

IIIT Vadodara
B.Tech. (CSE): Semester VII
Introduction to Distributed & Parallel Computing (CS-401)
Mid Semester Exam

Max-Marks – 30

Time: 2 Hours

Instructions – All questions are compulsory and carry equal marks. Answers must be specifically written.

- ✓ Q1 A. Explain the client-server architecture. How does it differ from peer-to-peer architecture in distributed systems?
B. Briefly describe the role of sockets in network communication and write a basic program (any language) to establish a client-server communication using sockets.
- ✓ Q2 A. What is Flynn's Taxonomy? Discuss the types of parallel architectures classified under Flynn's Taxonomy and explain the difference between SISD, SIMD, and MIMD architectures.
B. Compare and contrast Shared Memory and Distributed Memory architectures. Discuss their strengths and limitations.
- ✓ Q3 A. Define multithreading in Java and explain the life cycle of a thread with a diagram.
B. Write a Java program demonstrating the creation of multiple threads by implementing the Runnable interface.
- ✓ Q4 A. Explain Single Program Multiple Data (SPMD) and Multiple Program Multiple Data (MPMD) programming models with examples.
B. Describe the differences between a CPU and a GPU. Why are GPUs more efficient for handling parallel computing tasks such as matrix operations in deep learning?
- ✓ Q5 A. What is Cloud Computing? Explain the differences between Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) with examples of each model.
B. Discuss the advantages of using cloud-based infrastructures in distributed systems.
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