

**Faculty of Engineering Technology
Semester End Examination Question Paper-B.Tech.**

Department : Computer Science and Engineering
Programme : B.Tech.
Semester / Batch : 6th/2018
Date of Examination : 14/06/2021
Course Code : 19CSC313A
Course Title : Distributed and Cloud Computing

Semester End Examination-Theory

INSTRUCTIONS TO STUDENTS:

1. Answer Q.No.1 and Q.No. 2 – Mandatory/Compulsory
2. Answer any 2 from Q.No.3, Q.No.Q4 and Q.No.Q5
3. Use only SI units
4. Use of non-programmable scientific calculator is permitted
5. Use of data handbook permitted wherever applicable
6. Missing data may be appropriately assumed
7. Notations used have usual meaning
8. Send the scanned answer script to
jishmi.cs.et@msruas.ac.in /upload to ERP - Section A
prakashp.cs.et@msruas.ac.in /upload to ERP - Section B
chaitra.cs.et@msruas.ac.in / upload to ERP – Section
Within the prescribed time
9. Retain the original answer scripts and submit it to department without fail

Total Duration: 2 Hours

Maximum Marks: 50

IMPORTANT:

You may retain the question paper for future reference

| Q. No. | Question | Marks | CO |
|--------|--|-------|-------|
| 1 | <p>For the sub-questions 1.1 - 1.10, multiple choices are indicated as possible answers. You are supposed to pick and write any one of the choices as your answer in the answer booklet. (Each sub-question carries ½ (half) mark)</p> <p>1.1 Which of the following has all-or-nothing property?</p> <ol style="list-style-type: none"> Durability Isolation Openness Atomicity <p>1.2 In mutual exclusion, a process is expected to remain inside its critical section for _____</p> <ol style="list-style-type: none"> Infinite time Finite time Local time Global time <p>1.3 _____ is not a characteristic of global predicate.</p> <ol style="list-style-type: none"> Integrity Stability Safety Liveness <p>1.4 Which event is concurrent with the vector timestamp (2, 4, 6)?</p> <ol style="list-style-type: none"> (4, 6, 8) (3, 5, 7) (1, 3, 5) (1, 4, 6) <p>1.5 A schedule 'S' of 'N' transactions is _____ if it is equivalent to some serial schedule of the same 'N' transactions.</p> <ol style="list-style-type: none"> Non-Serial Conflict Serializability Serializable Both Non-Serial and Serializable <p>1.6 _____ enables communication between software written in different languages and running on different computers.</p> <ol style="list-style-type: none"> RMI CORBA RPC IPC | 05 | 1,2,3 |

| | | | |
|---|--|---|---|
| | <p>1.7 The _____ of a distributed system is determined by degree to which sharing new resources can be made available for use by a variety of client programs</p> <ol style="list-style-type: none"> Heterogeneity Transparency Scalability Openness <p>1.8 Which of these are not Conflicting Operations?</p> <ol style="list-style-type: none"> Write and Read Write and Write Read and Read Read and Write <p>1.9 The security threat which refers to the unauthorised alteration of information is called _____</p> <ol style="list-style-type: none"> Leakage Tampering Vandalism Eavesdropping <p>1.10 The _____ model deals with performance and with difficulty of setting time limits in a distributed system.</p> <ol style="list-style-type: none"> Failure Interaction Security Software | | |
| 2 | Explain the challenges related to heterogeneity in distributed systems | 5 | 3 |
| 3 | a. Explain different communication paradigms in a distributed system. | 6 | 1 |
| | b. Describe Remote Method Invocation with the role of each object and module involved in it. | 8 | 4 |
| | c. Identify and discuss the failure models for online shopping system. | 6 | 5 |
| 4 | a. Explain request reply protocol with a diagram. | 6 | 2 |
| | b. Consider a group chat application which enables instant messaging in a group. Discuss the characteristics of application and its membership management. | 6 | 4 |
| | c. Discuss the scenarios which show the need of authentication in the implementation of a secure distributed system. | 8 | 6 |
| 5 | <p>a. Scenario: Consider an Online Railway Ticket Reservation System with the following requirements.</p> <ul style="list-style-type: none"> Passenger login facility Entry of passenger details and requirements for travel Information to the passenger on availability of seats | 6 | 2 |

| | | | |
|--|---|----------|----------|
| | <ul style="list-style-type: none"> • Online payment of the fare • Cancellation within 8 days of reservation <p>Identify and discuss the appropriate architectural model(s) for the scenario.</p> | | |
| | b. Discuss the Two-Phase Commit Protocol for a distributed transaction clearly bringing out the working using appropriate illustrations. | 8 | 4 |
| | <p>c. Transaction A to transaction F are waiting for the locks held by other transactions. Following are the transactions waiting for:</p> <ul style="list-style-type: none"> i. A is waiting on D ii. B is waiting on C and F iii. C is waiting on E, F and B iv. D is waiting on A <p>Draw the wait-for graph for transactions A to F and identify the transactions which are deadlocked.</p> | 6 | 6 |

ooooooooOoooooooo

After undergoing this course students will be able to (CO):

- CO 1.** Explain the role of multithreaded , parallel and distributed programs in scientific and commercial applications and systems
- CO 2.** Describe steps to develop multithreaded applications devoid of faults such as race conditions and deadlocks
- CO 3.** Apply concurrency bug prevention mechanisms to develop thread safe libraries
- CO 4.** Design and develop parallel applications, in particular, exploiting data parallelism
- CO 5.** Design and develop reliable distributed applications considering different fault conditions
- CO 6.** Recommend one or more of concurrent, parallel or distributed computing solutions to an application with given functional and non-functional requirements