

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat labelled diagrams **WHEREVER** necessary.

**Q.1** What are routing overlays? What is the purpose of routing overlays? State and explain the tasks of routing overlays. (10)

**OR**

**Q.1** List the various models used for building distributed computing systems. With the help of neat diagram explain any one in detail. (10)

**Q.2** Signify the importance of Remote Method Invocation (RMI) in distributed computing. Explain Java RMI architecture in detail. (10)

**OR**

**Q.2** List the important issues to be considered in the design of IPC protocol for a message passing system. Why is synchronization a central issue in communication structure? How it is resolved? (10)

**Q.3** Why are threads important in processes? State and explain the commonly used ways to organize the threads of a process. (10)

**OR**

**Q.3** What is process migration? Justify the use of process migration with its implications. State the advantages of process migration. (10)

**Q.4** What is the role of election algorithms? State and explain the bully algorithm with example. Compare it with the ring election algorithm. (10)

**OR**

**Q.4** What is the use of timestamp ordering protocol? Explain in detail with example. How does it overcome the drawbacks of locking protocols? (10)

**Q.5** What is distributed shared memory? Draw a neat diagram and discuss the architecture of distributed shared memory. (10)

**OR**

**Q.5** Enlist the consistency models of distributed shared memory. Elaborate any two of them in detail. (10)

**Q.6** Why and where is security important in distributed system? Where does digital signature finds its significance in this scenario? Justify with example. (10)

**OR**

**Q.6** What is key distribution problem? How does it differ for symmetric and asymmetric cryptosystems? How is key distribution problem resolved in symmetric and asymmetric cryptosystems? (10)

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