Registration no: | | | | | | | | | | |

Total Number of Pages: 2 **M.TECH**

CSPC202

2nd Sem MTech Regular / Back examination – 2014-15

SUBJECT NAME: DISTRIBUTED OPERATING SYSTEMS

BRANCH(S): COMPUTER SC. & ENGG.,

Time: 3 Hours **Max marks: 70**

Q.CODE:T212

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

Q1 **Answer the following questions:** (2 x 10)

a) What are the parallel programming models ?
b) How a distributed system differs from a parallel system?
c) What is speed up and throughput? Write Amdahl's law.
d) List down the characteristics of a distributed system.
e) What is the need of marshalling and unmarsalling?
f) What do you mean by RPC?
g) Differentiate between name and directory service.
h) List down the concurrency protocols.
i) What do you mean by fault tolerance?
j) Distinguish between process and port identifiers.

Q2 a) Discuss the structures of parallel computers. Give examples for each structure. (5)
b) Distinguish between multiprocessor and multicomputer systems. How these system differs from multicore processors and SIMD array processors. (5)

Q3 a) Write the design goals of distributed systems. Why distributed algorithms are difficult to implement? (5)
b) How a synchronous distributed system differs from asynchronous distributed system? How the connectivity and exchange of messages are important for these distributed systems? (5)

Q4 Consider an asynchronous not completely connected reliable distributed system with N nodes. Write an algorithm to search an item X using this distributed system. Compute its time and message complexities using asymptotic notation. What would be the time and message complexity for the above algorithm for a synchronous reliable completely connected distributed system? (10)

Q5 a) Write a distributed algorithm for recording the global state assuming that each clock in the nodes of distributed system is perfectly synchronized and the communication network is reliable. (5)
b) Compare the time and message complexity of your algorithm with that of Chandy-lamport algorithm. Specify whether your algorithm is better that Chandy-lamport algorithm. (5)

Q6 a) Consider the design of distributed system having the major goal to achieve fault tolerance and security. What are the different ways these two goals can be achieved? (5)
b) Discuss the use of atomic broadcast protocol to achieve reliable communication. (5)

Q7 a) Discuss the different flexibilities provided by distributed file system when the system (5)

request to access data, files and physical memory location.

b) How cache consistency is maintained in distributed environment? Explain with example. (5)

Q8 Write short notes on any two: (5 x 2)

a) Kerberos system
b) Granularity
c) Load balancing
d) Memory coherence