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D – 3552

Reg. No. : .....

Name : .....

**Eighth Semester B.Tech. Degree Examination, December 2017  
Computer Science and Engg.  
(2008 Scheme)**

**08.804 : DISTRIBUTED SYSTEMS (R)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer **all** questions. **Each** question carries **four** marks.

1. Describe few commercial or social application sectors highlighting some of the associated established or emerging uses of distributed systems technology.
2. What is a mobile code ? Give examples of applications where the use of mobile code is beneficial.
3. What are the networking issues for distributed system ?
4. What is group communication ?
5. Differentiate between static and dynamic remote method invocation with the help of suitable example.
6. Compare the worker pool multi-threading architecture with the thread-per-request architecture.
7. What are the various alternatives of code migration ?
8. How does the NFS automounter help to improve the performance and scalability of NFS ?
9. How can write-ahead log in distributed transactions be used to recover from failures ?
10. A router separating process p from two others, q and r, fails immediately after p initiates the multicasting of message m. If the group communication system is view-synchronous, explain what happens to p next. **(10×4=40 Marks)**

P.T.O.



## PART – B

Answer **any one** question from **each** Module. **Each** question carry **20** marks.

**Module – I**

11. a) Explain in detail middleware models and services provided by middleware. **10**  
b) Explain different transparencies in distributed system with suitable examples. **10**

OR

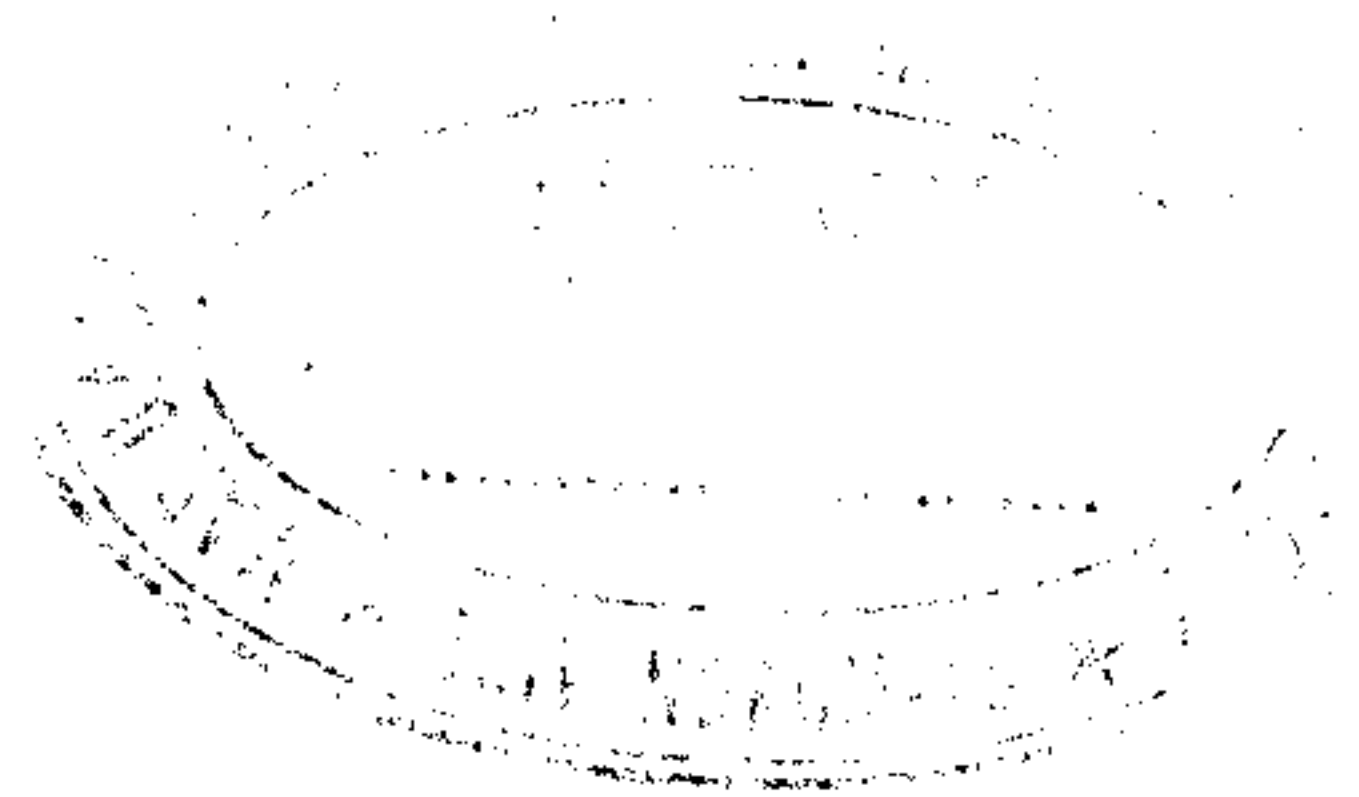
12. a) Following are the classical set of assumptions made by developers in distributed systems.  
i) The network is reliable  
ii) Latency is zero  
iii) Bandwidth is infinite  
iv) The network is secure.  
Discuss why these assumptions may be wrong. Justify these assumptions may not always true while designing the real distributed systems. **8**  
b) Explain the use of firewall in an organization. Describe how you would configure a firewall to protect the local network at your institution. What incoming and outgoing requests should it intercept ? **12**

**Module – II**

13. a) Explain how the conversation takes place between a client and a server in detail. **14**  
b) Explain the purpose of following with respect to RMI. **6**  
i) Dispatcher  
ii) Reflection and  
iii) Registry in RMI.

OR

14. a) Explain how group communication is facilitated by IP multicast. **10**  
b) What are threads ? Explain the various types of multi-threaded architectures with neat sketch. **10**



**Module - III**

15. a) Available copies replication is applied to data items A and B with replicas Ax, Ay and Bm, Bn. The transactions T and U are defined as :  
T : Read(A); Write(B, 44). U : Read(B); Write(A, 55).

Show an interleaving of T and U, assuming that two-phase locks are applied to the replicas. Explain why locks alone cannot ensure one-copy serializability if one of the replicas fails during the progress of T and U. Explain with reference to this example how local validation ensures one-copy serializability.

8

- b) Describe the components of the Distributed file server architecture.

12

OR

16. a) Explain in detail about concurrency control in transaction.

10

- b) Which features of the AFS design make it more scalable than NFS ? What are the limits on its scalability, assuming that servers can be added as required ?  
Which recent developments offer greater scalability ?

10

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