(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR THREE SEMESTER TWO

FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Course code : CSC366E

Course title : SIMULATION AND MODELING

DATE: 10TH FEBRUARY 2021 TIME: 2:00 P.M – 4:00 P.M

INSTRUCTIONS TO CANDIDATES

Answer **Questions ONE** and **ANY OTHER TWO.**

QUESTION ONE [COMPULSORY] [30 MARKS]

1. Describe why modelling of a system is referred to both as an art and a science [4marks]
2. State any five advantages of simulation [5marks]
3. Explain why it is best to start with a simple model and build toward greater complexity [2marks]
4. State and explain the five types of tests for random numbers [10marks]
5. Differentiate between the following: [3marks]
   a. Endogenous system and Exogenous system
   b. Open system and closed system
   c. Discrete system and continuous system
6. Describe any three disadvantages of simulation [6marks]

QUESTION TWO [20 MARKS]

1. State and explain the steps involved in a simulation study [16marks
2. State and explain any four types of models [4marks]

QUESTION THREE [20 MARKS]

1. Explain what you understand by queue behavior and queue discipline as used in modelling [4marks]
2. Describe any five application areas of simulation [10marks]
3. Describe the following queue disciplines. [6marks]
   a. SIRO
   b. SPT
   c. PR

QUESTION FOUR [20 MARKS]

1. Describe how you would simulate a queuing system. [15marks]
2. Describe any five scenarios where simulation is most appropriate for use [5marks]

QUESTION FIVE [20 MARKS]

1. Describe how you would simulate a random number system [15marks]
2. Define the following components of a system. [5marks]
   a. Entity
   b. Attribute
   c. Activity
   d. State of the system
   e. Event