



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, 2024/2025 ACADEMIC YEAR
THIRD YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS & INFORMATION TECHNOLOGY
KBI 2309 – BUSINESS DECISION SUPPORT SYSTEMS

Date: 15TH April 2024
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) A Decision Support System uses current and historical data to predict future trends, which reduces guessing and saves time. Businesses in all industries can benefit from DSS software.
- Describe three roles of decision support systems in businesses today (3 Marks)
 - Outline the three main components that make up a DSS (3 Marks)
- b) Decision Support System is a general term for any computer application that enhances a person or group's ability to make decisions and or complete process tasks to make decisions.
- With a diagram evaluate decision making and problem solving (5 Marks)
 - State any three characteristics of a DSS (3 Marks)
- c) A decision-maker is an employee, usually in leadership, who makes challenging decisions that impact how the company operates. Employees who are strong decision-makers know how to effectively problem solve and use critical thinking skills that help find solutions to problems. Accordingly, organization theory classifies decision-making into three fundamental types based on the different levels of management. Discuss three types of decision making in an organization. (6 Marks)
- d) Decision theory operates by breaking a problem down into specific components, which can be mathematically or probabilistically modelled and combined with a suitable optimality principle to determine the best decision. Expound on structured, semi-structured and unstructured decision categories. (6 Marks)
- e) In the book Decision Support Systems: Concepts and Resources for Managers, Daniel J. Power, professor of management information systems at the University of Northern Iowa, breaks down decision support systems into five categories based on their primary sources of information. Distinguish between data-driven and model-driven DSS types. (4 Marks)

QUESTION TWO (20 MARKS)

- a) As observed previously, decision theory operates by breaking a problem down into specific components, which can be mathematically or probabilistically modelled and combined with a suitable optimality principle to determine the best decision.
- Explain the term Decision Theory (2 Marks)
 - Explain Statistical decision theory (2 Marks)
 - Describe decision making under uncertainty (2 Marks)
 - Describe decision making under risk (2 Marks)
- b) Consider a factory producing two products, product X and product Y. The problem is this: If you can realize \$10 profit per unit of product X and \$14 per unit of product Y, what is the production level of x units of product X and y units of product Y that maximizes the profit P?

Given this scenario, your production, and therefore your profit, is subject to resource limitations, or constraints. Assume in this example that you employ five workers—three machinists and two assemblers—and that each works only 40 hours a week.

Products X and/or Y can be produced by these workers subject to these constraints:

Product X requires three hours of machining and one hour of assembly per unit.

Product Y requires two hours of machining and two hours of assembly per unit.

- i) Formulate a decision matrix/payoff table (3 Marks)
- ii) Formulate the requisite objective and constraints equations (3 Marks)
- iii) Solve the problem with the graphical method (6 Marks)

QUESTION THREE (20 MARKS)

- a) According to Rowe and Boulgarides’ decision style theory (DST), decision-making styles work along two axes cognitive complexity and value orientation.
 - i) Outline the two axes (4 Marks)
 - ii) Using a table review the two axes (4 Marks)
- b) A farmer has to decide which of three crops she should plant on her 100Acre farm. The profit from each is dependent on the rainfall during the growing seasons. The farmer has categorized the amount of rainfall as HIGH, MEDIUM, LOW & NO RAINFALL. Her estimated profit is shown on the table.

	STATES OF WEATHER/RAINFALL			
	HIGH	MEDIUM	LOW	NO RAINFALL
CROP A	300	500	800	-100
CROP B	600	500	200	0
CROP C	0	500	600	400

- i) Calculate the optimal crop as using the LaPlace Criterion approach (6 Marks)
- ii) Identify the optimal crop using the MINMAX – Salvage Regret criterion (6 Marks)

QUESTION FOUR (20 MARKS)

- a) Discuss how the ML – Most likelihood criterion operates (3 Marks)
- b) According to Bennett (1986), for a nontechnical user, the design of an appropriate DSS user interface is the most important determinant of the success of a decision support implementation.
 - i) Discuss what is meant by the user interface subsystem (2 Marks)
 - ii) Outline the primary goal of a DSS user interface (2 Marks)
 - iii) Highlight any three issues associated with user interface (3 Marks)
- c) The different user interface styles can often be combined usefully in a single application or set of related applications (Galitz [1985]; Shneiderman [1992]; and Turban [1995]). When building a user interface, a designer should try to provide multiple ways to perform the same task. Describe the significance of this. (2 Marks)
- d) Systems developed to effectively support the decision-making process must accommodate the models that give focus to the decision-making motifs of the individual decision maker. illustrate the Model Management sub-system. (8 Marks)

QUESTION FIVE (20 MARKS)

The Coca-Cola Company uses an Executive Information System (EIS) to enable top-level executives to monitor the performance of its various markets and product lines. The EIS gathers and processes data from Coca-Cola's thousands of retailers and distributors worldwide, enabling executives to analyze sales data, market share, and product performance. The EIS also integrates data from external sources, such as economic indicators and competitors' performance, allowing executives to make informed decisions regarding marketing strategies, product development, and global expansion.

- a) Explain what an EIS is (2 Marks)
- b) Using a diagram draw the major components of an EIS (4 Marks)
- c) Discuss any three features of an EIS (3 Marks)
- d) With a table compare an EIS and a DSS (8 Marks)
- e) Compare an Expert System to Business Intelligence (3 Marks)