MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

IT-704A

DISTRIBUTED OPERATING SYSTEM

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable. All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1 Answer *all* questions. $10 \times 1 = 10$

(i) Distributed OS Uses

(A) Layered kernel (B) Distributed kernel
(C) Micro kernel (D) Monolithic kernel

(ii) Migration transparency is basically

(A) hide resource (B) hide location
(C) both (A) and (B) (D) none of these

(iii) Scalability in distributed OS is covered

(A) extend size (B) extend resources
(C) extend performance (D) all of these

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(iv) Cloud Computing is an example of

(A) distributed OS
(B) distributed computing
(C) both (A) and (B)
(D) none of these

(v) Distributed object is an example of

(A) referencing object (B) creating object
(C) both (A) and (B) (D) none of these

(vi) In distributed systems, link and site failure are detected by

(A) polling (B) handshaking
(C) token passing (D) none of these

(vii) The capability of a system to adapt the increase service load is called

(A) scalability (B) tolerance
(C) capacity (D) none of these

(viii) Network operating system runs on

(A) server
(B) every system in the network
(C) both (A) and (B)
(D) none of these

(ix) Which technique is based on compile-time program transformation for accessing remote data in a distributed-memory parallel system?

(A) cache coherence scheme
(B) computation migration
(C) remote procedure call
(D) message passing

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(x) For proper synchronization is distributed systems

(A) prevention from the deadlock is must

(B) prevention from the starvation is must

(C) both (A) and (B)

(D) none of these

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. What are the applications and advantages of Distributed OS? 5

3. Explain the desirable features of a good message passing system. 5

4. Why remote procedure call gets disrupted? Describe different types of call semantics used in RPC system? 2+3

5. Describe the implementation of the kernel in distributed operating system? Draw the diagram for different kernel design. 3+2

6. What is distributed deadlock? How the path pushing algorithm works to control the deadlock. 2+3

GROUP C
(Long Answer Type Questions)

Answer any *three* questions. 3×15 = 45

7. Explain the desirable features of good mutual exclusion algorithm. Show that how Ricart-Agarwala algorithm deals with mutual exclusion. 6+9

8. What are the main differences between the distributed Operating System and Network Operating System? Explain with suitable examples. 15

9. Explain all these operating system structures and also explain which one is used in Distributed OS. (i) Monolithic (ii) Micro kernel (iii) Layered approach. 5+5+5

10. Explain the design issues in distributed file system. Also explain the cash study of CODA file system. 7+8

11. Explain in detail the Lamport's concept of logical clocks. Give a suitable algorithm to collect the global state information. 9+6