Assessment guidelines SØK2012 V19

1. **Answer:** He promises no changes in taxes, but massive cuts in public services.

2. (a) **Answer:**Alexa's loss: $v(0) - v(30) = 0 - 15 = -15$
   (b) **Answer:** Bob's loss: $v(-30) - v(0) = -60$.
   (c) **Answer:**Bob is most disappointed.

3. (a) **Answer**: Let H be the hypothesis that the coin has two heads, $\neg H$ that the coin is fair, and E be the coin comes up heads. Using Bayes rule then gives

$$\begin{aligned} Pr(H \mid E) &= \frac{Pr(E \mid H)}{Pr(E \mid H) \times Pr(H) + Pr(E \mid \neg H) \times Pr(\neg H)} \times Pr(H) \\ &= \frac{1 \times \frac{1}{5}}{1 \times \frac{1}{5} + \frac{1}{2} \times \frac{4}{5}} = \frac{1}{3} \end{aligned}$$

   (b) **Answer**:

$$Pr(H \mid E) = \frac{1 \times \frac{1}{3}}{1 \times \frac{1}{3} + \frac{1}{2} \times \frac{2}{3}} = \frac{1}{2}.$$

4. (a) **Answer:** The expected value of the gamble is:

$$EV(x) = \frac{1}{3} \times 36 + \frac{2}{3} \times 9 = 18.$$

   (b) **Answer:** The expected utility of the gamble is:

$$EU(x) = \frac{1}{3} \times \sqrt{36} + \frac{2}{3} \times \sqrt{9} = 4.$$

   (c) **Answer:** The certainty equivalent CE is found by solving for CE in:

$$\begin{aligned} u(CE) &= EU(x) \\ \sqrt{CE} &= 4 \\ CE &= 16. \end{aligned}$$

(d) **Answer:** She is risk averse because the certainty equivalent is smaller than the expected value.

(e) **Answer:** The expected utility of the gamble is:

$$EU(x) = \frac{1}{3} \times 36^2 + \frac{2}{3} \times 9^2 = 486.$$

(f) **Answer:** The certainty equivalent CE is found by solving for CE in:

$$\begin{aligned} u(CE) &= EU(x) \\ CE &= \sqrt{486} \\ CE &\approx 22.05 \end{aligned}$$

(g) **Answer:** She is risk prone because the certainty equivalent is bigger than the expected value.

5. (a) **Answer:** From the point of view of time 0:

$$\begin{aligned} U^0(\boldsymbol{A}) &= 0 + \frac{2}{3} \times 0 + \left(\frac{2}{3}\right)^2 \times 18 = 8 \\ U^0(\boldsymbol{B}) &= 0 + \frac{2}{3} \times 6 + \left(\frac{2}{3}\right)^2 \times 0 = 4 \end{aligned}$$

(b) **Answer:** From the point of view of time 1:

$$\begin{aligned} U^1(\boldsymbol{A}) &= 0 + \frac{2}{3} \times 18 = 12 \\ U^1(\boldsymbol{B}) &= 6 + \frac{2}{3} \times 0 = 6 \end{aligned}$$

(c) **Answer:** From the point of view of time 0:

$$\begin{aligned} U^0(\boldsymbol{A}) &= 0 + \frac{1}{3} \times 1 \times 0 + \frac{1}{3} \times 1 \times 18 = 6 \\ U^0(\boldsymbol{B}) &= 0 + \frac{1}{3} \times 1 \times 6 + \frac{1}{3} \times 1 \times 0 = 2 \end{aligned}$$

(d) **Answer:** From the point of view of time 1:

$$\begin{aligned} U^1(\boldsymbol{A}) &= 0 + \frac{1}{3} \times 1 \times 18 = 6 \\ U^1(\boldsymbol{B}) &= 6 + \frac{1}{3} \times 1 \times 0 = 6 \end{aligned}$$

(e) **Answer:** Hop is most likely to experience regret, because at time 2 it is no longer possible to prepare for the exam.

6. (a) **Answer:** Let The probability that Player 1 plays U be $p = Pr(U) = 1 - Pr(D)$. The probability depends upon the mixed strategy of Player 2. This must be where Player 2 is indifferent between L and R in terms of expected payoffs:

$$\begin{aligned} Eu(L) &= Eu(R) \\ 5 \times p + 1 \times (1-p) &= 1 \times p + 3 \times (1-p) \\ 1 + 4 \times p &= 3 - 2 \times p \\ 6p &= 2 \\ p &= \frac{1}{3}. \end{aligned}$$

(b) **Answer:** Let the probability that Player 2 plays L be $q = Pr(L) = 1 - Pr(R)$. The probability depends upon the mixed strategy of Player 1. This must be where Player 1 is indifferent between U and D in terms of expected payoffs:

$$\begin{aligned} Eu(U) &= Eu(D) \\ 5 \times q + 1 \times (1-q) &= 1 \times q + 3 \times (1-q) \\ 1 + 4 \times q &= 3 - 2 \times q \\ 6 \times q &= 2 \\ q &= \frac{1}{3}. \end{aligned}$$

Alternatively: since the payoffs are the same, the probabilities must be the same.

7. **Answer:** Good answers will include explanations of: framing effects, endowment effects, loss aversion, value function, integration and segregation, and probability weighting.