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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 2309 – BUSINESS DECISION SUPPORT SYSTEMS

Date: 06TH December 2024
Time: 2:30PM – 4:30PM

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

QUESTION ONE (30 MARKS)

a) **Define** the term Decision Support System (3 Marks)
b) **Outline** the main components that make up a DSS (3 Marks)
c) With the aid of a diagram **Illustrate** decisions making and problem solving (5 Marks)
d) **List** Any three characteristics of a DSS (3 Marks)
e) Organization theory classifies decision-making into three fundamental types based on the different levels of management. **Discuss** the three types of decision making. (6 Marks)
f) **Distinguish** between structured, semi-structured and unstructured decision categories (6 Marks)
g) **Explain** how Data-Driven and Model-Driven DSS types differentiate (4 Marks)

QUESTION TWO (20 MARKS)

a) 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.
   i) Define the term Decision Theory (2 Marks)
   ii) Define statistical decision theory (2 Marks)
   iii) Describe Decision making under uncertainty (2 Marks)
   iv) 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?
c) 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.
   i) Products X and/or Y can be produced by these workers subject to the following constraints:
   ii) Product X requires three hours of machining and one hour of assembly per unit.
   iii) Product Y requires two hours of machining and two hours of assembly per unit.
   iv) Formulate a **decision matrix/payoff** table (3 Marks)
   v) Formulate the requisite **objective** and **constraints** equations (3 Marks)
   vi) **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 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 appraoch (6 Marks)

ii) **Identify** the optimal crop through 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 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.

i) **DEFINE** an EIS (2 Marks)
ii) Using a diagram **ILLUSTRATE** the major components of an EIS (4 Marks)
iii) DISCUSS by three features of an EIS (3 Marks)
iv) **USING** a table compare an EIS and a DSS (8 Marks)
v) **COMPARE** an Expert System with Business Intelligence (3 Marks)