



COLLEGE OF ENGINEERING AND APPLIED SCIENCES(CEAS)

NCSC 413 SOFTWARE ENGINEERING II

END OF SECOND SEMESTER EXAMINATION

APRIL 2025

LECTURER: MR J. CHINZVENDE

TIME: 3 HOURS

INSTRUCTIONS

Answer questions instructed in each section

Start **each** question on a new page.

The marks allocated to **each** question are shown at the end of the section.

Answer all questions in Section A and Chose Two (2) in section B

Credit will be awarded for logical, systematic and neat presentations.

Section A

Answer **all** questions from this section

Question One

Define the following terms as they are used in Software Engineering.

- a. Reliability
- b. Modularity
- c. Refactoring
- d. Unit testing
- e. Serverless Architecture

[10]

Question Two

Differentiate between the following terms in Software Engineering?

- a. eXtensible Mark-up Language (XML) and Java Script Object Notation (JSON)
- b. Availability and Reliability
- c. Redundancy and dependability
- d. Software Architecture and Software Design
- e. Continuous Integration (CI) and Continuous Deployment (CD)

[10]

Question Three

You are managing a project in a rapidly changing technology landscape, where user needs and market conditions are continually evolving.

- a. Discuss how you would adapt your requirements gathering process to accommodate high levels of uncertainty and volatility.
- b. What techniques would you employ to ensure that the requirements remain relevant and actionable throughout the project lifecycle?
- c. How would you communicate changes in requirements to the development team and stakeholders to minimize disruption?

[10]

Question Four

Describe the concept of software testing and its significance in ensuring the quality of a software system.

[10]

SECTION B

Answer any **two (2)** questions from this section

Question Five

Africa University is embarking on a new project to develop a complex enterprise application with strict quality requirements.

- a. Outline the key components of a comprehensive Quality Assurance (QA) strategy for this project.
- b. How would you ensure that quality assurance practices are integrated into each phase of the software development lifecycle (SDLC)?
- c. Discuss the metrics you would use to measure the effectiveness of your QA strategy and how you would report these to stakeholders. [25]

Question Six

In an Agile development environment, your team frequently introduces new features, but the codebase is becoming increasingly complex and harder to maintain.

- a. How would you incorporate regular maintenance and refactoring into the Agile workflow?
- b. Discuss the role of technical reviews and pair programming in maintaining code quality.
- c. Describe how you would balance the need for new feature development with the need for code maintenance. [25]

Question Seven

You are preparing to release a new version of your application that includes numerous bug fixes and feature enhancements. Your team has a tight deadline for testing a new application. There is limited documentation available, and the application is complex.

- a. How would you approach regression testing for this release?
- b. What techniques would you use to ensure existing functionality is not broken?
- c. How would you implement exploratory testing in this scenario?
- d. What techniques can be used to maximize coverage and identify critical issues?[25]

End of Paper