

# WOMEN'S UNIVERSITY IN AFRICA



*Addressing gender disparity and fostering equity in University Education*

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**FACULTY OF MANAGEMENT AND ENTREPRENEURIAL SCIENCES**

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**BSc HONOURS DEGREE IN INFORMATION SYSTEMS**

**BSc HONOURS DEGREE IN COMPUTER SCIENCE**

**MAIN PAPER**

**IS213: SOFTWARE ENGINEERING**

**INTAKE 25: SECOND YEAR FIRST SEMESTER**

**INTAKE 2: FIRST YEAR SECOND SEMESTER**

**TIME: 3 HOURS**

**INSTRUCTIONS TO CANDIDATES**

Answer any **four** questions

## QUESTION 1

- a) It is believed that the quality of software is determined by the quality of its developers in terms of their knowledge, discipline, and commitment.

Explain the typical project manager's problem of people selection, motivation, and team effectiveness in an IT department, and discuss the extent to which the Personal Software Process model can provide a solution. [12]

- b) Explain how a software project manager would estimate and measure the software development productivity of a team. [5]

- c) Software cost estimation models are empirical models derived from data from many software projects. These have been widely used and evaluated. Discuss the relevance of software cost estimation models to an Agile software project development team.

[8]

## QUESTION 2

- a) Giving reasons for your answer based on the type of the system being developed, suggest the most appropriate generic software process model which might be used as a basis for managing the development of the following systems

- i. a system to control Anti-lock braking in a car;
- ii. a virtual reality system to support software maintenance;
- iii. a university accounting system; and
- iv. an interactive railway timetable system. [12]

- b) Explain how both the waterfall model and prototyping model of the software can be accommodated in the spiral model. [5]

- c) Explain why a software system that is used in a real-world environment must change or become progressively less useful. [4]

- d) Due to fire accident, all documentation for a product is destroyed just before delivered. What is the impact of the resulting lack of documentation? [4]

### **QUESTION 3**

- a) Discuss the differences between verification and validation and explain why validation is a difficult process. [5]
- b) Explain why bottom-up and top-down testing may be inappropriate testing strategies for object-oriented systems. [5]
- c) Describe the testing process. [10]
- d) Describe how you might stress test a bank ATM system. [5]

### **QUESTION 4**

- a) Using an example explain the COCOMO model. [4]
- b) What is reverse engineering? [2]
- c) What is structured programming and why is it important? [9]
- d) Give the benefits of verification and validation in software development and discuss about the techniques of verification and validation in the process of software development. [10]

### **QUESTION 5**

- a) Explain the software life cycle model that incorporates risk factor. [6]
- b) Explain any two requirement elicitation methods. [5]
- c) Define coupling. Discuss various types of coupling. [8]
- d) Explain various Object Oriented concepts used in Software Engineering. Give an example. [6]

### **QUESTION 6**

- a) Give an outline of the underlying principles of web service standards and discuss how these can provide support for the development of inter-organisational applications.

[15]

- b) Select a typical process model for a manufacturing business and demonstrate the design of a service-oriented system for such a company.

[10]

**END**