Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.TECH(CSE)/SEP.SUPPLE/SEM-7/CS-704D/2012

2012

ADVANCED OPERATING SYSTEM

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) Which one is not a distributed system ?

   a) *V*-system b) Amoeba

   c) The Sprite system d) None of these.

   ii) Minimum ..... number(s) of processes can create deadlock.

   a) four b) three

   c) two d) one.

   iii) Fruitless migration of processes is known as

   a) process thrashing b) load-balancing

   c) load sharing d) process scheduling.

   iv) What-for is used for

   a) deadlock detection b) deadlock prevention

   c) deadlock avoidance d) deadlock recovery.

v) For designing distributed file system ..... transparencies are required.

a) assess transparency

b) naming transparency

c) replication transparency

d) all of these.

vi) Granularity of a Distributed Shared Memory (DSM) system refers to the

a) block size of the DSM

b) total size of the DSM

c) block size of the process

d) none of these.

vii) A thread shares with other threads belonging to the same process are

a) code section and data section

b) other operating system resources

c) both (a) and (b)

d) none of these.

viii) Critical region is

a) a code segment of a program that needs exclusive access to shared resources

b) a high level synchronization construct

c) a region of a program which is shared among other cooperative processes

d) a region or portion of operating system used for handling critical situations.

ix) According to Ricart-Agrawala algorithm if P_1 wants to execute the critical section and P_2 is already executing in the critical section, then P_2 will reply to the request of P_1

a) if always

b) if timestamp of $P_1 < P_2$

c) if timestamp of $P_1 > P_2$

d) when P_2 has finished.

x) Which of the following is not a program threat ?

a) Worms b) Virus

c) Trojan horse d) None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Discuss the difference between network operating system and distributed operating system.
3. Briefly explain the different kinds of transparency properties desirable in a distributed system.
4. What is critical section problem and how is it solved by monitor ? 2 + 3
5. What are the advantages of user level thread and kernel level thread ? $2 \times 2½$
6. Briefly describe the Lamport logical clock. What are its limitations ? 3 + 2

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Explain briefly the concept of RPC.

   b) Discuss how process migration is done in a distributed system.

   c) Explain diskless workstation. 6 + 6 + 3

8. a) What is Clock synchronization ? How computer clocks are implemented ? What is clock drift ?

   b) What do you mean by a happened-before relation ? What are the conditions and Implementation Rules for happened-before relations satisfy ?

   c) Describe Ricart-Agrawala distributed mutual exclusion algorithm. (2 + 2 + 1) + (2 + 3) + 5

9. a) What is distributed scheduler ? Write down the techniques for scheduling process of a distributed system.

   b) Explain distributed shared memory with diagram.

   c) Define global and local states in distributed system.

   (2 + 4) + 6 + 3

10. a) Briefly describe process synchronization in multiprocessor operating system using Test abd set instruction and swap instruction.

    b) Write down the general structure of a cryptographic system. Name the different types of cryptographic system.

    c) Write down the difference between virus and worms. Briefly describe digital signature. 6 + (3 + 2) + 4

11. Write short notes on any *three* of the following : 3 × 5

    a) Stateless and stateful server

    b) Models of Deadlock

    c) Hypercube Architecture

    d) Distributed file system

    e) Queing Theory.

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