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**Question Paper Code : 45905**

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Nineth Semester

Information Technology

XCS 591 — DISTRIBUTED OPERATING SYSTEMS

(Common to 5 Year M.Sc. Computer Technology)

(Regulation 2003)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the categories of distributed computing system models.

2. Define blocking and non blocking types of semantics used for synchronization.

3. What are the tasks performed by server stub?

4. What is thrashing?

5. What is mutual exclusion?

6. Distinguish between wait die scheme and wait wound scheme.

7. What is the condition for a scheduling algorithm to be stable?

8. Illustrate the flow of execution of migrating process.

9. List the features of a good distributed file system.

10. Define explicit replication and implicit replication.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss eight forms of transparency relevant to open distributed processing. (8)

(ii) What is DCE? Describe the main components of DCE. (8)

Or

(b) (i) What are the methods for process addressing? Explain the primitives and methods used for process addressing. (8)

(ii) Discuss various types of buffering strategies used in inter process communication with illustration. (8)

12. (a) (i) Describe the types of messages involved in the implementation of RPC system with message formats. (8)

(ii) Describe various types of call semantics used in RPC system. (8)

Or

(b) (i) Explain about RRA protocol with diagram. (8)

(ii) Discuss the two protocols used for RMB strategy with diagram. (8)

13. (a) Differentiate among safe, unsafe, and deadlock states. Assume that in a system there are total 10 units of a resource for which four processes $P_1$, $P_2$, $P_3$ and $P_4$ are competing. Suppose the maximum units of the resource required by $P_1$, $P_2$, $P_3$ and $P_4$ are 3, 6, 5, and 4, respectively, and they are currently holding 2, 1, 3, and 2 units of the resource, respectively. Find out whether the current state of the system is safe or unsafe. If it is safe, enumerate all the safe sequences.

Or

(b) (i) Discuss the implementation techniques of logical clocks. (8)

(ii) Explain the working of bully algorithm with example. (8)

14. (a) List and discuss the issues in designing load balancing algorithm.

Or

(b) (i) Discuss the classification of messages to be forwarded and the mechanism used for message forwarding. (8)

(ii) Describe the issues in designing a threads package. (8)

15. (a) (i) Describe the factors affecting file accessing model of a distributed file system. (8)

(ii) Discuss the various cache validation schemes. (8)

Or

(b) (i) Discuss the file versions approach for recording file updates in a reversible manner. (9)

(ii) Discuss about absolute and relatives names type of object naming. (7)