

Seventh Semester Examination – 2006

ADVANCE OPERATING SYSTEM

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory
and any five from the rest.

The figures in the right-hand margin
indicate marks.

1. Answer the following questions : 2×10
- (a) List the key characteristics responsible for the usefulness of Distributed Systems.
 - (b) Define the term “transparency” in a distributed system.
 - (c) What is naming service ?

P.T.O.

- (d) What has driven the move from centralized to distributed systems ?
- (e) In what ways does an RPCCall resemble/differ from a Local Procedure Call ?
- (f) What is meant by the term *idempotent operation* ?
- (g) Discuss and compare Monolithic versus micro Kernels.
- (h) Explain the intuitive appeal of deadlock avoidance over deadlock prevention.
- (i) What are the essential features of a protection system ?
- (j) Define and differentiate between synchronous vs. asynchronous computations ?
2. (a) Define and briefly discuss the term "transparency" as it pertains to distributed systems. 5

2. (b) Discuss the reasons why it is not possible to provide a system wide common (global) clock. 5
3. (a) What is consistency maintenance in distributed systems and what are its primary categories. 5
3. (b) Develop a system model for Deadlock then using a Resource allocation graph illustrate a deadlock. 5
4. (a) Discuss a technique by which RPCs (within the same computer) can be replaced in a threaded environment, for increasing performance. 5
4. (b) In relation to Lamport's Logical Clocks, use a space-time diagram to show events that are :
- (i) Causally related
- (ii) Concurrent. 5
5. (a) Discuss the metrics used in evaluating the performance of Distributed Mutual Exclusion algorithms. 5

- (b) Discuss the issue of creating a new *process* versus creating a *thread*. 5
6. (a) Explain the mechanism of receiver initiated load distribution algorithms in distributed System. 5
6. (b) What is the basic concepts of Network File System? Discuss the features of Sun NFS Distributed File System. 5
7. (a) Discuss the Generalized Non-Token Based Distributed Mutual Exclusion algorithm. 5
- (b) What is the basic concepts of Distributed Shared memory (DSM)? What are the main approaches to the implementation of DSM ? 5
8. (a) What are the different methods to implement access matrix for security and protection of system resources. 5
- (b) What are the major issues in designing an operating system for multiprocessor system ? 5