**Assignment No. 1**

**Subject: Software Verifications and Validations**

**Submission Dateline: 8th May, 2025**

1. Explain the difference between Software Verification and Software Validation with suitable examples. Why are both processes essential in the software development lifecycle, and what are the consequences of neglecting either?

2. Discuss the role of Software Verification and Validation in ensuring software quality. How does SV&V contribute to achieving software reliability, maintainability, and user satisfaction? Provide real-world scenarios where SV&V significantly impacted software performance.

3. Describe the various levels of verification and validation in the software lifecycle (e.g., requirements, design, code, integration, system). For each level, explain the techniques used and the typical issues detected at that stage.

4. Compare and contrast static and dynamic verification methods. What are their respective strengths and limitations? In what situations would one be preferred over the other? Support your answer with technical justification and examples.

5. Evaluate the importance of early verification and validation activities in reducing software development costs. How do SV&V activities performed in the early phases help in defect prevention and resource optimization? Illustrate with lifecycle cost analysis or defect propagation scenarios.