(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2715 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION 2013-14

DISTRIBUTED SYSTEMS

Time : 3 Hours *Total Marks : 100*

Note :– (1) **All** questions are compulsory.

(2) All questions carry equal marks.

1. Attempt any **four** parts of the following : **(5×4=20)**

(a) How the distributed computing system is better than parallel processing system ? Explain.

(b) Discuss the impact of the absence of global clock in distributed systems.

(c) Define the term transparency. Explain important types of transparencies in distributed system.

(d) What is termination detection in distributed system ? Explain any algorithm for termination detection.

(e) What is Vector Clock ? How this maintains causal ordering ? Explain.

(f) Explain the following Distributed Computing Model :

(i) Mini Computer Model

(ii) Work Station Model

(iii) Work Station Server Model.

2. Attempt any **two** parts of the following : **(10×2=20)**

(a) What is Mutual Exclusion ? Describe the requirements of mutual exclusion in distributed system. Is mutual exclusion problem more complex in distributed system than single computer system ? Justify your answer.

(b) What do you mean by deadlock avoidance ? Explain in brief. Describe Edge-Chasing deadlock detection algorithm.

(c) Write and explain a non token based mutual exclusion algorithm. Describe its merit and demerits.

3. Attempt any **two** parts of the following : **(10×2=20)**

(a) Classify the agreement problems. Explain the applications of agreement algorithms.

(b) Write and explain various issues that must be addressed in design and implementation of distributed file system.

(c) Describe memory coherence. Briefly explain the write invalidate and write update protocols.

4. Attempt any **two** parts of the following : **(10×2=20)**

(a) What is checkpointing in message passing system ? Explain the recovery in message passing system using asynchronous checkpointing scheme.

(b) (i) Define the livelocks. What is the difference between a deadlock and livelock ?

(ii) Show that when checkpoints are taken after every K(K>1) message sent, the recovery mechanism suffers from the domino effect. Assume that a process takes a checkpoint immediately after sending the K^{th} message but doing anything else.

(c) Describe three phase commit protocol. How three phase commit protocol is different than two phase commit protocol ?

5. Write short notes on any **four** of the following :

(10×2=20)

(a) Describe the advantages and disadvantages of multiversion time stamp ordering over the ordinary time stamp ordering.

(b) Describe the optimistic concurrency control method. How this method avoids the drawbacks of locking ? Explain.

(c) (i) What is Phantom Deadlock ? Describe the conditions for the occurrence of phantom deadlock.

(ii) Describe the architecture of replicated transactions.