

Time: 3 hours

Total Marks: 80

- N.B.**
- 1. Question No. 1 is compulsory**
 - 2. Attempt any three questions from remaining five questions**
 - 3. Assume suitable data if necessary and justify the assumptions**
 - 4. Figures to the right indicate full marks**

- Q1 Answer the following questions.
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|---|---|----|
| A | Identify and explain five issues in distributed systems. | 05 |
| B | Analyze how Ricart-Agrawala's algorithm optimizes the message overhead in achieving mutual exclusion. | 05 |
| C | Describe the desirable features of a global scheduling algorithm. | 05 |
| D | Compare processes and threads. | 05 |
- Q2
- | | | |
|---|---|----|
| A | Explain the message communication model in distributed systems, covering transient synchronous, transient asynchronous, persistent synchronous, and persistent asynchronous communications. | 10 |
| B | Describe the working of Remote Procedure Call (RPC) in detail, with the help of a diagram. | 10 |
- Q3
- | | | |
|---|---|----|
| A | Explain the Suzuki-Kasami Broadcast Algorithm for mutual exclusion. | 10 |
| B | Analyze the architecture and performance of the Andrew File System (AFS) compared to the Network File System (NFS). Discuss the advantages and limitations of each. | 10 |
- Q4
- | | | |
|---|--|----|
| A | Compare load sharing, task assignment, and load balancing strategies for scheduling processes in a distributed system. | 10 |
| B | Explain the Bully Election algorithm with the help of an example. | 10 |
- Q5
- | | | |
|---|--|----|
| A | Discuss different data-centric consistency models in detail. | 10 |
| B | Explain Maekawa's algorithm for mutual exclusion and specify the properties of the Quorum Set. | 10 |
- Q6
- | | | |
|---|--|----|
| A | Describe code migration in distributed systems. | 10 |
| B | Explain the features of Distributed File Systems (DFS) and draw and explain the model file service architecture. | 10 |
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