INTERNATIONAL UNIVERSITY OF EAST AFRICA

'Learning to Succeed'

FACULTY OF SCIENCE AND TECHNOLOGY

END OF SEMESTER EXAMINATIONS - APRIL 2025

PROGRAMME: BSSE

YEAR/SEM: YEAR 3/SEMESTER 2

COURSE CODE: SWE3200

NAME: SOFTWARE EVOLUTION

DATE: 2025-04-14

TIME: 2:00-5:00PM

INSTRUCTIONS TO CANDIDATES:

1. Read the instructions very carefully
2. The time allowed for this examination is STRICTLY three hours
3. Read each question carefully before you attempt and allocate your time equally between all the Sections
4. Write clearly and legibly. Illegible handwriting cannot be marked
5. Number the questions you have attempted
6. Use of appropriate workplace examples to illustrate your answers will earn you bonus marks
7. Any examination malpractice detected will lead to automatic disqualification.

DO NOT WRITE ANYTHING ON THE QUESTION PAPER

Section A Attempt all Questions (40 marks)

Question 1:

a) Mention any three factors that would be considered during software re-engineering (**6 marks).**
b) Explain any six laws of software evolution **(12 marks)**
c) Elaborate on the origins of software development projects **(6 marks**)
d) Differentiate between the two types of prototyping **(4 marks**)
e) Explain any three objectives of software architecture evolution (**6 marks**)
f) Explain the various types of software maintenance that can be performed **(6 marks).**

Section B Attempt only 3 Questions. Each Question carries 20 marks

Question 1:

Reverse engineering involves analysing compiled programs to understand their design and functionality.

a) Elaborate on any other five uses or importances of reverse engineering **(10 marks)**
a) Explain any five principles followed during reverse engineering **(10 marks)**

Question 2:

Software re-engineering involves analysing and redefining existing systems to meet new requirements or take advantage of emerging technologies.

a) Elaborate on any other five uses or importances of Software re-engineering **(10 marks).**
b) Explain any five categories of tools that can be used in software re-engineering **(10 marks).**

Question 3:

A company has an existing system that they would wish to redesign and redevelop so as to improve its performance, scalability and maintainability.

a) Recommend to them the right technique to use and its importance? **(6 marks)**
b) Elaborate the any principles to adhere to while implementing the technique mentioned in (2 a) above **(4 marks).**
c) Explain the steps that would be followed in the implementation of the technique selected in (2 a) above **(10 marks).**

Question 4:

Software maintenance helps to keep a software up-to date and also improve its performance.

a) Explain the any five laws of software maintenance that you know (**10 marks**).
b) Illustrate and explain the process of software maintenance **(10 marks).**

Question 5:

An information System refers to an integrated set of components for collecting data, processing data, storing and delivering/outputting information.

a) With an illustration, discuss at-least eight types of information systems, mention the organisational levels on which those systems work and the various users who use them (20 marks)

Question 6:

A company has a legacy system for which they would wish to recover its design, and functions by analysing its code.

a) Recommend to them the right technique to use and its importance? **(6 marks)**

b) Elaborate the types of the technique mentioned in (1 a) above **(4 marks).**

c) Explain the steps that would be followed in the implementation of the technique selected in (1 a) above **(10 marks).**