



Name :

Roll No. :

Invigilator's Signature :

**CS/B.TECH (CSE)/SEM-7/CS-704D/2012-13
2012**

ADVANCED OPERATING SYSTEMS

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 :

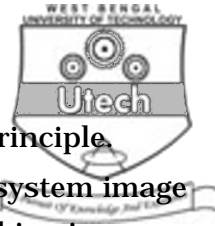
10 × 1 = 10

i) Which of the following is for global snapshot algorithm ?

- ☒ a) Chandi Lamport
- b) Lamport's Logical Clock
- c) Ricart Agarwala
- d) None of these.

ii) Semaphores are

- a) suitable for data abstraction
- b) structured
- ☒ c) both
- d) none of these.



iii) Distributed OS works on the following principle.

- a) file foundation b) Single system image
- c) Multi system image d) Networking image.

iv) Regarding to a thread,

- a) multiple threads in a process may share the same address space
- b) a complete independent address space needs to be allocated
- c) when it (thread) is blocked, all the threads in the same process must also be blocked
- d) none of these.

v) Location transparency

- a) allows are movement of resources and clients within a system without affecting the operations of users or programs
- b) enables local and remote resources to be accessed using indential operations
- c) hides whether a resource is in memory or on disk
- d) enables resources to be accessed without knowledge of their location.

vi) In synchronous communication,

- a) A sender continues immediately after it has submitted its message for transmission
- b) the sender is blocked until its messae is stored in a local buffer at receiving host, or to the receiver
- c) timing plays a crucial role. The two successive messages may have a temporal relationship such as those in video and audio streams in multimedia applications
- d) a message that has been submitted for trnasmission is stored by the communication system as long as it takes to deliver it to the receiver.



- vii) Achieving mutual exclusion
 - a) is only required in distributed system, and is never needed in single processor system
 - b) is primarily used in distributed systems to enhance the performance
 - c) is necessary for a process to read or write certain shared data
 - d) none of these.
- viii) Regarding to idempotent operation,
 - a) appending data to a file is an idempotent operation
 - b) adding an non-zero number to a bank account is not an idempotent operation
 - c) adding one element to a set is not an idempotent operation
 - d) none of these.
- ix) In making remote procedure call (RPC)
 - a) the parameters can be passed by reference and pointer values
 - b) the parameters can only be passed by value
 - c) the parameters can be any objects
 - d) the parameters can only be object references.
- x) In making remote method invocation (RMI)
 - a) the parameters can only be passed by value
 - b) the parameters can be object references
 - c) only remote objects can be used as parameters
 - d) only local objects can be used as parameters.

GROUP - B

(Short Answer Type Questions)

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

2. a) What is the difference between distributed systems and networked systems ? 2
- b) How to synchronize processes across nodes in a distributed system ? Explain using Lamport's logical clock. 3



3. What should a distributed system do ? Mention two advantages over Centralized Systems. Are there any disadvantages ?
4. What is the advantage of Ricart & Agarwala method over Lamport's method for implementing mutual exclusion in distributed system ?
5. Write short note on any *one* :
 - a) Naming
 - b) Distributed shared memory
 - c) Process Migration.

GROUP - C

(Long Answer Type Questions)

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

6.
 - a) Discuss various methods to implement parallelism in process execution. 10
 - b) Write a two-processor parallel algorithm using any one of the above to implement the following : 5
"Read n number of elements and determine the difference between the average and max."
 7. Explain what schemes you would adopt to solve Producer Consumer problem with Bounded Buffer in
 - a) Centralized system
 - b) Distributed system.
 8. Describe Chandi Haas algorithm.
 9. Discuss different models with diagrams to implement distributed system.
-