GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER II (NEW) - • EXAMINATION - SUMMER 2016

Subject Code: 2720207

Subject Name: Distributed Computing and Applications

Date: 25/05/2016

Time: 10:30 am to 01:00 pm

Total Marks: 70

Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.1 1. In what respect are distributed computing systems better than parallel 02 **(a)** processing systems?

- 2. Differentiate between the monolithic kernel and microkernel approaches 05 for designing a distributed operating system. Discuss their relative advantages and disadvantages.
- 1. What are the disadvantages of remote procedure call over the local 03 **(b)** procedure call?
 - 2. Explain with example the significance of exactly-once semantics to handle 04 duplicate request messages.

Q.2 Why pointers or references can not be passed as parameters in remote 02 **(a)** 1. procedure call?

- 2. Differentiate static and dynamic load balancing algorithms.
- 1. What are the differences between socket programming using TCP/IP **(b)** 03 and socket programming using UDP/IP?
 - 2. What is callback RPC? Give an example of an application where 04 callback RPC may be useful.

OR

- (b) Write a program to implement a file transfer protocol between client and server 07 using socket API. The client sends a request to the server mentioning the name of the file. Server checks if the file exists or not. If the file does not exists, server sends appropriate message to the client otherwise the contents of the file will be sent to the client. On the client side, a new file will be created which will be the exact copy of the file on the server machine.
- Q.3 What is RMI? What are the tasks of stub and skeleton objects in RMI? Which 07 (a) are the major steps to write RMI program?
 - 1. What are the advantages of using page size as a block size? 03 **(b)**
 - 2. Discuss the significance of happened-before relation with respect to 04 global clock synchronization.

OR

- What is object request broker? What is IIOP? Explain working of IIOP with Q.3 (a) 07 respect to CORBA.
 - What is thrashing with respect to DSM? When it occurs? Which methods can 07 **(b)** be used to solve the problem of thrashing in DSM system?

Q.4 1. Explain the significance of wait-for graph for deadlock. 03 **(a)** 2. What are the advantages of using multithreaded process? 04

Discuss the different message-forwarding mechanisms used to forward the 07 **(b)** messages to the migrant process's new location

OR

07 (a) Discuss how two-phase commit protocol is useful to achieve atomicity. **Q.4**

05

- (b) What are flat and nested transactions? Explain in detail. What are the 07 differences between flat and nested transactions?
- Q.5 (a) Discuss the issues involved in freezing and restarting a process during process 07 migration.
 - (b) What is Simple Object Access Protocol? How does it work? Why do we need a **07** standard like SOAP?

OR

- Q.5 (a) Outline the replication scheme used in UDDI. Supposing that vector 07 timestamps are used to support this scheme, define a pair of operations for use by registries needing to exchange data.
 - (b) Discuss security threats and security policies in distributed systems.

07
