Questions 2:
Choice and Optimisation

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Question 1

Consider a set of all integers z such that $z^2 < 10$. Is it an ordered set? Does this set have the top (maximum) or the bottom (minimum) elements? What are their values if they exist? What happens if the condition is changed to $n^3 < 10$?

Question 2

What is a choice set? Give examples.

Question 3

What is a utility function? Give an example of a utility function for set $\{\text{False}, \text{Truth}\}$ if truth is preferred to false.

Question 4

Consider a choice problem between several designs of an aircraft. Suppose that the choice must be made based on two attributes: The cost and speed of a plane. How can two objectives, to minimise the cost and to maximise the speed, be combined in a single utility function?

Question 5

What are the main characteristics of structured and unstructured decisions?

Question 6

Why are structured decisions also called programmable decisions?

Question 7

Which of the following is an unstructured, strategic task?

a) Producing a report on the change of stock at the end of a week;

b) Evaluating the social impact of a new product line;

c) Scheduling the project work for the next six months;

d) Producing a five year budget plan.

Question 8

Give examples of structured and unstructured decisions in business. Justify your examples by referring to properties of these types of decisions.

Question 9

Briefly describe Simon's model of decision making. Draw the diagram and state what are the outcomes of each phase.