FACULTY OF ACCOUNTING AND INFORMATICS

DEPARTMENT OF INFORMATION SYSTEMS

TEST 2 MEMORANDUM

INSTRUCTIONAL PROGRAMME	: ND IN INFO & COMM TECH IN APP
DINSTRUCTIONAL OFFERING	: INFORMATION SYSTEMS 3A
SUBJECT CODE/ S	: ISYA301
DATE	: 02 May 2025
DURATION	: 60 Minutes
TIME	: 12H00
TOTAL MARKS	: 50
NUMBER OF PAGES	: 6 (Including cover page)
EXAMINER/ S	: N.P. Cele

INSTRUCTIONS/ REQUIREMENTS: -

[1] Answer all the questions

[2] Adhere to the time limit.

[3] Write neatly and legibly.

Question One: MCQ [5 Marks]

Write only the question number and the correct letter. E.g., 1 E

1.1 What is the primary goal of Software Quality Assurance (SQA)?

A. Debugging
B. Testing
C. Quality improvement
D. Code optimization

1.2 What does the acronym 'ISO' stand for in the context of software quality?

A. International Software Organization
B. Information Security Operations
C. International Organization for Standardization
D. Internal System Operations

1.3 What is the purpose of the IEEE 829 standard?

A. Software development process
B. Test documentation
C. Code optimization techniques
D. Requirement analysis

1.4 What is the difference between validation and verification in the context of SQA?

A. They are synonymous
B. Validation checks if the product is built correctly, while verification checks if it meets the customer's requirements
C. Verification checks the product against the specifications, while validation ensures it works in the intended environment
D. Verification is performed by developers, and validation is performed by testers

1.5 What is the purpose of a code review in the context of SQA?

A. To find defects in the software
B. To evaluate the performance of the testing team
C. To assess the design of the software
D. To review the quality of the code

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Question Two: Match Column A and B [5 Marks]

Write only the question number and the letter, e.g., 2.1 A

Column A	Column B
2.1 Software as a Service (SaaS)	A. Enables software delivery via browsers without traditional installation

2.2 The Web as an Application Platform	B. A modern approach where requirements and solutions evolve through collaboration
2.3 Open-Source Software	C. Refers to the shift toward cloud computing and virtualization
2.4 Agile Development	D. Software tools that can be downloaded and customized from open-source communities
2.5 Trends in Technology Infrastructure	E. A cloud-based software delivery model where a third-party provider hosts and manages applications, making them available to users over the internet.

2.1 E

2.2 A

2.3 D

2.4 B

2.5 C

Question Three: Fill in the missing word [5 Marks]

Write only the question number and the answer, e.g., 3.1 Agile

3.1 The Unified Process uses _____for modeling system architecture and design.

UML

3.2_____ developers should follow standards for coding and documentation.

Coding standards

3.3_____ is a method of developing, delivering, and licensing software that makes the application source code freely available to any interested developer or client.

open source.

3.4 The Unified Process (UP), Extreme Programming (XP), and _____ are known to be the three influential Current Methodologies.

Scrum

3.5 The Unified Process Life Cycle model includes _____and phases.

Iteration

Question Four: Short Questions [20 Marks]

4.1 Mention the four phases of the Unified Process. [1x4]

Inception, Elaboration, Construction, and Transition

4.2 Read the scenarios below (from 4.2.1 to 4.2.4) and indicate which XP core value is described by each scenario? [2x4]

4..2.1 Despite tight deadlines, the team insists on writing automated tests and doing continuous integration to maintain a high-quality standard.

Courage.

4.2.2 The team pushes small changes to production frequently to get rapid feedback and ensure nothing breaks unexpectedly.

Feedback.

4.2.3 A developer pair frequently communicates with the customer to ensure the software matches their needs and quickly adjusts based on feedback.

Communication.

4.2.4 A team member notices inefficiency in the codebase and proactively suggests refactoring the code for better maintainability.

Simplicity

4.3 You are tasked with improving the user interface of a traditional web-based form. Suggest any 3 Rich Internet Applications (RIAs) tools you might use. [1x3]

- **JavaScript and Ajax Libraries**
- **ICEFaces and JavaFX**

- **Adobe Flash Platform**
- **Microsoft Silverlight**
- **HTML5**

4.4 List 5 of the practices of the Unified Process. [5]

- **Focuses early and often on users**
- **Use case driven**
- **Model-driven – uses UML exclusively**
- **Iterative, but provides management structure by defining phases**
- **Focuses on defining architecture**
- **Adaptable to the needs of a specific project**

Question Five: Scenario [15 Marks]

Read the scenario below and answer the questions that follows.

A mid-sized software development company is creating a hospital management system with strict compliance requirements. During early development, testers report that modules are failing integration tests. Additionally, the project manager notices that several quality standards agreed upon in the planning phase are not being consistently followed. The client has expressed concerns about system reliability and maintainability. The QA team currently only performs testing at the end of each major milestone, and there is no formal quality audit process in place.

5.1 Identify two key issues related to software quality management in this scenario. [2x2]

Quality Assurance (QA): Quality standards agreed upon in the planning phase are not being consistently followed

Quality Control (QC): Testers report that modules are failing integration tests

bugs accumulate unnoticed until late stages, compromising product reliability and increasing rework costs.

5.2 In the context of software quality management, one key metric used to assess customer satisfaction and product reliability is the *Customer Problem Metric*. State the formula used to calculate this metric. [3]

Problems per User Month = (Total Number of Problem Reports) / (Total Number of Users * Number of Months)

5.3 How does a software quality plan support risk management in software development? [2]

The risk management plan outlines how each risk will be assessed, prioritized, and mitigated. This includes specifying risk owners, defining mitigation strategies, and monitoring risks throughout the product development lifecycle to ensure that quality standards are maintained.

5.4 Reviews are a key component of software quality management, helping to detect defects early in the software development lifecycle. Mention and define these three phases in the review process. [2x3]

Pre-review activities are concerned with review planning and review preparation.

The review meeting: During the review meeting, the author of the document or program being reviewed should ‘walk through’ the document with the review team.

Post-review activities: These address the problems and issues that have been raised during the review meeting.