

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2024****Subject Code:2160710****Date:24-05-2024****Subject Name:Distributed operating system****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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) What are the main differences between a network operating system and a distributed operating system? **03**
- (b) What are the major issues in designing a distributed operating system? **04**
- (c) Differentiate between the monolithic kernel and microkernel approaches for designing a distributed operating system. Discuss their relative advantages and disadvantages. **07**
- Q.2** (a) What is "piggybacking" of a message? How does it help in reducing network traffic? **03**
- (b) What are the main similarities and differences between the RPC model and the ordinary procedure call model? **04**
- (c) What is a "deadlock"? What are the four necessary conditions for a deadlock to occur? Give suitable examples to prove that if anyone of the four conditions is absent, no deadlock is possible. **07**
- OR**
- (c) Prove with an example that an unsafe state is not a deadlock state. **07**
- Q.3** (a) Differentiate between preemptive and non-preemptive process migration. **03**
- (b) Describe the desirable features of a good naming system. **04**
- (c) Explain about various Thread Models in detail. **07**
- OR**
- Q.3** (a) List out the potential advantages and disadvantages of process migration. **03**
- (b) Differentiate between the terms "location transparency" and "location independency." Which is a more powerful feature and why? **04**
- (c) What load balancing? State the issues in load balancing algorithms. **07**
- Q.4** (a) What is meant by distributed file system? **03**
- (b) Explain types of file sharing primitives. **04**
- (c) Explain design and implementation issues of distributed shared memory. **07**
- OR**
- Q.4** (a) What are the file system modules? **03**
- (b) What is the difference between replication and file caching? **04**
- (c) What are the main causes of thrashing in a distributed shared memory system? What are the commonly used methods to solve the thrashing problem in a distributed shared memory system? **07**
- Q.5** (a) Define the following: **03**
- 1) Scalability
 - 2) Global State.

- (b) Explain Java RMI. 04
(c) What are the commonly used methods for implementing an access matrix? Explain their relative advantages and disadvantages. 07

OR

- Q.5** (a) Define Datagram. What is the use of UDP? 03
(b) Explain sun network file system. 04
(c) Describe the access matrix model used for protection purpose. 07
