

Total No. of Questions : 8]

SEAT No. :

P1452

[Total No. of Pages : 2

[6004]-574

B. E. (Information Technology)
DISTRIBUTED SYSTEMS
(2019 Pattern) (Semester - VIII) (414450)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Figures to right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable data, if necessary.

Q1) a) What are the general characteristics of inter-process communication? What are various types of Synchronous and asynchronous communication in IPC? Why it is blocking receive has no disadvantages in Java. [8]

b) What is Network virtualization? What are the types of overlay networks? What are the various advantages of overlay networks? [9]

OR

Q2) a) Describe Lamport's clock algorithm and give an example of how to order events in a distributed system. What are the algorithm's limitations? [8]

b) Why do we need an election algorithm? Using appropriate diagrams, describe the bully algorithm step-by-step. [9]

Q3) a) What are the key issues in Replica Management? Explain the following with respect to content replication and placement with suitable diagram. [9]

- i) Permanent Replicas
- ii) Server-Initiated Replicas
- iii) Client-Initiated Replicas

b) What is a primary-based protocol in a consistency protocol? Explain the working of replicated write protocols with active replication. [9]

OR

P.T.O.

- Q4)** a) What is checkpointing in a distributed system? Explain the working of Coordinated checkpointing recovery mechanism. [9]
- b) What are two primary reasons for replication? Explain the causal consistency model with suitable example using distributed shared database. [9]

- Q5)** a) Describe the architecture of Sun Network File System in details. [8]
- b) What is a Directory Service? What is the difference between DNS and x500? Describe in detail the components of X.500 service architecture. [9]

OR

- Q6)** a) Describe the design of a peer-to-peer download system designed to support very large multimedia files. How does the BitTorrent protocol operate? [8]
- b) What are web services? Describe with a suitable diagram the general organization of the Apache web server. [9]

- Q7)** a) Explain the following in brief: [9]
- i) Wearable devices
 - ii) PVM
 - iii) JINI
- b) Explain with an application (e.g., Travel Booking Service) various key components of Service Oriented Architecture. [9]

OR

- Q8)** a) Explain in brief the following Distributed System monitoring tools. [9]
- i) Zabbix
 - ii) Nagios
- b) Explain in brief following Microkernels. [9]
- i) Mach
 - ii) CHORUS

