PG Even Semester Examination, September, 2023

COMPUTER SCIENCE

(10th Semester)

Course No.: MCSCC-1001 / MS-401

(Distributed Computing)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

Answer any five questions, taking one from each unit.

UNIT-I

1. (a) What problems are encountered while transferring message data from the address space of a sending process to the address space of a receiving process? How are these problems solevd? 6

   (b) Explain a failure handling technique for reliable interprocess communication. 5

   (c) What is heterogeneous distributed system? 3

2. (a) What is concurrency transparency? What are the properties necessary for a distributed system to provide transparent resoruce sharing mechanism? 5

   (c) What are passive attacks? What is Trojan horse attack and how can it damage computer systems? Explain. 5

10. (a) What is name space? Explain the techniques of partitioned name space. 5

    (b) Define encryption and decryption and give examples. 3

    (c) Explain symmetric and asymmetric cryptosystems. 6

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(b) Explain the principle and working of the processor pool model of distributed computing. 6

(c) Define synchronous and asynchronous modes of communication. 3

UNIT-II

3. (a) What is remote procedure call? Explain a basic model of remote procedure call. 4

(b) Explain communication protocols for remote procedure call. 6

(c) What are thrashing and false sharing? Explain. 4

4. (a) Wht is it difficult to achieve exactly same semantics for remote procedure call and local procedure call?

(b) What is distributed shared memory system? State and explain the design issues of distributed shared memory system. 7

(c) What are the approaches for structuring shared memory space? 2

UNIT-III

5. Explain the token passing algorithm for mutual exclusion in distributed computing. How failures are handled in this algorithm? 8+6=14

6. (a) When a scheduling algorithm becomes unstable? 4

(b) What is task assignment? Write the basic objectives of task assignment algorithms in distributed computing and explain. 2+4=6

(c) Distinguish between centralized and distributed algorithms for dynamic scheduling for load balancing. 4

UNIT-IV

7. (a) What is process migration? What are the levels of transparency required for a good process migration mechanism in distributed computing? 4

(b) What is distributed file system? Illustrate the features of distributed file system. 5

(c) Distinguish between structured and unstructured files. 5

8. (a) Explain mechanisms for freezing and restarting a process while carrying out process migration in distributed computing. 10

(b) Explain how remote files are accessed in distributed file system. 4

UNIT-V

9. (a) What are location transparency and location independency of naming system in distributed system? 4

(b) What is name resolution? Explain. 5