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Question Paper Code: 92043

M.E. DEGREE EXAMINATION, OCTOBER - 2014.

Elective

Computer Science and Engineering (With Specialization in Networks)

01PNE517 – PRINCIPLES OF DISTRIBUTED SYSTEMS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Define distributed system.
2. State the purpose of the mobile agents with an example.
3. What is the difference between RMI and RPC?
4. What is meant by Marshalling the objects?
5. List the core operating system components.
6. What is message tampering?
7. What is digital signature?
8. What are the limitations of Lamport's clock?
9. Define Phantom deadlock.
10. What is meant by fault tolerant system?

PART - B (5 x 14 = 70 Marks)

11. (a) (i) List and Explain the challenges in the design of a Distributed system. (10)
(ii) Differentiate TCP and UDP protocols. (4)

Or

- (b) Explain the fundamental models of a distributed system. Also provide the purpose of the fundamental model. (14)

12. (a) Elaborate the design and implementation issues in remote method invocation. (14)

Or

(b) (i) Briefly explain about CORBA's common data representation with an example. (7)

(ii) Explain how group communication is implemented using multicast operation. (7)

13. (a) (i) Explain about the layers and core components of an operating system with a neat diagram. (10)

(ii) Define cryptography and list the uses of cryptography. (4)

Or

(b) Explain the characteristics of the file systems and list the essential requirements for the distributed file systems. (14)

14. (a) (i) Explain how synchronizing is done in physical clocks in distributed systems. (7)

(ii) Explain the Chandy and Lamport's snapshot algorithm for determining the global states of distributed system. (7)

Or

(b) Define critical section problem. Explain the algorithms used for achieving mutual exclusion in distributed systems. (14)

15. (a) Explain the concurrency control schemes based on timestamp ordering in detail. (14)

Or

(b) Explain how two - phase commit protocol for nested transaction, ensures that if the top-level transaction commits, all the right descendants are committed or aborted. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) How deadlock is detected in distributed environment. Explain the edge chasing algorithm for deadlock detection in distributed environment. (10)

Or

(b) Explain the working of DNS name servers. (10)