



**ZIMBABWE EZEKIEL GUTI UNIVERSITY**

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**FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY**

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**INFORMATION SYSTEMS DEPARTMENT**

**EXAMINATION PAPER**

**COURSE CODE** : MIS107  
**COURSE TITLE** : Software Engineering  
**DURATION** : 3 Hours  
**LEVEL** : 1.2  
**DATE** : 2023

12 OCT 2023

**INSTRUCTIONS TO CANDIDATES:**

1. Answer any four questions only.
2. Each question carries 25 Marks.

### Question 1

- a. Can we measure maintainability, dependability, efficiency and usability? Are these characteristic enough to define a good software? **[10 marks]**
- b. Discuss the problems and challenges that software engineering has to face in the 21st century? **[10 marks]**
- c. Define the following terms:
  - i. Software engineering
  - ii. Generic products
  - iii. Feasibility study
  - iv. Architectural design
  - v. Requirements specification **[5 marks]**

### Question 2

- a. Imagine yourself as a project manager and you have to handle an online banking system. What are the risks that can occur and how do you respond to them **[15 marks]**
- a. What is meant by functional requirements and non-functional requirements? **[10 marks]**

### Question 3

- a. What is the purpose of system requirements? How important are they in developing a system? **[15 marks]**
- b. Conflicts may arise during requirements elicitation and analysis process. Managers might want something different from stakeholders. Imagine yourself as the system analyst in a hotel booking system. How do you handle these conflicts in order to satisfy different requirements among your users? **[10 marks]**

### Question 4

Zimbabwe Ezekiel Guti University (ZEGU) library is currently having problems in tracking books borrowed by students and staff members. They are using a paper based system.

The new system that is being proposed is as follows. To join the library the member could be a student or a staff member. If a member joins as a student they are required to provide their student ID card upon registration and if the member of staff joins the library, they also need to produce their staff ID. The librarian will capture the details into the system. The system will allow the librarian to add the member into the system. If the member joins the library as a staff member they are allowed to borrow a maximum of 10 books and if the member is a

student they can borrow a maximum of 5 books each time they borrow books from the library. The system will allow a librarian to add a new book into the system each time the university purchase new books. Each time a member borrows a book from the library the librarian checks out the book from the library and when the member returns the book the librarian checks in the book into the library system. Staff members each time they borrow a book the loan period is for three months but for students the loan period is for 1 month. The members can use the system to reserve a book which they want from the library and they can also extend the loan with a further 1 month.

- i) Identify the business processes and rules for the new system. [4 marks]
- ii) Who are the stakeholders of the new system? [2 marks]
- iii) Come up with five functional requirements for the new system. [5 marks]
- iv) Invent two non-functional requirements together with their fit criteria. [4 marks]
- v) Come up with a use case diagram for the new library system proposed above. [10 marks]

#### Question 5

- a. What is the meaning of software maintenance? Give THREE different types of software maintenance [4 marks]
- b. What does a good software mean? How do we define a good software and what are the characteristics of a good software? [12 marks]
- c. Explain why programs which are developed using evolutionary development are likely to be difficult to maintain. [9 marks]

0/6 (pm)