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(*University of Choice*)

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

UNIVERSITY REGULAR EXAMINATIONS
2022/2023 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER EXAMS

FOR THE DEGREES OF

BACHELOR OF INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT
BACHELOR OF INFORMATION TECHNOLOGY
BACHELOR OF COMPUTER SCIENCE
BACHELOR OF TECHNOLOGY EDUCATION (COMPUTER STUDIES)

COURSE CODE: BIT 211/BCS 215
COURSE TITLE: SYSTEMS ANALYSIS AND DESIGN

DATE: 14/12/2022 **TIME: 08:00-10:00AM**

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

Question one (30 MARKS)

a) Distinguish between the following systems development concepts [8mks]
   i) Structured English and pseudocode
   ii) Object oriented system analysis and structured system analysis
   iii) Systems development and software engineering
   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) ERD [4MKS]
   ii) Swimlanes [4mks]

c) Feasibility study is an important part of systems development as it helps the organization determine whether to proceed with the systems development project. Imani Enterprises has been facing challenges growing their business in their local market and are considering investing on eCommerce systems before going online but are not sure what to expect. As an IT consultant, You have been contracted to advice [9mks]

d) To many users, the interface is the system. Do you agree? Justify your answer [5mks]

Question Two (20 MARKS)

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

e) Distinguish between DFD and ERD [3mks]

f) 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]

g) Explode one of the processes in your original data flow diagram into sub-processes, adding data flows and data stores [6mks]

h) 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 [3mks]

Question Three (20 MARKS)

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

i) Both processes have an implementation stage. Distinguish between the implementation activities in the two [4MKS]

j) 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

k) The purpose of the class diagram is to show the static structure of the system being modelled. Briefly describe the structure of a class in a class diagram [7MKS]

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.

l) Outline any four Notations and briefly describe how they are used [8 MKS]

m) Outline the systematic process of ordering and taking delivery of items online using an ecommerce facility such as Amazon or Jumia [6mks]

n) Using activity diagram notations, represent the process outlined above [6mks]

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.

o) Distinguish between Milestones and critical activities [3mks]

p) Consider the activities in the table below:

Activity	Description	Duration (days)
A	Prepare foundation	7
B	Make and position door frame	2
C	Lay drains, floor base, screed	15
D	Install services and fittings	8
E	Erect walls	10
F	Plaster ceiling	2
G	Erect roof	5
H	Install doors and windows	8
I	Fit gutters and pipes	2
J	Paint outside	3

The following is the order of precedence: activity D must follow E, E must follow A and B, F must follow D and G, G must follow E, H must follow G, I must follow C and F, and J must follow I.

i) Draw a well labelled activity network 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) Which are the critical activities where any delays must be avoided to prevent delaying project completion? [3mks]

iv) What path has the shortest completion time [3mks]