Code No: R194102G **R19** Set No. 1

IV B.Tech I Semester Regular Examinations, November – 2022
OPERATING SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
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UNIT-I

1 a) What do you mean by process scheduling? Explain different types of schedulers. [7]

   b) Compare multi programming system with batch processing and time sharing system. [8]

(OR)

2 a) Discuss in detail inter process communication mechanism. [7]

   b) Consider the following set of processes with the length of the CPU burst time given in milliseconds [8]

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0. Draw Gantt chart illustrating the execution of these jobs using Priority scheduling algorithms (a smaller priority number implies a higher priority). Compute the average turnaround time and average waiting time of each job for above algorithm.

UNIT-II

3 a) Explain in detail the requirements that memory management technique needs to satisfy. [7]

   b) Define thrashing. Explain available methods to avoid thrashing. [8]
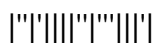
(OR)

4 a) Explain why the "principle of locality" is crucial to the use of virtual Memory. What is accomplished by page buffering? [7]

   b) Consider the following page reference string:
1,2,4,7,3,5,6,3,6,1,4,2,3,6,5,2
How many page faults would occur for the LRU page replacement algorithm, assuming four frames and all frames are initially empty? [8]

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R19

UNIT-III

5 a) Explain the infinite buffer producer/consumer problem for concurrent processing which uses binary semaphores. [7]

   b) Define deadlock. What are the four conditions necessary for a deadlock situation to arise. [8]

(OR)

6 a) Define monitor. Distinguish between monitor and semaphore. Explain in detail a monitor with notify and broadcast functions using an example. [7]

   b) Illustrate Banker's algorithm for deadlock avoidance with an example. [8]

UNIT-IV

7 a) Discuss the criteria for choosing a file organization. [7]

   b) Explain magnetic disk structure and its management. [8]

(OR)

8 a) Explain different types of directories with a suitable example. [7]

   b) Consider that a disk drive has 5,000 cylinders, numbered 0 to 4,999. The drive is currently serving request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is:
   86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130
   Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all pending requests for SCAN and C-SCAN algorithm. [8]

UNIT-V

9 a) What are Synchronous and Asynchronous interrupts in LINUX? Explain with an example? [7]

   b) Present Android Architecture with neat diagram. [8]

(OR)

10 a) Describe the key Components of a LINUX system. [7]

   b) Elaborate on the Android Operating system services. [8]