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# B.M.S. College of Engineering, Bengaluru-560019

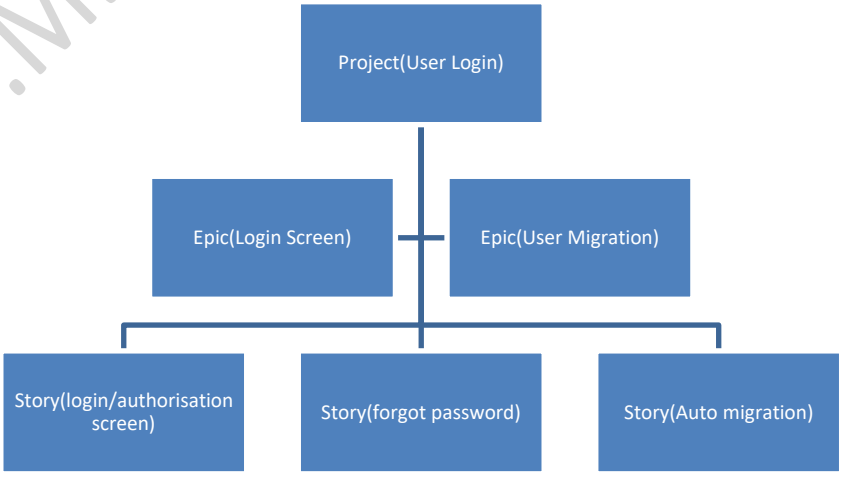
**Autonomous Institute Affiliated to VTU**

## January / February 2025 Semester End Main Examinations

**Programme: B.E.** **Semester: V**
**Branch: Information Science and Engineering** **Duration: 3 hrs.**
**Course Code: 23IS5PCSTG / 22IS5PESTG** **Max Marks: 100**
**Course: Software Testing**

**Instructions**: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

**Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

| | | UNIT - I | CO | PO | Marks |
|---|---|---|---|---|---|
| 1 | a) | What is **Software Quality**? Illustrate the 5 different view of software quality with suitable examples | CO1 | | 8 |
| | b) | How would you define **test scenarios and test cases**, and design 3 testcases for-each scenario i.e. login functionality and a shopping cart functionality in a web application using standard test case template? | CO4 | PO3 | 12 |
| | | **OR** | | | |
| 2 | a) | Compare and contrast **static analysis and dynamic analysis**, highlighting their benefits. | CO1 | | 6 |
| | b) | Describe the **Testing Activities** with an appropriate diagram. | CO1 | | 6 |
| | c) | Identify & illustrate the hierarchy and relationships shown in this **JIRA** diagram.   | CO2 | PO1 | 8 |
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| | | | **UNIT - II** | | | |
| | 3 | a) | Describe the following:<br>• Error<br>• Fault<br>• Failure<br>• Incident | *CO1* | | **8** |
| | | b) | A development team is working on an e-commerce website. One of the modules being implemented is the **"Add to Cart" functionality**. Before executing the code or running it dynamically, the team performs static testing to ensure code quality and compliance with standards. Illustrate Static Unit Testing (Code Review) with suitable diagram. | *CO2* | *PO1* | **12** |
| | | | **OR** | | | |
| | 4 | a) | You are assigned to develop a **calculator application** that performs basic arithmetic operations such as addition, subtraction, multiplication, and division. To verify the accuracy of your implementation, write the required **JUnit test cases** with suitable assertions for each operation and write any two features of Junit. | *CO2* | *PO1* | **10** |
| | | b) | Illustrate the following:<br>i) **Mutation testing** with suitable example<br>ii) **Level of testing** with suitable diagram | *CO1* | | **10** |
| | | | **UNIT - III** | | | |
| | 5 | a) | What is Boundary Value Analysis (BVA)? Explain **Normal BVA** & **Robust BVA** with suitable example. | *CO1* | | **10** |
| | | b) | Consider the scenario where you need to log in to a Gmail account using a username and password. The username must be between 10 and 90 characters long, while the password must be between 20 and 70 characters in length. Write the test cases that cover the **worst-case BVA** scenarios for this login process. | *CO2* | *PO1* | **10** |
| | | | **OR** | | | |
| | 6 | a) | What is Equivalence Class Testing? Describe **Weak Normal** Equivalence Class Testing and **Weak Robust** Equivalence Class Testing, providing relevant examples for each. | *CO1* | | **10** |
| | | b) | Consider a scenario where you are testing an online registration form for a website. The form includes the following fields:<br>• **Username**: Must be between 5 to 15 characters, containing only alphanumeric characters. | *CO2* | *PO1* | **10** |

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| | | | • **Password**: Must be between 8 to 20 characters, with at least one uppercase letter, one lowercase letter, and one special character (e.g., @, #, $, etc.).<br>• **Email**: Must be in a valid email format (e.g., user@example.com).<br>• **Age**: Must be between 18 and 100.<br>Using **Strong Robust Equivalence Class Testing**, design test cases for the above fields, ensuring robust boundary testing for each field. | | | |
| | | | **UNIT - IV** | | | |
| | 7 | a) | List the various types of **interface errors** and illustrate any 4 types with suitable examples for each. | *CO1* | | **12** |
| | | b) | Consider a scenario where you are tasked with developing an e-commerce platform that includes various functionalities such as user registration, product management, payment processing, and order tracking.<br>• Illustrate the **Top-Down** and **Bottom-Up** approaches with suitable diagrams, explaining how each approach would be applied in the development of the e-commerce system.<br>• Discuss the **advantages** and **disadvantages** of both approaches in the context of this project. | *CO2* | *PO1* | **8** |
| | | | **OR** | | | |
| | 8 | a) | Consider a scenario where you are developing a project management system for a company. The system includes features like task management, user authentication, project tracking, and reporting.<br>• **Illustrate the Incremental Approach** to software development with a suitable example, showing how the system can be developed in smaller, manageable parts or increments.<br>• Also, explain the process of a **Check-in Request Form** in the context of version control, demonstrating how developers submit their code changes in increments. | *CO2* | *PO1* | **12** |
| | | b) | Illustrate the Framework for system Integration Test Plan. | *CO1* | | **8** |
| | | | **UNIT - V** | | | |
| | 9 | a) | Imagine you are part of a team developing a new **Inventory Management System** for a retail company. The system is designed to track stock levels, manage product orders, and generate inventory reports. | *CO2* | *PO1* | **4** |

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| | | | • Define User Acceptance Testing (UAT)? And explain its significance in the software development lifecycle, particularly when it is performed, using the Inventory Management System as a practical example.<br>• Include a relevant diagram to show the position of UAT within the overall development process. | | | |
| | | b) | Discuss the six different quality characteristics defined in ISO 9126, explaining each one with suitable examples. | ***CO1*** | | **6** |
| | | c) | Explain the importance of User Acceptance Testing (UAT) and illustrate why it is essential in the software development process. | ***CO1*** | | **10** |
| | | | **OR** | | | |
| | 10 | a) | List the **any six principles** of ISO 9000:2000 fundamentals, providing an overview of each principle. | ***CO1*** | | **6** |
| | | b) | Discuss **six of McCall's Quality Factors**, providing an explanation for each factor. | ***CO1*** | | **6** |
| | | c) | Describe the **design process for User Acceptance Testing (UAT**), including key steps and components involved in creating effective UAT testing. | ***CO2*** | ***PO1*** | **8** |

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