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Code No. : 21904

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
M.Tech. (CSE: CBCS) I-Semester Main Examinations, January-2018

Advanced Operating Systems

Time: 3 hours

Max. Marks: 60

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. List the advantages of distributed system over traditional time sharing system.
2. Give an example for Lamport's logical clock.
3. List the basic requirements of the mutual exclusion.
4. How best and worst case performance is analyzed in mutual exclusion?
5. Compare load balancing and load sharing.
6. List various load distribution algorithms.
7. What is meant by fault tolerance?
8. Define Backward error recovery.
9. Explain about read-write conflict.
10. Define the term concurrency control in database system.

Part-B (5 × 8 = 40 Marks)

(All sub-questions carry equal marks)

11. a) Consider a distributed system where each node has its own clock. Assume that all clocks in the system are perfectly organized. Also, assume that the communication network is reliable. Write chandy Lamport algorithm for global state recording.
b) Illustrate how clocks are advanced and the dissemination of time occurs in system using vector clocks?
12. a) Show that in Lamport's algorithm the critical section is accessed according to the increasing order of timestamps.
b) Write the pseudo code for SUZUKI-KASAMI'S broadcast algorithm.
13. a) Draw and explain the flowchart for typical data access actions in distributed file systems.
b) Explain about write operation in read replication algorithm.
14. a) Explain about Domino effect with suitable example.
b) Illustrate the 2-phase commit protocol with an example.
15. a) Describe with neat Sketch, the distributed database system model.
b) What is the serializability condition for a fully replicated database system?
16. a) Draw the architecture of the distributed system and Explain.
b) Define BYZANTINE agreement problem? Address the solutions to the BYZANTINE agreement problem.
17. Answer any *two* of the following:
 - a) Explain the scenario of a distributed system without load distribution in detail.
 - b) Draw and explain the schematic of Kerberos authentication protocol.
 - c) A task consists of several subtasks. If these subtasks communicate synchronously with each other frequently, which scheduling policy would you recommend and why?