



RM-7815

B. E. - IV (Sem. VIII) (I.T.) Examination

May / June - 2010

Distributed Systems

Time : 3 Hours]

[Total Marks : 100

**Instructions :**

(1)

नीचे दृष्टावेव निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. - 4 (Sem. 8) (I.T.)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Distributed Systems"/>	<input type="text"/>
Subject Code No. : <input type="text" value="7"/> <input type="text" value="8"/> <input type="text" value="1"/> <input type="text" value="5"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1&amp;2"/>	<input type="text"/>
	Student's Signature

- (2) Answers to each section must be written in **separate** answer book.
- (3) Figures to extreme right indicate maximum marks.
- (4) Make necessary assumptions, if required.
- (5) Draw figure and mention assumptions wherever required.

**SECTION - I**

- 1 (a) Answer the following : 10
  - (1) What is true DOS ?
  - (2) Explain the term fail-stop and Byzantine failure.
  - (3) What is the difference between monolithic kernel and Microkernel model ?
  - (4) Explain CSMA/CD protocol.
  - (5) Discuss issues need to be considered when design of RPC is in Heterogeneous environment.
- (b) Write short notes : (any two) 10
  - (1) Callback RPC
  - (2) RPC Server Management
  - (3) Workstation-Server model.

- 2 (a) Discuss problems that occur during IPC and also discuss various IPC protocol for client server communication. **10**
- (b) What is binding ? Which are the various issues involved in client ? **8**

**OR**

- (b) What do you mean by semantic transparency ? How to achieve it in the implementation of RPC ? **8**
- 3 Do as directed : (any two) **12**
- (1) What is Group Communication ? Explain Many-to-Many communication in detail.
- (2) Write a short note on IPC Buffering technique.
- (3) Discuss desirable features of good Message-Passing System.

**SECTION - II**

- 4 (a) Do as directed : **10**
- (1) Explain Mutable and Immutable files. **2**
- (2) Give full form of RNMBs. **1**
- (3) List the three priority assignment rules used by Distributed Systems during process migration. **1**
- (4) Define False Sharing **2**
- (5) Write down the steps involved in process migration. **1**
- (6) Explain "Delayed Write Scheme" in Distributed System. **3**
- (b) What are the advantages and disadvantages of NRMB method ? **4**
- (c) Explain different data locating methods that may be used in NRMB (Non Replicating Migrating Blocks) strategy. **6**

- 5 (a) A system consists of three processors  $p_1$ ,  $p_2$  and  $p_3$  and a process having four tasks  $t_1$ ,  $t_2$ ,  $t_3$  and  $t_4$  is to be executed on this system. Suppose  $E_{ij}$  is the cost of executing task  $t_i$  on processor  $p_j$ ,  $C_{ij}$  is the communication cost between tasks  $t_i$  and  $t_j$  when the two task are assigned to different processors. Let  $E_{11} = 31$ ,  $E_{12} = 4$ ,  $E_{13} = 14$ ,  $E_{21} = 1$ ,  $E_{22} = 5$ ,  $E_{23} = 6$ ,  $E_{31} = 2$ ,  $E_{32} = 4$ ,  $E_{33} = 24$ ,  $E_{41} = 3$ ,  $E_{42} = 28$ ,  $E_{43} = 10$ ,  $C_{12} = 35$ ,  $C_{13} = 3$ ,  $C_{14} = 8$ ,  $C_{23} = 6$ ,  $C_{24} = 4$  and  $C_{34} = 23$ . Find an optimal assignment of the tasks to the processors and calculate the cost of optimal assignment. Now compare this cost with the assignment cost of the case in which  $t_1$  and  $t_2$  are assigned to  $P_1$ ,  $t_3$  is assigned to  $P_2$  and  $t_4$  is assigned to  $P_3$ . 8
- (b) List and explain various services provided by a Distributed File System. 7

**OR**

- (b) Explain how a floating point number, signed infinity and signed zero are represented in external data representation used in heterogeneous system. 7
- 6 (a) Explain general principles for designing distributed file systems. 8
- OR**
- (a) Explain advantages of File Replication. 8
- (b) Discuss Load Estimation Policies with reference to Load Balancing Algorithms. 7