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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR END SEMESTER EXAMINATION FOR THE BACHELOR OF BUSINESS INFORMATION TECHNOLOGY <u>KBI 2301 – COMPUTER MODELING FOR DECISION</u>

Date: 10TH AUGUST 2023 Time: 2:30PM – 4:30PM

(4 Marks)

(2 Marks)

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

- a) Determine which quantitative techniques do the following characteristics relate to.
 - i) This technique reduces waiting periods and the expenses they involve.
 - ii) The aim of this technique is to basically reduce wastage of time, energy and money in complex activities.
 - iii) This technique relies on probabilities instead of exact and accurate outcomes.
 - iv) Managers generally use this technique in situations of business rivalries or conflicts. (4 Marks)
- b) Assume Sue is a sales manager who wants to understand the impact of customer traffic on total sales. She determines that sales are a function of price and transaction volume. The price of a widget is \$1,000, and Sue sold 100 last year for total sales of \$100,000. Sue also determines that a 10% increase in customer traffic increases transaction volume by 5%. This allows her to build a financial model and sensitivity analysis around this equation based on what-if statements. Formulate the equation and hence illustrate what happens when customer traffic increases. (6 Marks)
- c) Describe the main Techniques of decision making
- d) Illustrate the Six Step Problem Solving process in order of precedence. (6 Marks)
- e) Define the terms:
 - i) Adaptive systems. (2 Marks)
 - ii) Sensitivity analysis
- f) Data models are made up of entities, which are the objects or concepts to be tracked hence data modeling occurs at three levels, discuss the levels.
 (6 Marks)

QUESTION TWO (20 MARKS)

- a) Discuss the Types of Decisions in modeling for decisions (9 Marks)
 b) A scenario analysis generally considers at least three types of scenarios when decision making, using
- examples explain the possible three scenarios that may occur. (6 Marks)
- c) Highlight five examples of processes which we can model with complex adaptive systems. (5 Marks)

OUESTION THREE (20 MARKS)

- Briefly describe the common record-based logical data models. a)
- Demonstrate the steps involved in database design as used in modeling. b)
- c) With the aid of a diagram, vividly discuss the relationship amongst knowledge, Information and Data

(8 Marks)

(6 Marks)

(6 Marks)

(6 Marks)

OUESTION FOUR (20 MARKS)

- The key to understanding the intricate relationship between data, information, and knowledge lies at a) the source of data and information. The source of both is twofold. Explain the two sources while giving examples of each of them. (5 Marks)
- b) With a well elaborated demonstration, discuss the Predator Prey systems (10 Marks)
- One of the main steps when solving a problem is analyzing the problem vividly. Explain the five main c) steps used when analyzing a problem. (5 Marks)

OUESTION FIVE (20 MARKS)

- a) For there to be an adaptive system, there must be at least three requirements in place, highlight them.
- Modeling has rich history in all the engineering disciplines. The experience suggests four basic b) (8 Marks) principles of modeling. Discus the four principles that have to be in place. (6 Marks)
- Elaborate the six Features of DSS c)