



Kasarani Campus
Off Thika Road
P. O. Box 49274, 00101
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATIONS, 2024/2025 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE DIPLOMA IN SOFTWARE ENGINEERING

DSE 1002 SOFTWARE QUALITY ASSURANCE

Date: 7TH AUGUST, 2024
Time: 11:30 AM – 2:30 PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE: COMPULSORY (30 MARKS)

XYZ Software Development Company is known for its innovative applications but has been facing challenges in delivering high-quality software products consistently. The company wants to improve its software quality assurance practices across projects.

- a) Discuss two common challenges faced by software development teams in achieving high-quality software. **(2 Marks)**
- b) Outline the importance of software quality assurance in addressing these challenges. **(2 Marks)**
- c) Discuss at least three important factors that contribute to software quality. Provide examples or scenarios to illustrate each factor. **(2 Marks)**
- d) Describe the key components of a comprehensive software quality assurance system. **(6 Marks)**
- e) Define configuration management in the context of software development. **(2 Marks)**
- f) Discuss the role of configuration management in maintaining software quality and ensuring consistency across software versions. **(2 Marks)**
- g) Compare and contrast at least two software testing strategies **(4 Marks)**
- h) Explain what Case Tools are and how they support software development processes. **(2 Marks)**
- i) Discuss the impact of Case Tools on software quality assurance practices. **(4 Marks)**
- j) Describe how quality assurance activities can be integrated into different phases of the software development lifecycle **(4 Marks)**

QUESTION TWO: (20 MARKS)

XYZ Software Development Company is planning to implement CI/CD practices to enhance software quality and delivery efficiency.

- a) Discuss the concepts of Continuous Integration (CI) and Continuous Delivery (CD) in software development. **(6 Marks)**
- b) Explain how CI/CD practices contribute to improving software quality assurance. **(4 marks)**

- c) Outline the challenges and potential risks associated with implementing CI/CD in a software development environment. **(4 Marks)**
- d) Provide a step-by-step guide on how XYZ Software Development Company can adopt CI/CD practices effectively. **(6 Marks)**

QUESTION THREE: (20 MARKS)

XYZ Software Development Company has adopted Agile methodologies for its projects.

- a) Discuss Agile testing principles and practices, focusing on how they enhance software quality assurance. **(4 Marks)**
- b) Explain the role of testers in Agile teams and their responsibilities throughout the Agile development lifecycle. **(6 Marks)**
- c) Discuss the challenges and advantages of implementing Agile testing in large-scale projects. **(6 Marks)**
- d) Provide recommendations on how XYZ Software Development Company can overcome challenges and optimize Agile testing practices for better software quality. **(4 Marks)**

QUESTION FOUR: (20 MARKS)

XYZ Software Development Company wants to establish a metrics-driven approach to monitor and improve software quality assurance practices.

- a) Define software quality metrics and explain their importance in measuring software quality. **(4 Marks)**
- b) Providing examples, discuss different categories of software quality metrics. **(6 Marks)**
- c) Outline a framework for implementing a metrics-driven approach to software quality assurance in XYZ Software Development Company. **(6 Marks)**
- d) Evaluate two potential challenges and risks associated with using metrics in software quality assurance and suggest strategies to mitigate these risks. **(4 Marks)**

QUESTION FIVE: (20 MARKS)

ABC Software Inc. is developing a new web application for online education. The application allows users to browse courses, enroll in classes, participate in quizzes, and interact with instructors through forums. As part of the quality assurance process, the testing team needs to plan and execute effective testing strategies.

- a) Discuss the importance of software testing in the development lifecycle and explain why effective testing is crucial for ensuring the success of the online education application. **(4 marks)**
- b) Explain the concept of white box testing. Describe two techniques commonly used in white box testing and how each technique can be applied to verify the functionality of the online education application. **(8 marks)**
- c) Describe black box testing. Discuss two black box testing techniques and provide scenarios where each technique would be beneficial in ensuring the quality of the online education application. **(8 marks)**