



**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
(MMUST)
MAIN CAMPUS**

**UNIVERSITY REGULAR EXAMINATIONS
2022/2023 ACADEMIC YEAR**

SECOND YEAR SECOND SEMESTER EXAMS

FOR THE DEGREES OF

BACHELOR OF INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT

**COURSE CODE: BIK 223
COURSE TITLE: INFORMATION SYSTEMS DEVELOPMENT**

DATE: 13/04/2023 TIME: 8:00-10:00AM

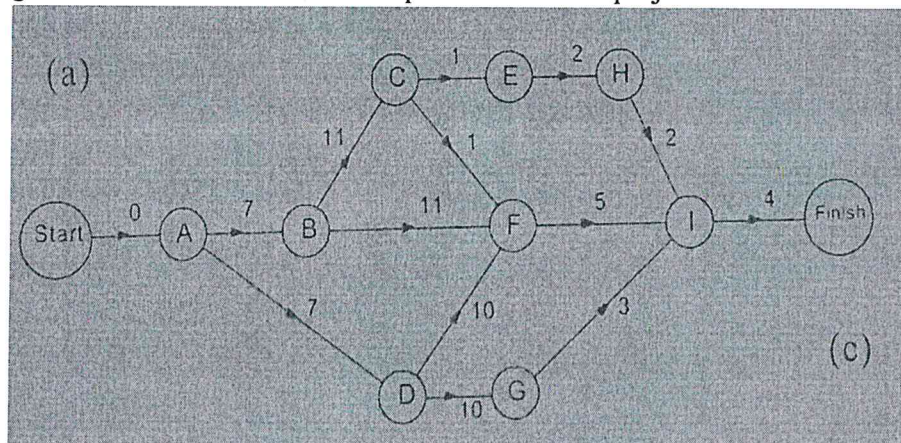
INSTRUCTIONS: Please attempt question one and any other two questions
TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating
Paper Consists of 3 Printed Pages. Please Turn Over



1) Question one (30 MARKS)

- a) Distinguish between the following systems development concepts [12mks]
 - i) ERD and DFD
 - ii) Object oriented system analysis and structured system analysis
 - iii) Inheritance and association
 - iv) Inclusive gateway and exclusive gateway on activity diagrams
- b) The following are some of the tools available to a systems analyst for use in systems development. Using suitable illustrations, describe them and explain how each is used
 - i) A class diagram [4MKS]
 - ii) Entity Relationship Diagram [4mks]
- c) The figure below is a CPM network representation of a project.



- i) Outline the critical activities (3mks)
- ii) What is the earliest completion time for the project (2mks)
- iii) What are the earliest completion and latest completion times for activity F (2mks)
- iv) Outline the possible paths (3mks)

2) Question Two (20 MARKS)

One common experience that students in every college and university share is enrolling in a college course.

- a) Draw a level 1 data flow diagram of data movement for enrollment in a college course. Use a single sheet and label each data item clearly [8mks]
- b) Explode one of the processes in your original data flow diagram into sub-processes, adding data flows and data stores [6mks]
- c) List the parts of the enrollment process that are “hidden” to the outside observer and about which you have had to make assumptions to complete a second-level diagram [6mks]

3) Question Three (20 MARKS)

Both systems development and software engineering share modelling tools that makes them to appear synonymous.

- a) Briefly describe The following Object Oriented Systems development concepts. Give examples how they are used in systems development [9mks]

- i) Encapsulation
 - ii) Aggregation
 - iii) Object
- b) Using a suitable application of class diagrams, illustrate the concept of Inheritance to model the relationships between various objects [6mks]
- c) Using a suitable application of class diagrams, illustrate the concept of Association to model the relationships between various objects [5MKS]

4) Question Four (20 MARKS)

An activity diagram is a special case of a state diagram in which all (or at least most) of the states are action or sub-activity states and in which all (or at least most) of the transitions are triggered by completion of the actions or sub-activities in the source states.

- a) Outline any four Notations and briefly describe how they are used [8 MKS]
- b) Outline the systematic process of ordering and taking delivery of items online using an ecommerce facility such as Amazon or Jumia [4mks]
- c) Using a suitable activity diagram notations in a swimlane to illustrate the different actors, represent the process outlined above [8mks]

5) Question five (20 MARKS)

The main purpose of the Use-Case diagram is to help development teams visualize the functional requirements of a system, including the relationship of "actors" (human beings who will interact with the system) to essential processes, as well as the relationships among different use cases.

- a) Briefly describe the components of a Use-Case model [8mks]
- b) Illustrate an online shopping activity diagram using a Use-Case model [12mks]

