

M.Tech(CSE) 1<sup>st</sup> Semester Examination -2019

Sub: Digital Signal Processing

Full Mark – 70

Time: 3Hrs

(Answer all questions. Figure in the right hand margin indicates marks.)

1. (a) Discuss different design approaches for operating systems. [7]
- (b) Explain message passing communication model used in distributed systems. What are the drawbacks of this system? [7]

OR

- (a) How does a vector clock is different than a Lamport's clock. Write down the representation and implementation rules for the vector clock. [4]
  - (b) Explain Chandy-Lamport's Global State Recording Algorithm with a suitable example. [10]
2. (a) Why it is difficult to achieve mutual exclusion in case of a distributed system as compared to single-processor system? What are the requirements from a mutual exclusion solution? [4]
  - (b) Explain Lamport's algorithm for mutual exclusion with a suitable example. What optimization can made to this algorithm and why? [10]

OR

- (a) Explain different metrics used to measure the performance of a mutual exclusion algorithm [4]
  - (b) Write and explain Raymond's Tree based algorithms for distributed Mutual exclusion with a suitable example [10]
3. (a) Differentiate Resource and communication deadlocks in distributed system. Explain different approaches used for distributed deadlock handling. [7]
  - (b) Explain Ho-Ramamoorthy's 2-phase algorithm used for deadlock detection [7]

OR

What are the different data structures used in Chandy-Misra-Haas's Edge-Chasing Algorithm? Write down the algorithm and its performance. [14]

4. (a) What is a distributed file system? Explain the architecture and data access steps for distributed file system. [7]
- (b) Discuss *Caching*, *Writing Policy*, and *Cache Consistency* design issues in distributed file system [7]

OR

- (a) Explain the architecture of distributed shared memory. What are the advantages of using DSM over a message passing system [4]
  - (b) What is memory coherence? Discuss different forms of memory coherence [10]
5. (a) How the distributed scheduling is different than uni-processor scheduling? What is load? Write down the classification load distribution algorithms. [7]
- (b) Discuss sender initiated load distributing algorithm with a flow diagram [7]

OR

- (a) Discuss different components of a load distributing algorithm [7]
- (b) Discuss Above-average symmetric load distributing algorithm. [7]