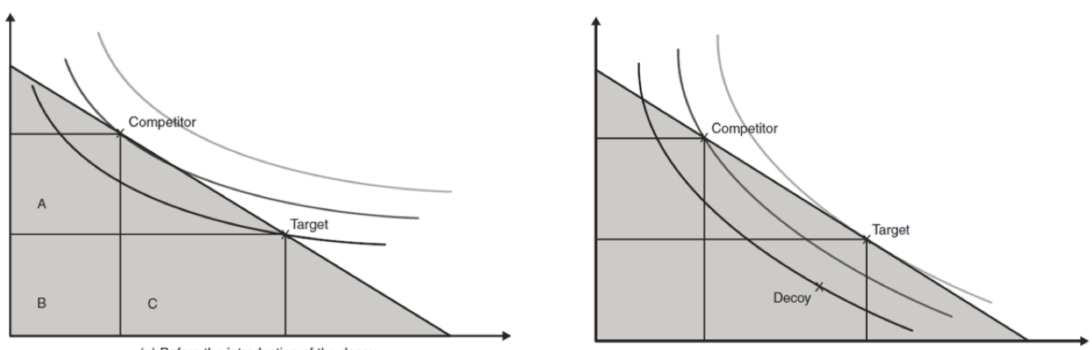
Exam

All 8 questions have equal weight

1. Discuss the decoy effect. Define the concept and give an example.

Solution: The decoy effect is one type of menu dependence. The decoy effect happens when introducing an inferior option changes the initial choice. It is a violation of the expansion condition.

Example: should use a two-dimension case (e.g. cars with different speed and safety), start from target (fast, unsafe) and competitor (Slow, safe), the decoy is worse than the target in both dimensions but better than the competitor in the same way as the target (a car that is less safe than both competitor and target, but with intermediate speed), the introduction of a decoy makes target preferred. Using a figure like below is a plus (for the car example, speed is in on the horizontal axis, safety on the vertical axis).



(a) Before the introduction of the decoy (b) After the introduction of the decoy

2. Discuss mental accounting and the hedonic editing hypothesis. Define the concepts and give an example.

Solution: Mental accounting: people's tendency to divide money into separate categories in their minds.

Hedonic-editing hypothesis: people may try to bundle outcomes to maximise their value.

Examples (just need to discuss at least one):

- segregated gains are valued more highly than integrated gains
  - winning two prizes at a lottery of \$5 and \$10 is better than winning one prize of \$15
  - why we wrap different presents to the same person separately;
  - why companies pay workers end-of-year bonuses instead of including them in the base salary
- segregated losses lead to more dissatisfaction than integrated losses.
  - why sellers try to sell expensive add-ons (e.g. radio when buying a car)
  - why people use credit cards (receiving only one bill at the end of the month)
  - why companies offer flat monthly fees
- integrating a small loss with a large gain leads to more value than segregating them
- segregating a large loss with a small gain leads to more value than integrating them (silver linings)

3. Discuss commitment. Define the concept and give an example.

Solution: Commitment = individuals may choose to constrain their future choices, because they know they will fall prey to impulsivity.

This assumes a person is time-inconsistent but sophisticated.

Examples:

- Ulysses tied to the mast
- layaway options to save for Christmas gifts
- Commercial commitment contracts
- Save More Tomorrow

An analytical example with numbers is even better.

4. Consider the following game. There are two players: a Sender (Player 1) and a receiver (Player 2). Each of them is initially given \$10. The sender chooses an amount x out of her \$10 to send to the receiver. The receiver gets $3 \times x$ and then chooses an amount y to send back to the sender. The sender's final payoff is $10 - x + y$. The receiver's final payoff is $10 + 3x - y$.

   (a) What is the sub-game perfect equilibrium of this game? Explain why.

   Solution: The receiver returns 0, because returning any $y > 0$ only decreases her payoff. Anticipating this, the sender sends 0.

   (b) How do people usually behave in this game? What are possible explanations for observed behavior?

   Solution: Player 1 sends approx \$5, Player 2 returns approx \$4 to \$5: so Player 2 reciprocates to some extent. Explanations:

   1. Positive reciprocity: the receiver feels they need to reciprocate the senders investment, this is viewed like gift that should be repaid.
   2. Altruism and inequality aversion: increasing the payoff of others increases individual utility.

5. Assume preferences over hats (x) and money (y) are described by the following utility function:

$$U(x, y) = v(x - \overline{x}) + y$$

where $\overline{x}$ is the endowment of hats and the value function is:

$$v(x - \overline{x}) = \begin{cases} x - \overline{x}, & \text{if } x \geq \overline{x} \\ 1.5(x - \overline{x}), & \text{if } x < \overline{x} \end{cases}$$

Compute the willingness-to-accept and the willingness-to-pay for one hat and explain why they are the same or different.

Solution: $WTA = 1.5$, $WTP = 1$

They are different because of loss-aversion: selling the hat is treated as a loss which is weighted more than gaining a hat.

6. A person's value function is:

$$v(x) = \begin{cases} \sqrt{x}, & \text{if } x \geq 0 \\ -2\sqrt{|x|}, & \text{if } x < 0 \end{cases}$$

where x is the gain or loss relative to the person's reference point. This person is facing the choice between a sure \$16 and a 50-50 gamble that pays \$25 is she wins and \$0 if she loses. If she takes the worst possible outcome as her reference point, which alternative would she prefer? Explain why.

Solution: The sure payment since $\sqrt{16} > 0.5 \times \sqrt{25}$. Because of diminishing sensitivity the person is risk-averse in the gains domain. All outcomes are framed as gains if she takes the worst possible outcome as her reference point.

7. A taxi company was involved in a hit-and-run accident at night. There are 130 taxis in your city, and two taxi companies, the Green and the Blue. There are 120 Green taxis and 10 Blue taxis. A witness identified the cab involved in the accident as Blue. The court tested the reliability of the witness under the same circumstances that existed on the night of the accident and concluded that the witness correctly identified each one of the two colors 80 percent of the time and failed 20 percent of the time.

(a) If the judge is a Bayesian, what is her belief that the taxi involved in the accident was Blue rather than Green?

Solution:

$$\Pr(B|b) = \frac{\Pr(b|B)\Pr(B)}{\Pr(b|B)\Pr(B) + \Pr(b|G)\Pr(G)} = \frac{0.8 \times \frac{1}{13}}{0.8 \times \frac{1}{13} + 0.2 \times \frac{12}{13}} = 0.25$$

(b) How would the judge's belief be affected if she suffered from base-rate neglect?

Solution: The judge belief would be higher and closer to 80%.

8. Consider the following game (payoffs are in dollars):

	L	R
U	\$6, \$4	\$2, \$2
D	\$0, \$1	\$2, \$1

Assume players are altruistic: a player's utility is $u(x, y) = 0.5x + 0.5y$, where x is the player's own monetary payoff and y is the monetary payoff of the other player. Find the Nash equilibria in pure strategies (if there is any).

Solution:

Game in utility:

	L	R
U	5, 5	2, 2
D	0.5, 0.5	1.5, 1.5

Nash: (U, L)

Useful formulas

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{P(B|A) \cdot P(A)}{P(B)} = \frac{P(B|A) \cdot P(A)}{P(B|A) \cdot P(A) + P(B|A^C) \cdot P(A^C)}$$ where $A^C = A$ does not occur