Problem 1 (counts 30%)

a) Explain the main differences between prospect theory and expected utility theory with asset integration. Briefly explain the concepts i) loss aversion, ii) reflection effect, and iii) decision weights.

Consider the two following choices: In choice A, a person receives 1000 NOK and must in addition choose between (A1) receiving 500 NOK for sure, or (A2) a 50-50 chance of receiving either 1000 NOK or 0 NOK. In choice B, a person receives 2000 NOK and must in addition choose between (B1) losing 500 NOK for sure, or (B2) a 50-50 chance of losing either 1000 NOK or 0 NOK.

b) A common finding is that subjects in A choose the certain outcome (A1) and in B chooses the lottery (B2). Is this behavior consistent with prospect theory? Is the behavior consistent with expected utility theory with asset integration? (Explain your answer and add extra assumptions if necessary for your argument).

Lotteries such as Lotto give a large premium with a very small probability. The expected value of the premiums is less than the cost of the tickets. We observe that people buy such lottery tickets.

c) Is this behavior consistent with prospect theory? Is the behavior consistent with expected utility theory with asset integration? (Explain your answer and add extra assumptions if necessary for your argument).

A person chooses between C: a lottery with a 1/3 probability of losing 100 kroner and 2/3 probability of winning 100 kroner, and D: 0 with certainty. It is commonly observed that people choose D.

d) Is this behavior (choosing D rather than C) consistent with prospect theory? (Explain your answer.)
e) Assume a person acts in a way consistent with expected utility theory with asset integration and consistently prefers option D over option C, regardless of their level of wealth. These assumptions give a logical implication that is often considered unreasonable. Explain briefly what kind of implications this is. (You do not have to do any calculations.)

Problem 2 (counts 30%)

Imagine two desk workers: Bert and Ernie. Within a four-month period the workers are required to clean their desk. It becomes increasingly dirty so the cost schedule of performing the task is $\mathbf{c} \equiv (3,\ 5,\ 10,\ 18)$.

Assume that each month is a time period, that they can only clean once and that they have to clean in one of the time periods.

Both employees have β, δ-preferences: β=1/2, δ=2/3.

a) (counts 10%) Set up the evaluated outcomes across time periods given their preferences. For example, you can use a table showing the outcomes in each time period in the columns and the period from which outcomes are evaluated in the rows, or you can use a decision tree.

b) (counts 5%) Seen from the perspective of t=0, which month is optimal for them to clean the desk?

c) (counts 5%) Bert is sophisticated and Ernie is naïve. When will Bert clean his desk? And when will Ernie clean his desk?

d) (counts 5%) Give an example of a commitment device. Would Bert and Ernie be willing to pay for a commitment device seen from month 0? If yes, how much would they be willing to pay?

e) (counts 5%) Briefly explain how the dual-self model is different from the multi-self model.

Problem 3 (counts 40%)

A large number of studies from experimental economics have demonstrated that, compared to the predictions from the self-interest model, people i) share more; ii) cooperate more; iii) sanction each other more; iv) vary their behaviors more depending on what others do (or are expected to be doing); v) vary their behaviors more depending on the specific context.

a) (Counts 10%) For each of the phenomena i) – v) above, mention at least one typical result from games often played in economic experiments that provides an example of the phenomenon. (You do not need to name specific studies by specific researchers, it is sufficient to mention patterns that are often seen in such experiments.)

Consider now an anonymous two-player ultimatum game. The amount at stake is 100 kr. The game is *binary* in the sense that the proposer can only choose between two alternatives: Either he can offer an equal split (50, 50), or he can propose to take 75 himself and give 25 to the responder: (75, 25). Assume that the proposer proposes (75, 25), and that the responder rejects.

b) (Counts 5%) Is the responder's behavior consistent with the responder having i) self-interested preferences? ii) Fehr-Schmidt inequality aversion? iii) Reciprocal preferences? Provide brief explanations (verbal discussions are sufficient).

Assume now that the game is being played a second time. We are considering **the same responder** as above, but let her now be matched with a different proposer.

This time, however, the only two alternatives available to proposers are (75, 25) and (90, 10); that is, the proposer must propose either 75 or 90 to himself.

The proposer in this second game proposes (75, 25). The responder accepts.

c) (Counts 5%) If you view the second ultimatum game in isolation, not taking into account what you know about behaviors in the first game, is the responder's behavior in the second ultimatum game consistent with the responder having i) self-interested preferences? ii) Fehr-Schmidt inequality aversion? iii) Reciprocal preferences? Provide brief explanations (verbal discussions are sufficient).

d) (Counts 5%) Consider now the responder's behavior in both ultimatum games, taking into account that it is the same responder acting in both cases. Given what we know about her choices in the two games, is this behavior consistent with the responder having i) self-interested preferences? ii) Fehr-Schmidt inequality aversion? iii) Reciprocal preferences? Provide brief explanations (verbal discussions are sufficient).

(Problem set continues on the next page.)

Assume now that reciprocal preferences can be specified as follows:
A reciprocal player i's utility U_i is given by

(i) $U_i = x_i + \alpha_i k_{ij} \tilde{k}_{ji}$

where

(ii) $k_{ij} = x_j(s_i, b_{ij}) - 1/2[x_j^{max}(b_{ij}) + x_j^{min}(b_{ij})]$ and

(iii) $\tilde{k}_{ji} = x_i(b_{ij}, c_{iji}) - 1/2[x_i^{max}(c_{iji}) + x_i^{min}(c_{iji})]$.

Here, α_i =a parameter indicating the strength of i's reciprocity concerns, x_i = i's material payoff, k_{ij} =i's kindness towards j, $\tilde{k}_{ji}$ = i's belief about j's kindness towards i $(i=1,2; j=1,2; i \neq j)$; s_i = i's strategy, b_{ij} = i's belief about j's strategy, $x_j^{max}(b_{ij})$ is the largest material payoff i could secure to j, given i's belief about j's strategy b_{ij}, and $x_j^{min}(b_{ij})$ is the smallest material payoff i could secure to j, given b_{ij}. Finally, c_{iji} =i's belief about j's belief about i's strategy.

Assume that for the responder, $\alpha_R = 1$.

e) (Counts 15%) Consider the second ultimatum game discussed above, that is, the game in which the proposer can only choose between proposing (75, 25) or (90, 10). The proposer proposes (75, 25). What is the responder's utility of accepting, if she thinks the proposer indeed expects her to accept anything strictly positive? What would be the responder's utility if she had the same belief about the proposer's expectation, but instead chose to reject (s_R = reject)?

(Hint: Note that since the game is sequential, the responder's belief about the proposer's strategy, b_{RP}, will be equal to the proposer's actual strategy. Also, if you end up with ugly multiplication exercises you don't have to calculate the final numbers if you don't have time.)