CPU burst given in following table:

Process	Arrival-time	Burst-time
P1	0	5
P2	1	3
P3	3	6
P4	5	1
P5	6	4

a) Draw Gantt chart for round robin (with time quantum 1 millisecond).

b) Calculate average waiting time & average turn-around time for above scheduling algorithm.

UNIT-III

6. Illustrate the critical section problem by employing the context of a Bounded Buffer.

OR

7. Explore the essential prerequisites for Deadlock and strategies to avert Deadlock occurrences.

UNIT-IV

8. Visualize the concept of segmentation through the use of a clear and organized diagram.

OR

9. Consider the following page reference string

1, 2, 5, 2, 3, 5, 7, 1, 2, 3, 8, 6, 4, 3, 2, 2,3, 6.

Assuming there are 3 memory frames, how many page faults would occur in the case of i) LRU ii) FIFO.

Note that initially all frames are empty

UNIT-V

10. Exemplify about File Operations.

OR

11. Suppose that a disk drive has 100 cylinders, numbered 0 to 99. The drive is currently serving a request at cylinder 26. The queue of pending requests is

    37, 100, 14, 88, 33, 99, and 12.

    Draw the graph for the following disk scheduling algorithms:

    a. FCFS b. SSTF c. SCAN

    d. LOOK e. C-LOOK

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