



MURANG'A UNIVERSITY OF TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION

UNIVERSITY ORDINARY EXAMINATION

2020/2021 ACADEMIC YEAR

**FIRST YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN
INFORMATION TECHNOLOGY**

SCS 051– OBJECT ORIENTED ANALYSIS AND DESIGN

DURATION: 2 HOURS

Instructions to candidates:

1. Answer question One and Any Other Two questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in object oriented systems (2marks)
 - (i) Object
 - (ii) Class
- b) Highlight any four types of programming paradigms used today. (4marks)
- c) State the difference between sequence and collaboration diagram (4marks)
- d) Explain the main limitations with traditional approaches of software development compared to object oriented system development. (4marks)
- e) Explain the importance of robustness analysis in object oriented systems. (4marks)
- f) Differentiate between boundary object, entity and controller as used in robustness diagram. (3marks)
- g) Object oriented languages use various access specifiers. State them and explain how they are used. (5marks)
- h) Define UML and why it is important to use UML diagram (2marks)

SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

- a) What is inheritance in object –Oriented analysis and example of inheritance as depicted in object orientation. (10marks)
- b) Discuss any five popular software development methodologies used by software developers today. (10marks)

QUESTION THREE (20 MARKS)

- a) Object – oriented language is made up of four main principles. State and explain how each of them are important to the object orientation. (3marks)
- b) Using a suitable scenario/ case study , explain the various characteristics of an object (7marks)
- c) Use a diagram to highlight the five symbols of robustness diagram. (5marks)

QUESTION FOUR (20 MARKS)

Use this case study to answer 4b.

Consider the library Management system of MUT. A student is allowed to be issued books for a period of two weeks. Students can read newspapers/ magazines in the library and can even access the databases for e-books. The library staff is responsible for maintaining the records of students along with the issued books. The staff marks an entry in the register whenever a student is issued or returns a book. A fine is charged on student if he/ she fails to returns a book on time. The librarian is there to manage the staff, check the records and prepare reports for the registrar.

- a) Explain the main use of case diagrams in object oriented analysis and design. (5marks)
- b) (i) Identify the actors
(ii)Identify (extract) the use cases
(iii)Construct a proper use- case diagram (with proper symbols and notations) (15marks)