

TOPIC 6 REVIEW QUESTIONS

Questions 1 – 8 relate to the following data.

A person with wealth m has the following utility function over goods x and y :

$$u(x, y) = ax^{\frac{1}{2}} + by^{\frac{1}{2}}$$

She faces prices p_x and p_y for goods x and y respectively.

It can be shown the MRS associated with this utility function is

$$MRS_{xy} = \frac{ay^{\frac{1}{2}}}{\frac{1}{2}bx^{\frac{1}{2}}}$$

Assume that $a = 1$ and $b = 1$.

This person faces uncertainty over her wealth. In particular, she has current wealth m_H but she will suffer a loss L with probability π , reducing her wealth to $m_L = m_H - L$.

1. At given wealth m , her utility-maximizing consumption choices are

- A. $x(p, m) = \frac{m^{\frac{1}{2}} p_Y}{p_X (p_X + p_Y)}$ and $y(p, m) = \frac{m^{\frac{1}{2}} p_X}{p_Y (p_X + p_Y)}$
- B. $x(p, m) = \frac{m p_Y}{p_X (p_X + p_Y)}$ and $y(p, m) = \frac{m p_X}{p_Y (p_X + p_Y)}$
- C. $x(p, m) = \frac{m^2 p_Y}{p_X (p_X + p_Y)}$ and $y(p, m) = \frac{m^2 p_X}{p_Y (p_X + p_Y)}$
- D. $x(p, m) = \frac{m p_Y}{p_X (p_X + p_Y)^2}$ and $y(p, m) = \frac{m p_X}{p_Y (p_X + p_Y)^2}$

2. Her indirect utility function is

A. $v(p, m) = \left(\frac{m(p_X p_Y)}{p_X + p_Y} \right)^{\frac{1}{2}}$

B. $v(p, m) = \left(\frac{m(p_X + p_Y)}{p_X p_Y} \right)^2$

C. $v(p, m) = \left(\frac{m(p_X p_Y)}{p_X + p_Y} \right)^2$

D. $v(p, m) = \left(\frac{m(p_X + p_Y)}{p_X p_Y} \right)^{\frac{1}{2}}$

For Question 3 – 7, assume the following parameter values:

$$p_X = 2, p_Y = 2, m_H = 10000, L = 5904 \text{ and } \pi = 0.25$$

3. The expected value of the prospect is

- A. 4096
- B. 8524
- C. 7346
- D. 2500

4. The certainty-equivalent wealth associated with the prospect is

- A. 8281
- B. 7346
- C. 7500
- D. 4096

5. The risk premium for this prospect is

- A. 862
- B. 250
- C. 243
- D. 142

6. If this agent can purchase insurance against the loss at price $r = 0.27$ per dollar of coverage, how much insurance will she buy?

- A. 4241.27
- B. 4096
- C. 5904
- D. 3723.66

7. What is the maximum total premium this person would be willing to pay for full insurance?

- A. 2346
- B. 1719
- C. 1136
- D. 1459

8. Would any your answers to Q3 – Q7 be different if prices are instead $p_x = 3$, $p_y = 5$?

- A. Yes.
- B. No.

Questions 9 – 15 relate to the following data.

A person with wealth m has the following utility function over goods x and y :

$$u(x, y) = ax^{\frac{1}{2}} + by^{\frac{1}{2}}$$

She faces prices p_x and p_y for goods x and y respectively.

It can be shown the MRS associated with this utility function is

$$MRS_{xy} = \frac{ay^{\frac{1}{2}}}{bx^{\frac{1}{2}}}$$

Assume that $a = 3$ and $b = 4$, and that $p_x = 25$, $p_y = 25$.

This person faces uncertainty over her wealth. In particular, she has current wealth m_H but she will suffer a loss L with probability π , reducing her wealth to $m_L = m_H - L$.

9. At given wealth m , her utility-maximizing consumption choices are

- A. $x(p, m) = \frac{3m^{\frac{1}{2}}}{25}$ and $y(p, m) = \frac{4m^{\frac{1}{2}}}{25}$
- B. $x(p, m) = \frac{3m^2}{625}$ and $y(p, m) = \frac{4m^2}{625}$
- C. $x(p, m) = \frac{9m}{625}$ and $y(p, m) = \frac{16m}{625}$
- D. $x(p, m) = \frac{9mp}{25}$ and $y(p, m) = \frac{4m}{25}$

10. Her indirect utility function is

A. $v(p, m) = m^{\frac{1}{2}}$

B. $v(p, m) = \frac{4m^{\frac{1}{2}}}{3}$

C. $v(p, m) = \frac{m^2}{5}$

D. $v(p, m) = \frac{3m^{\frac{1}{2}}}{4}$

For Question 11 – 15, assume the following parameter values:

$$m_H = 14400, L = 4400 \text{ and } \pi = 0.25$$

11. The expected value of the prospect is

A. 12600

B. 11230

C. 9860

D. 13300

12. The certainty-equivalent wealth associated with the prospect is

A. 12300

B. 13225

C. 11000

D. 9060

13. The risk premium for this prospect is

- A. 75
- B. 300
- C. 230
- D. 800

14. If this agent can purchase insurance against the loss at price $r = 0.28$ per dollar of coverage, how much insurance will she buy?

- A. 2196
- B. 526.7
- C. 626.1
- D. 112.34

15. What is the maximum total premium this person would be willing to pay for full insurance?

- A. 1175
- B. 986
- C. 1225
- D. 1035

ANSWER KEY

1. B
2. D
3. B
4. A
5. C
6. A
7. B
8. B
9. C
10. A
11. D
12. B
13. A
14. C
15. A