KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
THIRD YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS AND INFORMATION TECHNOLOGY
KBI 2301 – COMPUTER MODELLING OF DECISIONS

Date: 10TH December 2024
Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS
QUESTION ONE (30 MARKS)

a) As the manager in an organization, managing the risks of over-reliance on models, what precautions & safeguards will you put in place to ensure that human judgment is still a critical part of the mitigation of risks? (5 Marks)

b) How does the organization ensure that decision-making remains human-centered, even when relying heavily on model outputs? (5 Marks)

c) What role do predictive models play in anticipating competitor actions, customer preferences, or market trends? (3 Marks)

d) Decision making is a difficult exercise. Hence, quite often issues arise about the quality of a decision made. Identify in detail seven major criteria for judging the quality of decision-making procedures. (5 Marks)

e) How are models used to assess the strategic risks and rewards of major organizational initiatives or investments? (4 Marks)

f) How does the organization handle trade-offs between the accuracy of complex models and the need for fast, actionable insights? (3 Marks)

g) You have been appointed a Project Manager for a small software product company. Your job is to build a breakthrough video game product that combine virtual reality hardware with state-of-the-art software. Because competition for the home entertainment market is intense, there is significant pressure to get the job done. What software process model(s) would you choose and why? (5 Marks)

QUESTION TWO (20 MARKS)

a) How does the organization validate and verify computer models before they are used to make important decisions? (4 Marks)

b) A meeting has been scheduled by the Management and you have been selected to represent the ICT director. The directorate was tasked to present an overview on use of simulation tools. In your presentation how would you explain the different simulation tools used for forecasting and planning? (6 Marks)

c) What are the potential biases inherent in the models used by the organization, and how are these biases detected and mitigated? (5 Marks)

d) How does the organization address ethical concerns related to decision-making with computer models, particularly in areas such as privacy, fairness, and transparency? (5 Marks)

QUESTION THREE (20 MARKS)

a) How does the organization address issues of data bias, uncertainty, or gaps in data when building models? (4 Marks)

b) What training or change management strategies has the organization implemented to promote the use of modelling in decision-making? (4 Marks)

c) How have organizational resistance or lack of technical expertise among decision-makers impacted the adoption of modelling tools? (4 Marks)

d) A fairly successful medium business enterprise wishes to replace its legacy systems. It wishes to procure rather than to purchase a modern enterprise resource planning system with a client/server configuration together with a state-of-the-art local area network infrastructure. The specifications for the entire system have been written and you have been asked to give a second opinion based on your decision. You notice that whereas the specifications are satisfactory the evaluation criteria and evaluation methodology have not been developed.

    i) Suggest a framework/model for this shortcoming, explaining your choice. (4 Marks)

    ii) Based on decision making skills, outline how you would treat the technical and the financial evaluations in the recommendation to award a contract. (4 Marks)

QUESTION FOUR (20 MARKS)

a) Assume you work for an organization that has never implemented computer simulation. You are tasked to present to the management the steps involved in developing a Computer Simulation. Discuss (8 Marks)

b) What processes are in place for continuously improving models, including refining algorithms, incorporating new data sources, or adjusting assumptions? (4 Marks)

c) The systematic approach involves a sequence of well-defined steps that guide the creation of a model from a real-world phenomenon. Discuss the phases of a systematic approach to Modeling. (8 Marks)

QUESTION FIVE (20 MARKS)

a) When tasked in an organization to come up with various computer models, What types of computer models would you mention, and explain the decision areas they would address? (6 Marks)

b) How are visualizations, dashboards, or user-friendly interfaces incorporated into the modelling process to make results more accessible to non-technical stakeholders? (4 Marks)

c) How does the organization use modelling to gain a competitive advantage, for example, by optimizing pricing strategies, marketing campaigns, or product development? (6 Marks)

d) In an organization, explain how to use game theory models or agent-based simulations to understand competitive dynamics and inform decision-making? (4 Marks)