KENYA INSTITUTE OF HIGHWAYS AND BUILDING TECHNOLOGY

END OF TERM EXAMINATION AUGUST 2021

**EXAMINATION FOR THE DIPLOMA IN INFORMATION &
COMMUNICATION TECHNOLOGY YEAR 2**

UNIT TITLE: SYSTEM ANALYSIS AND DESIGN

DATE: 6ᵀᴴ AUGUST 2021   **TIME: 8:30 – 11:30 AM**

INSTRUCTIONS:

Answer Question **ONE** and any other **TWO** questions.

QUESTION ONE

a) Explain the term' System Theory'   (3marks)
b) Explain any four characteristics of a system   (8marks)
c) With an aid of a diagram, briefly explain the stages of the waterfall model
                                                                           (10marks)
d) Discuss the following concepts under which feasibility can be considered
    i)   Operational consideration
    ii)   Technical consideration
    iii)   Social consideration   (9marks)

QUESTION TWO

a) With an aid of a diagram, describe the four components of a data flow
   diagram   (4marks)
b) Describe the role of the data dictionary in systems development (2marks)
c) Explain five roles of a system analyst in systems development   (5marks)
d) Prototyping is a different approach to developing information systems.
   Describe two types of prototyping   (6marks)
e) Explain three drawbacks of prototyping   (3marks)

QUESTION THREE

a) Explain what is meant by a CASE tool. (2marks)

b) An applicant for a post graduate scholarship is granted a full scholarship if he has an undergraduate degree and has a higher than a second class upper division. If he has an upper second division, then he is allocated partial scholarship. Under all other circumstances he is not awarded any scholarship. Draw a decision tree for this scenario (9marks)

c) Logic modeling involves representing the internal structure and functionality of the processes within an information system. Describe three tools that can be used to represent these processes (9marks)

QUESTION FOUR

a) Describe any four fact finding techniques (8marks)

b) Differentiate the following concepts as used in system development
   i) Unit testing and integration testing
   ii) Open questions and closed questions
   iii) Hierarchical database and relational database (6marks)

c) Explain SSADM as a development methodology and explain any four implementation methods (6marks)

QUESTION FIVE

a) Explain the following types of system conversion changeovers
   i) Direct changeover
   ii) Parallel changeover
   iii) Pilot changeover
   iv) Phased changeover (8marks)

b) Distinguish between systematic sampling and stratified sampling (4marks)

c) Explain why software maintenance is necessary (2marks)

d) Explain the importance of documentation in an information system project (2marks)

e) Briefly describe the following types of systems
   i) Stochastic systems
   ii) Deterministic systems (4marks)