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**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: 7<sup>TH</sup> AUGUST 2024  
Time: 8:30AM – 10:30AM

**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

- a) Mary, a sales manager, wants to analyze the impact of customer traffic on total sales. She concludes that sales depend on price and transaction volume. The price of a widget is \$1,000, and Sue sold 100 widgets last year, totaling \$100,000 in sales. She also finds that a 10% increase in customer traffic leads to a 5% increase in transaction volume. Using this information, Sue creates a financial model and sensitivity analysis with what-if scenarios. Formulate an equation and use it to demonstrate the effects of an increase in customer traffic on sales. **(6 Marks)**
- b) Giving examples of each, differentiate between simulation and model. **(4 Marks)**
- c) Describe five scenarios when simulation may not be the best approach. **(5 Marks)**
- d) When it comes to making decisions, there are various techniques that can be used for decision evaluation. One such technique is multiple criteria decision analysis (MCDA), which is valued for its simplicity and applicability to different types of choices. Describe the four steps involved in performing decision evaluation? **(4 Marks)**
- e) Highlight five examples of processes that can be modeled using complex adaptive systems. **(5 Marks)**
- f) When making decisions, scenario analysis considers at least three types of scenarios. Explain the three possible scenarios using examples. **(6 Marks)**

**QUESTION TWO (20 MARKS)**

- a) Using a diagram, thoroughly explore the interconnections between knowledge, information, and data. **(8 Marks)**
- b) With a well elaborated demonstration, discuss the Predator Prey systems **(10 Marks)**
- c) State any Four Quantitative Techniques for decision making **(2 Marks)**

**QUESTION THREE (20 MARKS)**

- a) When solving a problem, one of the key steps is to vividly analyze the problem. Describe the five main steps used in analyzing a problem. **(5 Marks)**
- b) Data models consist of entities, which are the objects or concepts to be tracked. Data modeling occurs at three levels. Discuss these levels. **(6 Marks)**

- c) There are various capacity modeling techniques, ranging from making estimates based on current resource utilization and experience to creating prototypes, full-scale benchMarks, and pilot studies. Discuss the three most popular ones **(9 Marks)**

**QUESTION FOUR (20 MARKS)**

- a) Elaborate how a conceptual design is different from a logical design. **(4 Marks)**
- b) Use a diagram to discuss the Types of decisions as used in modeling **(9 Marks)**
- c) Defining the term scenario modeling/analysis, demonstrate the steps involved in scenario planning and analysis. **(7 Marks)**

**QUESTION FIVE (20 MARKS)**

- a) State any four differences between an actual system and a model. **(8 Marks)**
- b) Strategic decisions need analysis and in-depth study, True or False? Discuss your answer. **(4 Marks)**
- c) The decision-making process varies in duration, ranging from almost instant mental reflection to lingering for weeks or even months. The availability of the correct information to the appropriate individuals at the right times is crucial throughout the entire process. Discuss the steps to follow during the decision-making process. **(8 Marks)**