**Deparment of Computer science and Engineering**

**Mandsaur University, Mandsaur**

**Computer Architecture And Organization**

Assignment -1

1. Case: In a desktop computer, certain arithmetic instructions fail to execute properly, but logical operations work fine.

* Q: Analyze how different parts of the CPU contribute to this issue. Could it be related to the Instruction Format, ALU, or Control Unit? Justify your answer.

2. Case: You are designing a custom CPU for an embedded controller used in industrial automation.

* Q: Design a basic register transfer language (RTL) sequence for a custom instruction set, including an addressing mode of your choice. Justify your RTL steps.

3. Case: Two architectures are proposed for a high-speed system – one with a common bus and another with dedicated data paths between components.

* Q: Critically evaluate both architectures in terms of speed, cost, and complexity. Recommend the better option for real-time applications and justify your reasoning.