

## SOFTWARE TESTING & QUALITY

**Credits :4**

**Semester: VI**

**Subject Code: BS21602A**

**No. of Lecture Hours:60**

### **Objectives:**

- To help the students understand the importance and need of testing through testing cycles.
- To learn various testing techniques which are required for any software product.
- To introduce Quality assurance concepts and activities.

**Outcomes:** Students will be able to

**CO1:** Analyze importance of testing in software development process, apply glass-box testing, black-box testing, and how to report and analyze bugs

**CO2:** Identify problem tracking system, different types of testing and test case design.

**CO3:** To understand how to build testing strategy, establishing software testing methodology and software testing techniques.

**CO4:** Explain the definition of quality, metrics for software quality and inspection techniques.

**CO5:** Classify software configuration management, software reengineering and software restructuring techniques.

### **UNIT – I**

**12Hrs**

1. Example

Test Series – First Cycle

1

2. Second Cycle, Subsequent Cycles

1

3. Objectives and Limits of Testing

1

4. Testing in Software Development Process- Planning Process – Planning Stage

1

5. Design Stage Testing

1

6. Glass Box Code Testing

1

7. Black Box Testing

1

8. Software Errors

1

9. Reporting and Analyzing Bugs – Problem Report, Contents Characteristics

1

10. Analysis of Reproducible Bug

1

11. Tactics for Analyzing a Reproducible Bug Making a Bug Reproducible

2

**UNIT – II**

**12Hrs**

1.

Problem Tracking Systems – Objectives, Tasks.

2

2. Overview, Users.

2

3. Mechanics, Further Thoughts on Problem Reporting

2

4. Test Case Design – Characteristics of Good Test

1

5. Equivalence Classes and Boundary Values

1

6. Visible State Transitions, Race Conditions, Load Testing, Error Guessing

1

7. Function Equivalence Testing

1

8. Regression Testing, Executing the Tests

2

**UNIT – III**

**12Hrs**

1.

Building a Software Testing Strategy

3

2. Establishing a Software Testing Methodology

2

3. Determining a Software Testing Techniques

3

4. Eleven Steps for Software Testing Process – Overview

2

5. Assess Project Management

2

**UNIT – IV**

**12Hrs**

1.

Product Metrics - Software Quality, Framework for Product Metrics

2

2. Metrics for Process and Products - Software Measurement

3

3. Metrics for Software Quality.

2

4. Quality Management – Quality Concepts, Software Quality Assurance

2

5. Software Reviews, Formal Technical Reviews, Software Reliability

3

## **UNIT – V**

**12Hrs**

1. Change Management - Software Configuration Management

3

2. SCM Repository, SCM Process

3

3. Reengineering – Software Reengineering

3

4. Reverse Engineering, Restructuring.

3