|  |  |  |
| --- | --- | --- |
| Course: | **Parallel and Distributed Computing** | Date: 31/08/2024 |
| Course Code: | CEN-455 | Session: I |
| Faculty’s Name: | Dr. Muhammad Asif | Max Marks: 50 |
| Time Allowed: | 2.5 Hours | Total Pages: (1) |

**INSTRUCTIONS:**

1. This is closed book exam. Communication devices and any written material are strictly prohibited.
2. All questions are compulsory.

Student’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Enroll No:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(USE CAPITAL LETTERS)

**Question # 1 (2.5+2.5+2.5+2.5= 10 Marks) (CLO-1)**

By recalling the **KNOWLEDGE** of **Parallel Computing Architectures and Models**, differentiate by **DESCRIBING** the **following points?** Only provide to the point explanation**?**

1. What is **PCAM**? Explain each of them in detail with **real-time/real-life examples**?
2. Explain the **FOUR** types of **communication**?
3. Write down in Bullets the **TWO** **Mapping** **Strategies**?
4. Explain **Agglomeration** by considering the **example** of **CUBE Partitioning**?

**Question # 2 (2.5+2.5+2.5+2.5= 10 Marks) (CLO-2)**

By **INTERPRETING** the concept of **Parallel Algorithms**, do as directed? Only provide to the point explanation**?**

1. What is **PRAM**? What does it **stand** **for**? Explain the **FOUR** types of **PRAM**?
2. Draw and Explain the **PRAM** **Model**?
3. Write down the **THREE** **modules** of which a **PRAM** consists of?
4. Algorithms are designed to improve the computation speed. For the analysis of parallel algorithms, what are the **THREE** **parameters** to be considered? **Enlist** them only?

**Question # 3 (2.5+2.5+2.5+2.5= 10 Marks) (CLO-1)**

By recalling the **KNOWLEDGE** of **Goals and Issues in Distributed Computing**, differentiate by **DESCRIBING** the **following points?** Only provide to the point explanation**?**

1. **Enlist** any **FIVE** **Pitfalls/FALSE ASSUMPTIONS** when developing Distributed Systems?
2. **Enlist and Explain the THREE Scaling** Techniques with **practical** **examples**?
3. **Enlist** and Explain **SEVEN** different types of **TRANSPARENCY in a distributed systems**?
4. **Enlist** and Explain **FOUR** **types** **of** **Threats** in the security of distributed systems?

**Question # 4 (2.5+2.5+5= 10 Marks) (CLO-2)**

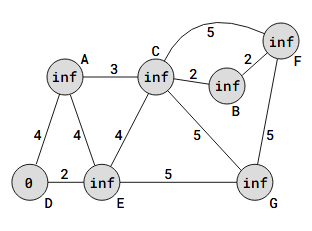
By **INTERPRETING** the concept of **Distributed File Systems**, do as directed? Only provide to the point explanation**?**

1. **ENLIST** the **FOUR** **Advantages** and **Disadvantages** of **Distributed File Systems**?
2. Write down the **FOUR** key **observations** of the **DESIGN of GFS**?
3. As already discussed the case studies in the class, Explain the **Architectures** of **SUN NFS, GFS and CFS**?

**Question # 5 (5+5= 10 Marks) (CLO-3)**

**UNDERSTAND** the following problem statements and **EXPLAIN** the following in detail in the context of **Distributed Algorithms (Routing Algorithms)**?

1. Write down the fine pseudocode of **DIJKESTRA** **Algorithm?**
2. Consider the following **GRAPH** and find out the **Shortest Path** form Initial Node ‘D’ to the Final Node ‘F’. You should **RUN** it manually/DRY Run step by step as already done in the class by using **DIJKESTRA** **Algorithm?**

****

**Best of Luck**