B.E. (Computer Engineering)
DISTRIBUTED OPERATING SYSTEMS
(2008 Course) (Semester - II) (410448)

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

Instructions to the candidates:

1)   Answer 3 questions from each section.

2)   Answers to the two sections should be written in separate answer books.

3)   Figures to the right indicate full marks.

4)   Assume suitable data, if necessary.

SECTION - I

Q1) a)   In what respect are distributed computing systems better than parallel processing systems? Give examples of three applications for which distributed computing systems will be more suitable than parallel processing systems. **[7]**

b)   Explain the RPC mechanism in detail with the help of a diagram. **[7]**

c)   Explain different issues in Inter Process Communication. **[4]**

OR

Q2) a)   Discuss the relative advantages and disadvantages of the various commonly used models for configuring distributed computing systems? Which model do you think is going to become the most popular model in future? Give reasons for your answer. **[7]**

b)   Explain different desirable features of good message passing system.**[7]**

c)   What is group Communication? **[4]**

Q3) a)   Explain in detail middleware models and services provided by middleware. **[8]**

b)   Differentiate between internal synchronization and external synchronization of clocks in a distributed systems. Externally synchronized clocks are also internally synchronized, but the converse if not true. Explain why.**[8]**

OR

Q4) a) Explain different architectural models of distributed system. **[8]**

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

Q5) a) Compare centralized algorithms and distributed algorithms for Mutual exclusion. **[8]**

b) Discuss why advance knowledge of the resource usage of processes is essential to avoid deadlocks. Why the deadlock avoidance strategy is never used in distributed systems for handling deadlocks? **[8]**

OR

Q6) a) Explain Token-Passing Approach for Mutual Exclusion. **[8]**

b) Prove that the following resource allocation policies prevent deadlocks: **[8]**

i) Ordered requests

ii) Collective requests

SECTION - II

Q7) a) Explain mechanisms for building distributed file system. **[10]**

b) Explain components of load distributing algorithms. **[8]**

OR

Q8) a) Explain issues to be considered in design of DSM system. **[10]**

b) Explain differences between load balancing and load sharing approaches? **[8]**

Q9) a) What is an access matrix? Explain how the following issues can be handling in a security system that uses access matrix for access control **[8]**

i) Deciding the contents of access matrix entries

ii) Validating access to objects by subjects.

b) Explain the approaches for backward error recovery. **[8]**

OR

*Q10)*a) Explain the difference between synchronous checkpointing and asynchronous checkpointing. **[8]**

b) Explain the majority based dynamic voting protocol in detail. **[8]**

*Q11)*a) Explain the basic Service Oriented Architecture with suitable diagram.**[8]**

b) Enlist concepts of Cluster and Grid Computing, and explain how Grid Computing is different from Cluster Computing. **[8]**

OR

*Q12)*a) Explain the major steps involved in SOA design and development. **[8]**

b) Enlist different types of Grids and explain how Grid computing works.**[8]**

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