



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. |

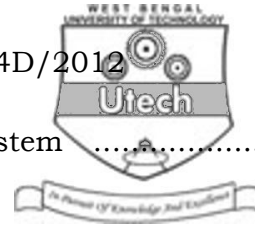
iv) What-for is used for

- | | |
|-----------------------|------------------------|
| a) deadlock detection | b) deadlock prevention |
| c) deadlock avoidance | d) deadlock recovery. |

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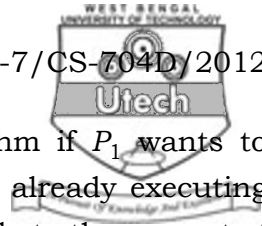
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- v) For designing distributed file system
transparencies are required.
- a) assess transparency
 - b) naming transparency
 - c) replication transparency
 - d) all of these.
- vi) Granularity of a Distributed Shared Memory (DSM) system refers to the
- 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.

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- 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
- if always
 - if timestamp of $P_1 < P_2$
 - if timestamp of $P_1 > P_2$
 - when P_2 has finished.
- x) Which of the following is not a program threat ?
- Worms
 - Virus
 - Trojan horse
 - None of these.

GROUP – B**(Short Answer Type Questions)**Answer any *three* of the following. $3 \times 5 = 15$

- Discuss the difference between network operating system and distributed operating system.
- Briefly explain the different kinds of transparency properties desirable in a distributed system.
- What is critical section problem and how is it solved by monitor ? $2 + 3$
- What are the advantages of user level thread and kernel level thread ? $2 \times 2\frac{1}{2}$
- Briefly describe the Lamport logical clock. What are its limitations ? $3 + 2$

GROUP – C**(Long Answer Type Questions)**Answer any *three* of the following. $3 \times 15 = 45$

- Explain briefly the concept of RPC.
 - Discuss how process migration is done in a distributed system.
 - Explain diskless workstation. $6 + 6 + 3$

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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 and 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
- Stateless and stateful server
 - Models of Deadlock
 - Hypercube Architecture
 - Distributed file system
 - Queing Theory.

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