B. Tech Odd Semester Examination, February, 2023

Computer Science & Engineering

(5th Semester)

Course No.: CSEC-503

(Operating System)

Full Marks: 50

Pass Marks: 25

Time: 2 hours

Note:
1. Attempt any five questions.
2. Begin each answer in a new page.
3. Answer parts of a question at a place.
4. Assume reasonable data wherever required.
5. The figures in the right margin indicate full marks for the question.
6. All the mathematical symbols and abbreviations have their usual meanings.

1. Write short notes on:

   i. Distributed Systems

   ii. Batch Operating System 5+5

2. What is a process? Explain about various fields of Process Control Block. 2+8

3. With a neat sketch, describe the services that an operating system provides tousers, processes and other systems. Explain system calls. 8+2

4. Consider the following: 5+5

Process	Burst Time	Priority	Arrival Time
P1	10	3	0
P2	1	1(Highest)	1
P3	2	3	2
P4	1	4	1
P5	5	2	2

Draw the Gantt Chart for the execution of these processes using and find the average waiting time and average turn-around time usingRound Robin scheduling (time quantum=2)and Priority Scheduling (Pre-emptive).

5. What is a page fault?

   Consider the following page reference string:

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

   How many page faults would occur for the optimal page replacementalgorithm, assuming three frames and all frames are initially empty 2+8

6. Explain deadlock condition and discuss various techniques to recover from the deadlock. 10

7. Explain the following with suitable example:

   a) Short-term, medium term and long-term schedulers

   b) FIFO and LRU page replacement algorithm. 5+5

8. Consider the following table:

Process	Arrival Time	Burst Time
1	0	3
2	2	6
3	4	4
4	6	5
5	8	2

Calculate average turn-around time and average waiting time using Shortest Job First (SJF) and Shortest Remaining Time First (SRTF) scheduling algorithm. 5+5

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