G 1476 (Pages : 2) Reg. No..................................

Name...................................

B.TECH. DEGREE EXAMINATION, MAY 2016

Sixth Semester

Branch : Computer Science and Engineering

CS 010 606 L01—DISTRIBUTED SYSTEMS (Elective I) [CS]

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

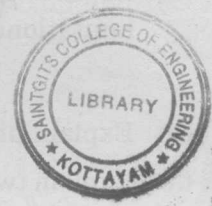Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 3 marks.

1. What is the role of middleware in a distributed system ?

2. In order to use distributed shared memory, a distributed synchronization service needs to be provided. Why ?

3. What do you mean by "lazy replication} ?

4. Explain Co-scheduling.

5. What do you mean by "dirty reads" ?

(5 × 3 = 15 marks)

Part B

Answer all questions.
Each question carries 5 marks.

6. Explain the challenges of distributed systems with respect to the transparency of its components.

7. List the steps in remote procedure calls.

8. How is naming issue addressed in Sun Network File System ?

9. Explain Fail-stop failures and Byznatine failures.

10. Explain 'lost-update problem' for concurrent transactions.

(5 × 5 = 25 marks)

Part C

Answer all questions.
Each full question carries 12 marks.

11. (a) Explain the design issues of distributed systems.

Or

Turn over

(b) Explain workstation model of distributed system. How is an idle workstation found and how can remote process be run transparently in an idle workstation ?

12. (a) What is marshalling ? Why is it necessary for inter process communication ? Explain.

Or

(b) Explain Lamport's algorithm for clock synchronization.

13. (a) Explain caching in server side as well as in client side for distributed file system.

Or

(b) Explain NFS architecture and its implementation.

14. (a) Explain graph theoretic deterministic algorithm for processor allocation. What are its limitations ?

Or

(b) Explain dispatcher/worker model of threads. Compare the model with pipeline model.

15. (a) Explain two-phase commit protocol for distributed transactions. Show the sequence of message transfer between co-ordinator and participants.

Or

(b) How will you detect deadlocks in transactions ? What are the methods to resolve these deadlocks ? Explain using suitable example.

$(5 \times 12 = 60$ marks$)$