

Total No. of Questions : 12]

SEAT No. :

P890

[4659]-235

[Total No. of Pages : 4

B.E. (Computer Engineering)
DISTRIBUTED OPERATING SYSTEMS
(2008 Course) (Semester - II)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer three questions from each section.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) How do we achieve the security in the distributed operating system?
Explain it with access matrix model for security. **[6]**
- b) Explain the following issues with respect to RPC. **[10]**
- i) structure
 - ii) binding
 - iii) parameter and result passing
 - iv) semantics
 - v) error handling

OR

- Q2)** Explain the following with respect to distributed operating system: **[16]**
- a) Naming
 - b) Scalability
 - c) Compatibility
 - d) Process synchronization
 - e) Data migration
 - f) Computation migration.

P.T.O.

- Q3)** a) What is global state in distributed OS? How it ensure the stability and safety in DOS? [6]
- b) Why Lamport logical clock is required? What are the conditions satisfied by logical clocks? Also explain space time diagram with an example also discuss the limitation of Lamport's clock how do overcome those. [10]

OR

- Q4)** a) Give an example to show why event ordering is most important in most of the distributed application? Explain total ordering and compare it with partial ordering. [10]
- b) Discuss centralized approach for mutual exclusion. What are the necessary and sufficient condition that mutual exclusion algorithm should satisfy? [6]

- Q5)** a) Discuss the impact of message loss following deadlock detection algorithms. [10]
- i) a path pushing algorithms
- ii) a edge chasing algorithms
- b) Explain the Lamport's algorithm for mutual exclusion. Show that in Lamport's algorithm the critical section is accessed according to the increasing order of timestamp. [8]

OR

- Q6)** a) Distributed deadlock detection algorithms normally have substantial message overhead, even when there is no deadlock. Instead of using a deadlock detection algorithm, we can handle deadlocks in distributed systems simply by using "timeouts" i.e. after waiting certain time declares that it is deadlock, what are the risks in using this method? Explain the above scenario by comparing this with any deadlock detection algorithm. [10]
- b) Show that Byzantine agreement cannot always be reached among four processor if two processor are faulty. [8]

SECTION - II

- Q7)** a) What is distributed scheduling? Why it is needed? What are the different issues in load distribution? Explain sender initiated algorithm in detail. **[12]**
- b) Discuss distributed shared memory system with architecture. What is the main motivation behind implementing DSM. **[6]**

OR

- Q8)** a) What is distributed scheduling? Why it is needed? What are the different issues in load distribution? Explain receiver initiated algorithm in detail. **[12]**
- b) What are various coherence protocols used in DSM? Give the brief about each. **[6]**

- Q9)** a) Explain backward error recovery. What are various approaches for backward error recovery? What are the major problems associated with backward error recovery approach? **[8]**

- b) What is Rollback? How does it help in recovery mechanism? Explain in details the rollback recovery algorithm. **[8]**

OR

- Q10)**a) What is voting? Explain voting protocol in designing a fault tolerance system in distributed environment. **[8]**

- b) How do we achieve the security in the distributed operating system? Explain it with access matrix model for security. **[8]**

- Q11)**a) What is the cluster? How do you compare cluster with distributed system? How do we classify the clusters? Give any suitable example of the cluster. **[10]**

- b) What are web services? How do you compare it to components? And the Compare between service oriented architecture and component based architecture. **[6]**

OR

Q12)a) Explain the relation of the following system with distributed system:[10]

- i) cluster computing
- ii) grid computing
- iii) cloud computing
- iv) service oriented architecture

b) Explain the following with respect to cloud computing: [6]

- i) elements of cloud computing
- ii) features of cloud computing
- iii) advantages and disadvantages

