

## PSG COLLEGE OF TECHNOLOGY, COIMBATORE - 641 004

Department of Computer Science and Engineering

CSE &amp; 07

CONTINUOUS ASSESSMENT TEST 3 Date: 22-10-2024

19Z023- SOFTWARE TESTING AND QUALITY ASSURANCE

Time: 1 Hour 15 minutes.

Maximum Marks: 35

**INSTRUCTIONS:**

1. Answer **ALL** questions.
2. Question No. 1 carries 8 Marks and question No. 2 carries 27 Marks
3. In question No. 1, subdivision **a** carries total of 8 marks (one mark for each question).
4. In question No. 2, subdivision **a** carries total of 7 marks (one mark for each question), subdivisions **b(i)** and **b(ii)** carries 5 marks each and subdivision **c** carries 10 marks.
5. Course Outcome Table :
 

Un. 1	CO 1 to 4
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Un.2	CO5
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**Group I**

1. a

(8 x 1 mark = 8 marks)

- Write the alphabet of your choice answer for the questions i, iii, v & vii in the CA test answer book mentioning the question number and subdivision number.
- Write the answer for the Fill in the blanks questions ii, iv, vi & viii in the CA test answer book mentioning the question number and subdivision number.

i. Which of the following is not part of the Test document?

L1

A) Test Case

B) Requirements Traceability Matrix

C) Test strategy

D) Project Initiation Note

ii. Test plan in the test document is used to define the exit criteria of testing.

L2

iii. What is the key objective of Integration testing?

L2

A) Design Errors

B) Interface Errors

C) Procedure Errors

D) Code Errors

iv. Black box testing is related to the boundary value analysis.

L1

v. When do we have to stop the testing?

L2

A) The faults have been fixed

B) All the tests run

C) The time completed

D) The risk is resolved

vi. For a test automation tool, the ability to execute tests across different browsers and platforms is known as Cross-browser testing

L1

vii. Which of the following metrics is most useful for assessing the effectiveness of a test automation suite?

L2

A) Number of automated test cases

B) Number of test scripts executed daily

C) Defect detection rate through automated tests

D) Time spent on creating automated test scripts

viii. DRE is calculated as the percentage of defects removed before software delivery. L1

2. a

(7x 1 mark = 7 marks)

Write the alphabet of your choice answer in the CA test answer book mentioning question number and subdivision number.

i. Which of the following is the primary goal of Software Quality Assurance (SQA)? L2

- A) To find and fix bugs in the software
- B) To ensure software is delivered on time
- C) To ensure that software meets specified quality standards and requirements
- D) To design software architectures

ii. The TMM framework primarily focuses on which aspect of software development? L1

- A) Requirements gathering
- B) Testing processes
- C) Code quality
- D) Project management

iii. Which of the following is a key benefit of implementing Software Quality Assurance in an organization? L2

- A) Reducing the overall cost of software development
- B) Increasing the complexity of software systems
- C) Extending the time required for software releases
- D) Ensuring software development is conducted without any testing

iv. At which maturity level in TMM does an organization begin to establish a defined testing process? L2

- A) Level 1: Initial
- B) Level 2: Managed
- C) Level 3: Defined
- D) Level 4: Measured

Write the answer for the Fill in the blanks questions in the CA test answer book mentioning question number and subdivision number.

v. TMM provides a framework for improving the maturity of the testing process within an organization. L1

vi. QA Plan is a systematic approach that defines the processes, methods, and tools used in SQA to ensure quality in software development. L1

vii. The cost of fixing a defect increases significantly as it moves through the software development life cycle, which is referred to as the amplification of defects. L2

b.

(2 x 5 marks = 10 marks)

i. An organization is facing challenges in maintaining software quality, such as frequent bugs in production, delayed releases, and unclear testing processes. The management is considering adopting the Testing Maturity Model (TMM) to improve their testing practices and overall software quality. Illustrate the adoption of the Testing Maturity Model (TMM) to benefit this organization by improving software quality and achieving better project outcomes.



ii. A software development company is working on building a new cloud-based inventory management system for a large retail client. The development team works under tight deadlines to meet the customer's expectations for new features and enhancements. As the project progressed, several issues started to arise, so the company involved a Software Quality Assurance (SQA) group. Illustrate the role of the SQA group in ensuring the product meets the desired quality standards.

**L4**

**c.**

**(1 x 10 marks = 10 marks)**

i. A software project is managed by following a waterfall model of development. In the Requirements Gathering phase, it is estimated that 15 defects are introduced. The defects propagate through the remaining phases if they are not detected and fixed early on.

The project team performs effective reviews at each phase:

- Requirements phase reviews: 70% of defects detected.
- Design phase reviews 60% of remaining defects detected.
- Development phase reviews 60% of remaining defects detected.

If the project team skips reviews, the defects propagate without control, multiplying as they move through the phases.

- Design amplification factor: 1.8x (undetected defects double in the Design phase).
- Development amplification factor: 2.5x (undetected defects triple in the Development phase).
- Testing amplification factor: 1.2x (undetected defects amplify by 2 in Testing).

Evaluate the number of defects that will reach the testing phase with and without review to emphasize the need for doing reviews.

**L5**

**(OR)**

ii. An organization is experiencing issues such as inconsistent project documentation, varying software quality standards, and customer complaints about the end product. Summarize how implementing a Quality Management System (QMS) can address these issues and contribute to better software quality and customer satisfaction.

**L5**