8. a) Why do most RPC systems support call-by-value semantics for parameter passing ? Justify your answer. 8

b) Suggest some programming practice that will reduce network block faults in a DSM system. 7

9. a) What are partial and total ordering in the distributed system ? What do you mean by distributed mutual exclusion ? 7

b) Name the main components of a distributed file system. What might be the reason for separating the function of distribution file system into those components. 8

10. a) Explain loosely coupled and tightly coupled systems in terms of both memory and processor. (with diagram) 8

b) Explain light weight RPC. Is it possible to implement light weight RPC in railway reservation system ? Justify your answer. 7

11. a) List the desirable features of a good distributed file system. 7

b) What is an immutable file ? How basic file operations like create, read, write and delete can be performed in this file system for shared files ? 2 + 6

2013

DISTRIBUTED OPERATING SYSTEM

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

i) In loosely coupled system the memory is

a) shared b) distributed

c) centralized d) none of these.

ii) Lightweight RPC is made for process communication between

a) cross-domain b) cross-machine

c) both of these d) none of these.

iii) Granularity refers in a distributed shared memory

a) page size b) block size

c) virtual address space d) logical address space.

iv) In file replication the cached copy is associated with

a) server

b) client

c) both the client & server

d) none of these.

v) Which deadlock model is used for resource acquisition ?

a) Single-unit b) AND

c) OR d) AND-OR.

vi) The main aspect of location transparency in distributed system is

a) name transparency b) user mobility

c) both (a) and (b) d) none the these.

vii) A prefix table contains

a) the destination network ID

b) the hop count reach to the network

c) token

d) all of these.

viii) Which of the following algorithms works on asymmetric key cryptography ?

a) DES b) IDEA

c) RSA d) None of these.

ix) In remote procedure call model the client & server stub can be generated

a) automatically b) manually

c) all of these d) none of these.

x) Thrashing is associated with

a) processes b) processors

c) threads d) all of these.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

3. What are the differences between network operating system & distributed operating system ?

4. Discuss the path pushing algorithm in distributed deadlock detection.

5. Explain the concept of logical clocks in distributed system.

6. Why should we implement a page based distributed shared memory at user level and what is required to achieve this ?

7. Briefly describe the architecture of distributed shared memory.

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. a) Describe some flexibility features that a message-passing system should provide to its users. Write suitable IPC primitives that will allow the users to take advantage of these flexibility features. 10

b) Explain weak consistency model with example. 5