

M.Tech. Computer Science & Engineering (CBCS Pattern) Semester-I
PCSS12 - Advanced in Operating System Design

P. Pages : 1

Time : Three Hours



GUG/S/25/10941

Max. Marks : 70

- Notes :
1. Solve **any five** questions.
 2. All questions carry equal marks.
 3. Assume suitable data wherever necessary.

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| 1. | a) Discuss various issues in the design of Distributed operating systems. | 8 |
| | b) Write a short note on: Lamport's logical clocks. | 6 |
| 2. | a) What are the advantages of a microkernel over a monolithic kernel? | 7 |
| | b) Write detailed note on Raymond's Tree based Algorithm. | 7 |
| 3. | a) Suppose in Lamport's logical clock each node i increment its clock by a fixed positive constant d_i on an event (instead of incrementing by 1). Will the clock works correctly if the d_i 's are different for different i ? Justify your answer. | 8 |
| | b) Why does the Chandy-Lamport Global State collection algorithm require that the channels should be FIFO? How can we implement this algorithm in the real-world where the channels are not FIFO? | 6 |
| 4. | a) Differentiate implementation rules of Vector clock and Lamport's clock. | 8 |
| | b) What do you understand by external and internal clock synchronization? What is fault tolerant averaging? How it is used in these schemes of clock synchronization? | 6 |
| 5. | a) Which are different deadlock handling strategies in distributed systems. | 6 |
| | b) Describe an Edge-chasing Algorithm for deadlock detection in Distributed systems. | 8 |
| 6. | a) What are the design issues to be considered while designing a Real-time operating system? | 7 |
| | b) Explain the architecture of wireless networks as a Distributed system. | 7 |
| 7. | a) Explain the voting algorithms for controlling access to replicated data. | 7 |
| | b) Write in brief about the Mach operating system. | 7 |
| 8. | a) Discuss message passing model and Remote, Procedure calls model for communication. | 8 |
| | b) Write a short note on "Vector clocks". | 6 |
