VS

(University of Choice)

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

UNIVERSITY SPECIAL/SUPPLEMENTARY EXAMINATIONS
2021/2022 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE OF

BACHELOR OF INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT

COURSE CODE: **BIK223**
COURSE TITLE: **INFORMATION SYSTEMS DEVELOPMENT**

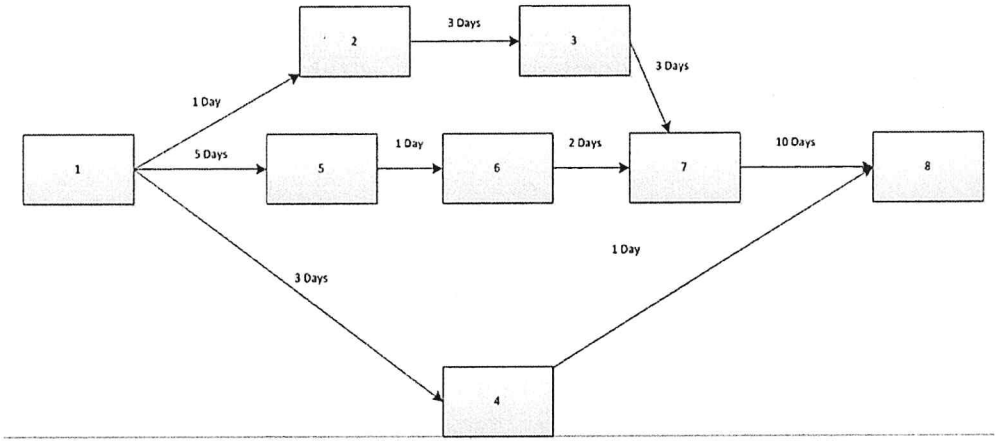
DATE: TUESDAY 02-08-2022 **TIME: 11:00a.m-1:00p.m**

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 [8mks]
      i) Context Diagram and DFD
      ii) Object oriented system analysis and structured system analysis
      iii) Systems development and software engineering
      iv) Predictive and adaptive approaches to SDLC
   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) An Activity diagram [4MKS]
      ii) Entity Relationship Diagrams (ERD) [4mks]
   c) The following is a project network
      i) Identify the critical activities [4mks]
      ii) What is the expected project duration [2mks]



2) **Question Two (20 MARKS)**
   The procurement process is one of the most common activities in organizations. It begins with a user department making a purchase request to the procurement department and ends with the supplier being paid for goods delivered.
   a) Outline the sequential process in form of pseudocode [6mks]
   b) Draw a levels 0 and 1 data flow diagram of data movement for the process. Use a single sheet and label each data item clearly [8mks]
   c) Explode one of the processes in your original data flow diagram into sub-processes, adding data flows and data stores [6mks]

3) **Question Three (20 MARKS)**
   Both systems development and software engineering share modelling tools that makes them to appear synonymous
   a) Both processes have an implementation stage. Distinguish between the implementation activities in the two [4MKS]
   b) 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

c) Swimlanes are used to organize responsibility for actions and subactivities according to class. Using a suitable example, describe the structure of a swimlane diagram [7MKS]

4) Question Four (20 MARKS)

The purpose of the class diagram is to show the static structure of the system being modeled. It specifically shows the entities in the system i.e. literally mean literal entities, along with each entity's internal structure and relationships with other entities in the system.

a) Briefly describe the components of a class diagram and how they are used [6 MKS]

b) Using any process familiar to you, explain the following concepts as modelled by Class diagrams

i) Uni-directional and bi-directional Associations [6mks]
ii) Inheritance [3mks]
iii) Aggregation [3mks]

5) Question five (20 MARKS)

Estimating the time a project will take is a critical factor in controlling systems development projects. Some of the tools available for a project manager include PERT, CPM and Gantt charts.

a) Distinguish between the following project control concepts

i) **activity-on-arc** (AOA) and **activity-on-node** (AON) project network [3mks]
ii) Milestones and critical activities [3mks]

b) The table below shows a breakdown of activities of a project and their dependencies.

Activity	Predecessors	Duration
A	—	2 weeks
B	A	4 weeks
C	B	10 weeks
D	C	6 weeks
E	C	4 weeks
F	E	5 weeks
G	D	7 weeks
H	E, G	9 weeks
I	C	7 weeks
J	F, I	8 weeks
K	J	4 weeks
L	J	5 weeks
M	H	2 weeks
N	K, L	6 weeks
O		0

i) Draw a well labelled CPM diagram to show how the project will progress from start to end [8mks]
ii) What is the total time required to complete the project if no delays occur? [3mks]
iii) Identify and list all the critical activities where any delays must be avoided to prevent delaying project completion [3mks]