

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]

Dec-24-0464 (CBCS)

CS-602 (Distributed Operating System)

B.Tech-6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Attempt five questions in all, select one question from each section A, B, C, D. Section E (Question-9) is compulsory.

Section-A

1. Give unique characteristics of a distributed system. What is the issue of transparency in distributed systems? List various types of transparencies desired in a distributed system. (10)
2. What is Remote Procedure Call (RPC)? Give total working of RPC mechanism. How is it different from RMI? (10)

Section-B

3. What is a distributed deadlock? Give basic conditions for the occurrence of deadlock in a distributed system. Give an algorithm for detecting deadlock in a distributed system. (10)
4. What is a distributed election? Why do we require a distributed election? Give an algorithm for electing a group leader and give its network overheads in terms of network bandwidth consumed, client delay etc. (10)

Section-C

5. What is distributed shared memory and what is its need? Explain page based distributed shared memory model in detail. (10)

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6. Explain shared variable based distributed memory. How is it different from other shared memory models like page based distributed memory? Give its benefits over other models and also outline its drawbacks. (10)

Section-D

7. What is caching? What is its role in a distributed file system? Explain Network File System and role of caching in it. (10)
8. How can we reduce latency in distributed file system? What are stateless and stateful architectures? Explain in the context of (Network File System) NFS and AFS (Andrew File System). (10)

Section-E (Compulsory)

9. Attempt all questions. (10×2=20)
 - I. Differentiate between scalability and openness issue in a DS.
 - II. Differentiate between TCP and UDP connection setup in IPC.
 - III. Write in short about Network Time Protocol.
 - IV. What is external data representation?
 - V. What is middleware? Name any two popular middleware.
 - VI. When is replication desirable in DS? When is it undesirable?
 - VII. How are Vector clocks better than simple Lamport clocks?
 - VIII. What is blocking and non-blocking send/receive in IPC?
 - IX. How is object based distributed memory better than other methods? Write in short.
 - X. Differentiate between connection oriented and connectionless service.