Total No. of Questions :12]

SEAT No. :

P2820

[Total No. of Pages :3

[5154] - 201

B.E. (Information Technology)

DISTRIBUTED SYSTEMS

(2008 Course) (Semester - II) (414448)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer to the two sections should be written in separate answer books.***
2) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from section - I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from section - II.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data if necessary.***

SECTION-I

Q1) a) Define Distributed Systems? Give Two examples and explain each in details. **[8]**

b) How do you handle heterogeneity in distributed systems? **[8]**

OR

Q2) a) Discuss the challenge of heterogeneity and scalability while designing distributed systems. **[8]**

b) Which system is a better system? Distributed or parallel processing. **[8]**

Q3) a) What are the main issues related to the correctness of the IPC protocols of a message-passing system? Describe a suitable mechanism for handling each of these issues. **[10]**

b) Why are transport-level communication services often inappropriate for building distributed applications? **[8]**

OR

P.T.O.

Q4) a) Suggest a suitable mechanism for implementing each of the following types of IPC sematics. **[10]**

i) Last one

ii) At least once

iii) Exactly once

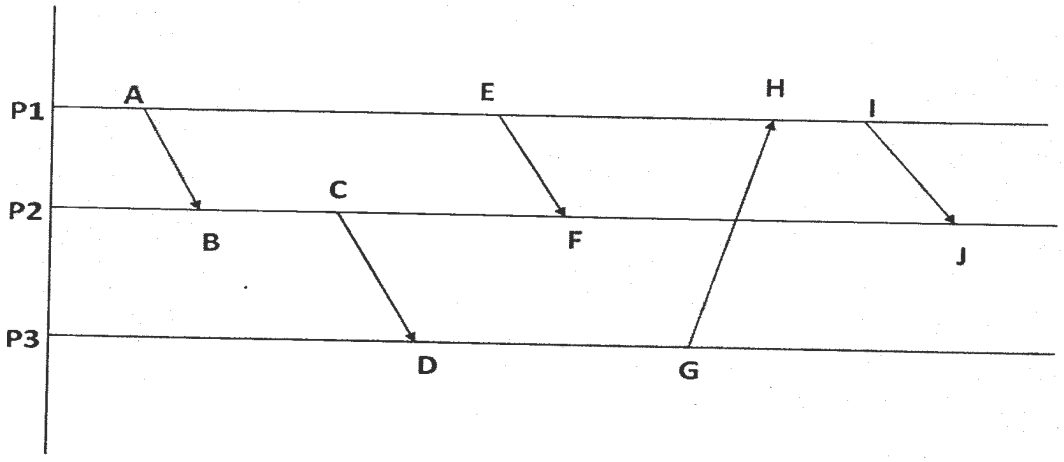
b) Discuss the techniques that makes LRPC more efficient that RPC. **[8]**

Q5) a) How do clock synchronization issues differ in centralized and distributed systems? **[8]**

b) What will happen if in a bully algorithm for electing a coordinator when two or more processes almost simultaneously discover that the coordinator has crashed? **[8]**

OR

Q6) a) Solve following timing diagram using Lamport's Logical Clock algorithm and Vector Time-stamp method both. **[10]**



b) Differentiate between internal and external synchronization of clocks in a distributed systems. **[6]**

SECTION-II

Q7) a) In what aspects the distributed file systems differ from centralized file system? **[8]**

b) Describe file sharing mechanism in CODA file systems. **[8]**

OR

Q8) a) Discuss following properties of distributed file systems **[8]**

i) High degree of availability.

ii) High degree of security.

iii) High degree of performance.

b) Discuss security implementations in Network File System. **[8]**

Q9) a) What is Distributed Shared memory? What are the design issues in implementation of DSM? **[8]**

b) What will happen if we prefer page size of virtual memory implemenation as the block size of the DSM system? **[8]**

OR

Q10)a) Explain and compare Strict Consistency model with Sequential Consistency model with one example each. **[8]**

b) What is the data centric consistency model? Explain in detail. **[8]**

Q11)a) What is the relationship among reliability, availability and maintainability. **[8]**

b) Write and explain Two phase commit and Three phase Commit protocols in details. **[10]**

OR

Q12)a) How failure is masked using redundancy? What is k fault tolerant system? **[8]**

b) What is triple modular redundancy? Explain with one example. **[10]**

ℰℰℰ