Kasarani Campus
Off Thika Road
Tel. 2042692 / 3
P. O. Box 49274, 00100
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
THIRD YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS INFORMATION TECHNOLOGY
KBI 2301 – COMPUTER MODELLING OF DECISION

Date: 14TH December 2023
Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

1. Define computer modeling in the context of decision-making. Explain how computer models can be valuable tools in various industries (8 Marks)
2. Describe the steps involved in the process of creating a computer model for decision-making. Provide examples to illustrate each step (6 Marks)
3. What is the difference between deterministic and stochastic models? Give examples of situations where each type of model would be more appropriate (8 Marks)
4. Explain the concept of sensitivity analysis in computer modeling, and describe why is it important in decision-making, and how is it performed (8 Marks)

QUESTION TWO (20 MARKS)

1. Discuss the advantages and limitations of simulation models in decision-making. Provide an example of a real-world application where simulation modeling has been beneficial (8 Marks)
2. What is optimization modeling, and how can it be applied to decision-making problems (8 Marks)
3. Provide an example of an optimization problem and explain how a computer model can help find the optimal solution (4 Marks)

QUESTION THREE (20 MARKS)

1. Compare and contrast discrete-event simulation and continuous simulation, and outline in what types of scenarios you would choose one over the other (10 Marks)
2. Explain the concept of Monte Carlo simulation and outline how Monte Carlo simulation can be used to estimate probabilities and make informed decisions in uncertain situations (10 Marks)

QUESTION FOUR (20 MARKS)

1. Discuss the role of data in computer modeling for decision-making and describe how the quality and quantity of data impact the effectiveness of the model (8 Marks)
2. Provide examples of situations where modeling may lead to unintended consequences (4 Marks)
3. Describe the ethical considerations and potential pitfalls associated with computer modeling in decision-making (8 Marks)

QUESTION FIVE (20 MARKS)

1. Highlight two clear advantages and challenges of using these advanced technologies in computer modeling for decision-making (2 Marks)
2. Elucidate how machine learning and artificial intelligence techniques can be integrated into computer modeling for decision-making (8 Marks)
3. Consider a real-world decision-making problem, such as supply chain optimization or financial portfolio management. Explain how you would approach modeling and solving this problem using a computer-based approach (10 Marks)