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Total Number of Pages : 02

MCA
MCA306

3rd Semester Regular/Back Examination 2017-18

ADVANCED OS

BRANCH : MCA

Time: 3 Hours

Max marks: 100

Q. Code: B1165

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

- Q1** Answer the following questions : (2 x 10)
- a) An inconsistent global state, there is at least one message
 - A) Whose receive event is recorded but send event is not recorded
 - B) Whose send event is recorded but receive event is not recorded
 - C) both A and B
 - D) None of the above
 - b) Which of the following is an algorithm of Mutual exclusion based on token
 - A) Lamport's Algorithm
 - B) Maekawa's Algorithm
 - C) Suzuki Kasami Broadcast Algorithm
 - D) RicartAgrawala Algorithm
 - c) In a fully Connected network of m processors, it is impossible to reach a consensus if the number of faulty processors exceed
 - A) $\lfloor (m - 1) / 3 \rfloor$
 - B) $(m - 1) / 3$
 - C) $\lfloor (m - 1) / 3 \rfloor$
 - D) \sqrt{m}
 - d) Which of the following is/are call semantics in RPC
 - A) May-Be call semantics
 - B) Exactly-Once Call Semantics
 - C) At-Least-Once Call Semantics
 - D) All of the above
 - e) Which of the architecture, all processors have same access time to main memory
 - A) UMA
 - B) NUMA
 - C) NORMA
 - D) All of the above
 - f) In Receiver-Initiated Algorithms, the load distributing activity is initiated from an
 - A) Overloaded Sender
 - B) Under-loaded Receiver
 - C) Overloaded Receiver
 - D) Under-loaded Sender
 - g) Which of the following is a location policy
 - A) Random
 - B) Threshold
 - C) Shortest
 - D) All of the above
 - h) Two Phase Locking Protocol ensures
 - A) Serializability
 - B) Free Of Deadlock
 - C) Both
 - D) None of the above

- i) Which of the following is false regarding a Knot in RAG
 - A) a non-empty set
 - B) one or more cycle
 - C) Identical reachable set of each node
 - D) None of the above
- j) Which of the following is a wrong statement about Maekawa's Algorithm
 - A) It does not require permission from every site
 - B) It is free of deadlocks
 - C) It provides mutual exclusion
 - D) It is a non token based algorithm

Q2 Answer briefly the following questions (2x10)

- (a) Specify limitation of Lamport's clock.
- (b) What is forward error recovery?
- (c) Mention significance of a cycle in RAG.
- (d) How network operating system is different from distributed operating system?
- (e) Specify two inherent limitations in a distributed system.
- (f) Define a Livelock.
- (g) How update operation is implemented in the Write-Ahead-Log protocol?
- (h) Differentiate between LAN and WAN.
- (i) Specify the conditions satisfied by Lamport Logical clock.
- (j) What approach is followed in case of collision detection in CSMA/CD protocol?

Q3 (a) Define distributed Operating System. Discuss issue of Resource management in a distributed system. (8)

(b) Write down Lamport's mutual exclusion algorithm. (7)

Q4 (a) Define Causal ordering of message. Write steps of BirmanSchiper-Stephenson algorithm. (8)

(b) Define a global state. Discuss Chandy-Lamport Global state recording algorithm. (7)

Q5 (a) Show that Byzantine agreement cannot be reached among three processors, Where one processor is faulty assuming a fully connected network. (8)

(b) Explain necessary conditions for a deadlock. (7)

Q6 (a) Discuss components of a load distribution algorithm briefly. (8)

(b) How backward recovery is different from forward error recovery? Discuss how shadow page technique can help in recovery. (7)

Q7 (a) Discuss two phase locking protocol with an example. (8)

(b) Define Digital Signature. Discuss properties to be satisfied by it. (7)

Q8 Write Short notes on- (ANY THREE) : (5x3)

- (a) Authentication in Distributed System
- (b) Cuts in a distributed computation
- (c) Task Migration
- (d) Conventional Cryptography
- (e) Load distribution issues