Business Decision Making   **Winter semester 2013/2014**
(20115)   **February 4, 2014**

Name: . . . .

Student identification number: . . . .

Group A

This exam consists of 14 pages with ten questions and one answer sheet. It is not allowed to open the binding. Please do not forget to enter your name and student identification number above. For each of the ten questions you can choose between six different answers, of which only **one** is correct. For each correct answer you will receive one point. If more than one answer to a question is marked, the answer will be considered as incorrect. For an incorrect answer or no answer to a question you will receive no points. You have 60 minutes to solve the questions.

Only the answer box below is used as the basis for grading. The numbered columns in the answer box on this page correspond to the numbered exam questions. Each row, characterized by letters a-f, represents an alternative answer to the respective exam question. Please mark your answers carefully by completely filling in the corresponding circle. If corrections are necessary, please indicate them clearly on this answer sheet.

Admitted Aids: Non-programmable pocket calculator;
                   Dictionary without handwritten notes.

Answer box										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
a	O	O	O	O	O	O	O	O	O	O
b	O	O	O	O	O	O	O	O	O	O
c	O	O	O	O	O	O	O	O	O	O
d	O	O	O	O	O	O	O	O	O	O
e	O	O	O	O	O	O	O	O	O	O
f	O	O	O	O	O	O	O	O	O	O

Question 1:

Two international companies, Up Co. and Down Inc., are contemplating a "merger of equals". Both companies have to agree on the issues Name, Location, Chairman, CEO and Layoffs. Both sides are able to assess the relative importance of each issue. Moreover, they have an idea of the total monetary value of the social issues, so that they can place a monetary value on each social issue. The following table shows the individual assessments.

		Mill. €	Up %	Down %	Mill. €
1	Name	312	6	44	2,024
2	Location	1,976	38	13	598
3	Chairman	312	6	13	598
4	CEO	624	12	8	368
5	Layoffs	1,976	38	22	1,012
	Sum	5,200	100	100	4,600

How large is the total share (in percentage points) which company UP Co. receives if both companies agree to apply the Knaster-Steinhaus procedure?

a) 50
b) 57
c) 69
X) 72
e) 76
f) 88

Question 2:

Joe is a risk-averse utility maximizer and faced with the task of having to choose between two uncertain investment projects P1 (straight line) and P2 (dashed line). The following illustration shows the risk profiles of both projects.
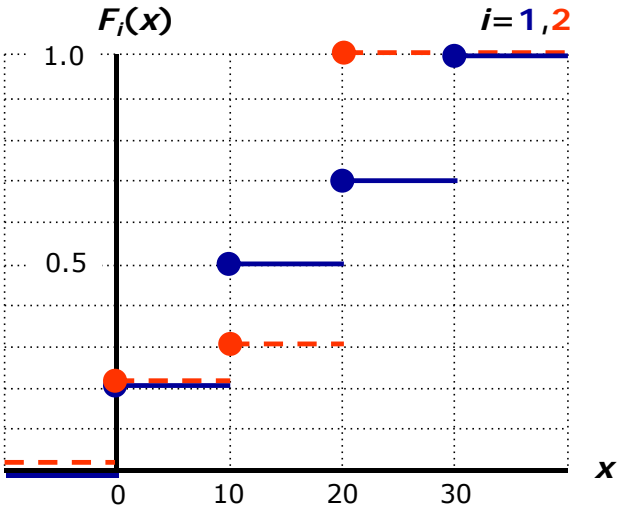

Which statement referring to the graphical representation is correct?

a) P1 first order stochastically dominates P2.
b) P2 first order stochastically dominates P1.
c) P1 second order stochastically dominates P2.
d) P2 second order stochastically dominates P1.
e) P2 first and second order stochastic dominates P1.
X Joe cannot decide between both projects on the basis of stochastic dominance of first or second order.

Question 3:

Ben, a risk neutral and payoff-maximizing venture capitalist, is thinking of financing two alternative ventures. One is a proposal to market a generic brand of a drug and the other is an investment in the development of a commercial application of a gene-splicing technique. The following decision tree represents the decision situation of Ben.
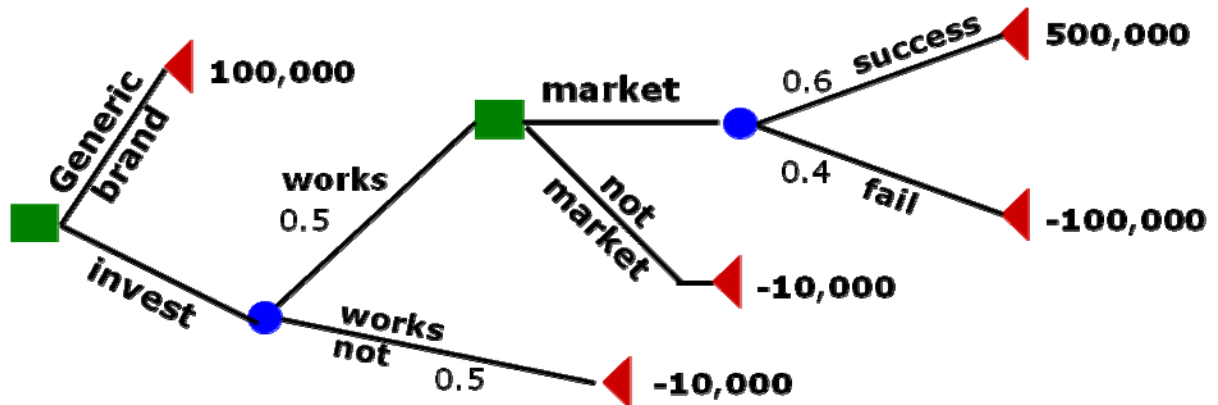
How large is the maximum informational value of an oracle which is able to predict with certainty whether the gene-splicing technique works?

X) 55,000
b) 75,000
c) 125,000
d) 130,000
e) 160,000
f) 0

Question 4:

A charity wants to hire a regional officer. The following table presents the overall performance (calculated with the SMART procedure) and the expected salary of each of the seven candidates.

Candidate	Total Score	Expected Salary
A	50	46,000
B	31	40,000
C	75	42,000
D	90	60,000
E	20	54,000
F	62	52,000
G	49	42,000

Which of the following statements is correct if the charity is a rational decision maker?

X) If the charity would be willing to pay always $ 8,000 for 20 points in the overall performance candidate C would be the optimal choice.
b) For a moderate weight on salary and total score candidate F is optimal.
c) Exactly four candidates survive the elimination of dominated alternatives.
d) For an extremely high relative weight on salary the charity would choose candidate D.
e) If candidate E would reduce his expected salary by $ 14,000 candidate E could be optimal.
f) Candidate B is dominated by candidate A.

Question 5:

Consider the following matrix game with payoffs for players 1 (first value) and 2 (second value), respectively, where player 1 has the choice between strategies A, B, and C, while player 2 chooses between X, Y, and Z. Both players aim at maximizing the own payoff.

	X	Y	Z
A	1,5	2,2	2,-3
B	2,-1	1,1	3,0
C	1,1	0,2	3,-1

Which of the following statements is correct?

a) In the mixed strategy equilibrium player 1 applies strategy B with probability 3/4.

X) If both players behave according to their mixed strategy equilibrium, the strategy combination B-Y has the same joint probability as the strategy combination B-X.

c) In the mixed strategy equilibrium player 2 applies strategy Y with probability 3/4.

d) If both players behave according to their mixed strategy equilibrium, A-X is the strategy combination with the highest joint probability.

e) In the mixed strategy equilibrium player 2 applies strategy Z with certainty.

f) There is no mixed strategy equilibrium.

Question 6:

Consider a decision situation under certainty with three different criteria (A, B, C). The decision maker applies the Analytic Hierarchy Process (AHP). As one element he needs to determine the priorities of these criteria.

	A	B	C
A	1	2	4
B	1/2	1	2
C	1/4	1/2	1

Which of the following statements is correct with respect to the matrix of pairwise comparisons given by the decision maker?

a) The matrix is not consistent.
b) Criterion B is twice as important as criterion A.
c) The maximum eigenvalue of this matrix is 2.
X) Criterion A's priority ω_A is 4/7.
e) The maximum eigenvalue of this matrix is 1.
f) Criterion B's priority ω_B is 7/2.

Question 7:

Imagine that you are the candidate in a game show with five rounds of statements to which you must respond only 'true' or 'false'. If your response is incorrect, you end the game with nothing. However, if your response is correct, you can leave with a total of $5,000 after the first round, $15,000 after the second, $40,000 after the third, $75,000 after the fourth, or $100,000 if you respond correctly to the fifth statement. After each correct response you must choose whether you wish to take the money or invest it in the next round. Since you do not know the next statement beforehand, you consider guessing in the next round, so that your chance of a correct response is 50%. Assume that you are risk neutral and you behave as a payoff maximizer. After which statement should you leave the game?

a) After the fourth.
X) After the third.
c) After the fifth.
d) After the second.
e) After the first.
f) You should not participate at all.

Question 8:

Consider the following statements concerning different rules in decision situations under uncertainty. Which of the following statements is correct?

a) For the Laplace rule it holds that the rank order of alternatives remains unchanged when one state of nature with all its consequences is duplicated.

b) The Minimax-Regret rule assumes an equal probability for all possible outcomes.

c) For the Minimax-Regret rule it holds that the rank order of alternatives is not influenced by the introduction of a new alternative that is not chosen.

X) For the Hurwicz rule it holds that, if one alternative strictly dominates another alternative, then it will be chosen.

e) The Maximax rule only considers the best and worst possible outcome.

f) The Maximin rule assumes extreme optimism.

Question 9:

Carol is offered a lottery with the opportunity to win $400 with a probability of p and otherwise $100. How large is the probability p if her certainty equivalent is $324 and her preferences are characterized by the following utility function?

$$u(x) = \frac{1}{\ln x}$$

a) 74 %
b) 62 %
✗) 88 %
d) 12 %
e) 96 %
f) Carol must win with certainty.

Question 10:

The Minion Tom is hungry and, thus, has to decide on his optimal snack. Three alternatives are relevant for this decision: a chocolate, a banana, and an icecream. He compares these alternatives on the basis of sweetness, healthiness, and enjoyability. The normalized swing weights as well as the performances of the alternatives with respect to each criterion (100=best, 0=worst) are given in the table below. Moreover, the table includes Tom's values of the costs of the alternatives (100=best, 0=worst).

Criteria	Normalized Swing Weight	Chocolate	Banana	Icecream
Sweetness	0.5	100	0	50
Healthiness	0.3	0	100	0
Enjoyability	0.2	25	0	100

Costs		0	100	50

Tom would like to apply the SMART procedure. For which normalized swing weight of costs is icecream the optimal choice?

a) 1
b) 1/3
X c) 1/5
d) 1/7
e) 1/9
f) 1/11

This page is for your notes.