2017/EVEN/08/24/MCS–1001 (C)/ MS–401 (C)/573

PG Even Semester (CBCS) Exam., May—2017

COMPUTER SCIENCE

(10th Semester/4th Semester)

Course No. : MCS–1001 (C)/MS–401 (C)

(Distributed Computing)

Full Marks : 75
Pass Marks : 30

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, selecting **one** from each Unit

UNIT—I

1. *(a)* Suggest potential solution to a situation in the workstation model of distributed computing in which if a user logs onto a workstation that was idle until now and was being used to execute a process of another workstation. 5

(b) What are synchronous and asynchronous communications in distributed system? Explain the synchronization of communication process by using blocking and non-blocking types of semantics. 6

(c) What is idempotency in message communication? Explain how duplicate request messages are handled in distributed interprocess communication with examples. 4

2. *(a)* What is reliability of a computing system? How does a distributed computing system improve reliability? Explain. 4

(b) What do you mean by portability of a message passing system? Explain. 4

(c) Explain the message buffering technique in asynchronous communication. 4

(d) Explain heterogeneous distributed computing systems briefly. 3

UNIT—II

3. *(a)* What is distributed shared memory? Explain the structure of the shared memory space. 7

(b) What do you mean by memory coherence and access synchronization? Explain. 4

(c) Explain how slow, perfect and fast clocks are determined in distributed systems. 4

4. *(a)* Explain the basic RPC model and its implementation in distributed computing. 7

(b) Explain the active server centralized algorithm for clock synchronization in distributed system. 5

(c) What is event ordering in distributed system? Explain event ordering using happened-before relationship. 3

UNIT—III

5. *(a)* What is thrashing? How does thrashing occur? Explain how thrashing is handled in distributed system. 7

(b) What is load balancing? Explain the taxonomy of load balancing algorithm in distributed computing. 8

6. *(a)* What do you mean by process migration? Illustrate the process migration mechanism in distributed systems. 10

(b) Explain process migration transparency and concurrency transparency requirements in the design of distributed operating systems. 5

UNIT—IV

7. *(a)* What are the different types of transparencies required for a good distributed file system? Explain. 5

(b) What is data caching model of files? Explain the data transfer techniques in the data caching model of files. 7

(c) Explain structured and unstructured files. 3

8. What is file caching? Explain the critical decisions required for designing and implementing a distributed file system. 15

UNIT—V

9. *(a)* What is name agent? Explain the process of name resolutions. 5

(b) What is cryptography? Explain the basic requirements of a cryptosystem. 5

(c) What is Trojan Horse? Explain passive and active types of Trojan Horse program. 5

10. *(a)* Explain the location transparency and location independency of naming system for distributed system. 5

(b) What are worms? Explain how worms propagate and affect a network of computers. 5

(c) What is name server? Explain the functions of a name server. 5

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