B.E. INFORMATION TECHNOLOGY SUPPLEMENTARY EXAM 2018 (OLD)

FOURTH YEAR, FIRST SEMESTER

DISTRIBUTED SYSTEMS

Time: 3 Hours   Full Marks: 100

Note: Answer any five questions.

1. (a) With a clear diagram explain the work principle of Lamport's system of logical clocks.

   (b) How vector clocks are maintained at each process? Formally state the fundamental property of vector clocks. **(10+7+3)**

2. (a) Define 'Global State'. Discuss the use of cuts of a distributed Computation. When does a cut become inconsistence?

   (b) Explain the Chandy-Lamport Algorithm for finding out the Distributed Snapshot. **(3+3+4+10)**

3. (a) What is distributed systems? List and explain different types of transparency in distributed systems.

   (b) Describe the different kinds of failure in Distributed Systems. How are they dealt in distributed systems? **(3+7+6+4)**

4. (a) What are the different strategies for handling deadlocks?

   (b) Describe the Chandy-Misra-Haas algorithm for and model for distributed deadlock detection with a suitable example. **(6+14)**

5. (a) Explain the basic requirements of any Mutual Exclusion Algorithms?

   (b) Discuss the Ricart-Agrawala algorithm for distributed Mutual Exclusion.

   (c) Prove that Lamport's algorithm for achieving distributed mutual exclusion is fair. **(3+12+5)**

6. (a) Why we need replication? Describe in detail about active replication.

   (b) In context of distributed file system discuss cache updation policies.

   (c) Discuss the architecture of Network File System. How is lookup implemented in NFS V3? **(3+3+5+5+4)**

7. Write a short on the following-   **(5x4)**
   (a) Quorum based approach
   (b) 8 fallacies of designing distributed system
   (c) Limitation of Lamport's Clock
   (d) Synchronization delay