UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
WEEKDAY/WEEKEND PROGRAMME END OF SEMESTER TWO EXAMINATIONS

ACADEMIC YEAR 2023/2024

DEPARTMENT: ICT

SEMESTER: TWO

PROGRAMME(S): DIPLOMA IN INFORMATION TECHNOLOGY FOR SCIENCE (DITS)

YEAR OF STUDY: TWO

COURSE: INTRODUCTION TO SOFTWARE ENGINEERING

COURSE CODE : CSC2202

DATE: SATURDAY 21ST, JUNE 2025

TIME: 9:00 AM – 12:00 NOON

DURATION: 3 HOURS

INSTRUCTIONS:

(i) This paper contains two Sections: A (40 marks) & B (60 marks).

(ii) Attempt ALL questions in Section A, and ONLY THREE questions in Section B.

(iii) All questions in Section B carry equal marks.

(iv) Credit will be given for use of relevant examples and illustrations.

(v) Begin each number in Section B on a new page of the answer sheet.

(vi) DO NOT write on this question paper.

SECTION A [40 MARKS]

Attempt **ALL** the Questions in this Section.

Question 1

a) Define software engineering. **(2 marks)**
b) Distinguish user documentation from system documentation. **(4 marks)**
c) Give two reasons why software systems undergo changes. **(2 marks)**
d) Describe two advantages of prototype model of software development. **(4 marks)**
e) Briefly explain the meaning of software specification. **(2 marks)**
f) Describe two activities involved in the software design process. **(4 marks)**
g) Give three reasons why software engineers conduct software testing. **(3 marks)**
h) Distinguish between functional requirements and non-functional requirements. **(4 marks)**
i) Outline two goals of Unified Modeling Language, UML. **(2 marks)**
j) The table below shows SDLC phases and their description. Correctly match the phases with the corresponding description. **(4 marks)**

PHASE	**DESCRIPTION**
Requirement Analysis	Releases software to users
Design	Identifies user needs
Testing	Creates system architecture
Deployment	Verifies software functionality

k) Explain the purpose of software validation and state any two techniques used to validate any software of your choice. **(4 marks)**
l) Describe the 'Black Box Testing' method of software testing. **(2 marks)**
m) Collaboration tools are essential for modern software engineering teams. Identify any one popular collaboration tool used by software engineers and explain how it supports efficient communication and project management in distributed teams **(3 marks)**

SECTION B [60 MARKS]

Attempt **ONLY THREE** Questions in this Section.

Question 2

a) Define the term software process. **(2 marks)**

b) Describe four responsibilities of a software engineer. **(8 marks)**

c) A small business wants a custom inventory management system. They have a basic idea but are unsure about all the features they need. As a software engineer, how would you approach this project?

   i) State any two functional requirements for this system **(2 marks)**

   ii) State and explain any four non-functional requirements for this system **(8 marks)**

Question 3

a) Define system engineering process. **(2 marks)**

b) Describe any **five** phases of the traditional SDLC. **(10 marks)**

c) Give **two** reasons to explain why maintenance phase is important. **(4 marks)**

d) During testing of an e-library website, the team finds that the payment gateway fails 20% of the time under heavy traffic.

   i) What type of testing is likely to have revealed this anomaly? **(2 marks)**

   ii) How would you resolve it before deployment? **(2 marks)**

Question 4

A client wants a mobile app for food delivery but keeps changing their mind about the design. As a software engineering student, you are required to explain to the client various development models such as Waterfall Model, Agile Model and Spiral Model, when they are used and why. The table below has models and reasons for their use but not correctly matched.

a) Match the following scenarios against the correct corresponding model and reasons to justify its use. **(6 marks)**

SCENARIO	**MODEL REASON**	**REASON**
Well-defined, high-security	Agile	Combines prototyping, plus risk analysis
Fast-changing startup app	Waterfall	Stable requirements, strict compliance
High-risk AI project	Spiral	Needs iterative updates & user feedback.

b) Explain **three** activities of a software process. **(6 marks)**
c) Describe **four** factors that influence choice of staff for a software engineering team. **(8 marks)**

Question 5

a) A Project Manager for a software development team handles professionals with divergent skills and attitudes. Describe **three** people management factors a good project manager must consider. **(6 marks)**
b) Describe any **three** needs outlined in Maslows hierarchy of needs. **(6 marks)**
c) Describe **four** factors that affect group communication in a project. **(8 marks)**

Question 6

a) Differentiate between estimating and costing a software product. **(4 marks)**
b) Give **two** reasons why projects make estimates for software products. **(4 marks)**
c) Describe **three** advantages of the prototype model. **(6 marks)**
d) Consider a simple library management system. Identify any three entities and under each of them outline possible relationships between these entities. **(6 marks)**

END