

Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes Division
First Semester 2024-2025

Mid-Semester Test
(EC-2 Regular)

Course No. : SE ZG501
Course Title : Software Quality Assurance and Testing
Nature of Exam : Closed Book
Weightage : 30%
Duration : 2 Hours
Date of Exam : 20/09/2024 (AN)

No. of Pages	= 2
No. of Questions	= 6

Note to Students:

1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
2. All parts of a question should be answered consecutively. Each answer should start from a fresh page.
3. Assumptions made if any, should be stated clearly at the beginning of your answer.

- Q1. A software development team is working on a new application for managing customer orders. The application is designed to handle a variety of tasks, including processing orders, generating invoices, and sending confirmation emails.

During the testing phase, several issues arise: The "Generate Invoice" button in the application does not produce an invoice when clicked. The button appears functional but does not trigger the intended action. In the application code, there is a typo in the function that is supposed to generate the invoice. The function name is misspelled, which prevents it from being correctly invoked. After deploying the application to production, users report that their orders are not being processed correctly, leading to incomplete order records and missed shipments.

Based on the scenario provided,

- i) Describe the differences between the defect, the error, and the failure. **Marks-2**
- ii) How would each be identified, and what steps should be taken to address each issue?

Marks-3

- Q2. a) Define Software Quality Assurance. **Marks-1**

b) A tech company is developing a new mobile application for managing personal finances. As part of the development process, the company has implemented both Software Quality Assurance (SQA) and Quality Control (QC) practices to ensure the final product meets high standards.

Company designed a comprehensive software development lifecycle (SDLC) that includes requirements gathering, design reviews, development standards, and regular process audits. They have established coding guidelines and best practices, and have implemented a training program for developers to ensure adherence to these standards. Company has planned to conduct regular process reviews and retrospective meetings to assess and improve the development process.

Organization planned various testing activities, including unit testing, integration testing, and system testing to identify and report defects in the application.

They use automated testing tools to validate that the application functions correctly and meets specified requirements. Company has created a team tracks and manages defects, coordinating with developers to ensure that issues are resolved before the application is released to users.

Based on the scenario provided,

i) Differentiate between the activities performed by the Software Quality Assurance (SQA) team and the Quality Control (QC) team. **Marks- 2**

ii) How do their roles and responsibilities contribute to the overall quality of the mobile application? **Marks- 2**

Q3. a) A company is planning to develop a new e-commerce platform. The project is expected to be a significant investment, and management is debating whether to allocate a portion of the budget to Software Quality Assurance (SQA) or focus on other areas such as marketing or additional features.

Illustrate why it is necessary and profitable for the company to invest in Software Quality Assurance (SQA). Include considerations of cost, risk, and long-term benefits in your arguments. **Marks - 3**

b) Reducing Prevention Costs impact the overall Cost of Quality, Justify the statement.

Marks - 2

Q4. a) What is the primary focus of the McCall Model in software quality? **Marks-1**

b) Highlight on the three major dimensions to derive quality factors defined in the McCall Model. **Marks-1**

c) Which quality factor in the McCall Model is concerned with the software's ability to protect against unauthorized access? **Marks-1**

d) List out five Maturity levels of CMMI-DEV Model. **Marks-1**

e) Discuss the need of ITIL Framework in two sentences **Marks-1**

Q5. a) Differentiate and Mention various activities carried out under software verification and validation. **Marks - 2**

b) An organization is testing a software application that requires users to enter an age value between 18 and 65 inclusive.

Using Boundary Value Analysis, what test cases would you create to ensure that the application correctly handles the valid and invalid age inputs? List the test cases with their expected outcomes. **Marks - 3**

Q6. a) What is automated testing, and how does it differ from manual testing? List four advantages of using automated testing? **Marks 3**

b) What is the primary purpose of a test plan in software testing? Mention key components of Test plan. **Marks- 2**
