Duration: 3hrs   **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
       (2) Attempt any three questions out of the remaining five.
       (3) All questions carry equal marks.
       (4) Assume suitable data, if required and state it clearly.

1	Attempt any FOUR	[20]
a	Explain issues in designing Distributed system	
b	Compare NOS and DOS	
c	Explain desirable features of global scheduling algorithm	
d	Explain the need of election algorithm.	
e	Justify how Ricart-Agrawala's algorithm optimized the Message overhead in achieving mutual exclusion	
2 a	What is Remote procedure call? Explain how transparency is achieved in RPC	[10]
b	Explain various forms of message oriented communication with suitable example	[10]
3 a	What is logical clock? Why are logical clocks required in distributed systems? How Lamport does synchronizes logical clock? Which events are said to be concurrent in Lamports timestamp	[10]
b	Explain Chandy -Misra_Hass Algorithm for distributed deadlock detection.	[10]
4 a	Explain different load estimation and process transfer policies used by load balancing algorithms.	[10]
b	Describe code migration issues in details	[10]
5 a	Discuss and differentiate various client consistency models.	[10]
b	Explain Absolute ordering and Casual ordering process with the help of example for many to many communication.	[10]
6 a	List desirable features of distributed File system. How are modifications propagated in file caching schemes?	[10]
b	Discuss Raymonds tree based algorithm of token based in distributed mutual exclusion	[10]

****