

TOPIC 3 – PART 1 REVIEW QUESTIONS

1. Consider the two-person exchange economy depicted in **Figure R3-1**, where E denotes the endowment point and C denotes the competitive equilibrium. At this equilibrium,

- A. Person 1 is a buyer of X and a seller of Y.
- B. Person 1 is a buyer of Y and a seller of X.
- C. Both persons are sellers of X.
- D. There is not enough information to determine who is a buyer or seller of any particular good.

2. At the competitive equilibrium depicted in **Figure R3-1**, the wealth of person 1 is

- A. $p_X \bar{X}_1 + p_Y \bar{Y}_1$
- B. less than $p_X \bar{X}_1 + p_Y \bar{Y}_1$ because she sells some of her Y.
- C. less than $p_X \bar{X}_1 + p_Y \bar{Y}_1$ because she sells some of her X.
- D. greater than $p_X \bar{X}_1 + p_Y \bar{Y}_1$ because trade creates a Pareto improvement.

3. Consider the following choice problem for person 1 in the two-person exchange economy

$$\max_{x_1, y_1} u_1(x_1, y_1) \quad \text{subject to} \quad p_X x_1 + p_Y y_1 = M_1$$

The solution to this problem is found by solving

- A. $MRS^1 = \frac{p_Y}{p_X}$
- B. $MRS^1 = \frac{p_X}{p_Y}$
- C. $MRS^1 = \frac{p_Y}{p_X}$ combined with $p_X x_1 + p_Y y_1 = M_1$
- D. $MRS^1 = \frac{p_X}{p_Y}$ combined with $p_X x_1 + p_Y y_1 = M_1$

4. The competitive equilibrium in the two-person exchange economy is Pareto efficient because

- A. the persons in this economy would not trade if trade made either person worse off.
- B. each person gets to consume more of each good than is possible at the endowment point.
- C. prices adjust to ensure that supply equals demand.
- D. None of the above.

5. The competitive equilibrium in the two-person exchange economy is Pareto efficient because price-taking behaviour leads to $MRS^1 = MRS^2$.

- A. True.
- B. False.

Questions 6 – 12 refer to the following information.

Consider a two-person exchange economy with two goods in fixed amounts $X = 75$ and $Y = 125$. Person 1 has preferences represented by

$$u_1 = x_1 y_1^2$$

and person 2 has preferences represented by

$$u_2 = x_2^2 y_2$$

The endowment is $E = \{ \bar{X}_1 = 25, \bar{Y}_1 = 50, \bar{X}_2 = 50, \bar{Y}_2 = 75 \}$. These agents can buy and sell x and y at prices p_x and p_y respectively. Let y be the numeraire good.

Recall that the MRS for Cobb-Douglas preferences is

$$MRS = \frac{ay}{bx}$$

where a is the exponent on good x .

6. The consumption of x by person 1 as a function of p_x is

A. $\frac{50p_x + 100}{3}$

B. $\frac{75p_x + 100}{3p_x}$

C. $\frac{25p_x + 50}{3p_x}$

D. $\frac{50p_x + 75}{2p_x}$

7. The consumption of y by person 2 as a function of p_x is

A. $\frac{25p_x + 50}{3}$

B. $\frac{75p_x + 50}{3p_x}$

C. $\frac{25p_x + 75}{3p_x}$

D. $\frac{50p_x + 75}{3}$

8. The equilibrium price of x (relative to the price of y) in this economy is

A. $p_x^* = \frac{3}{2}$

B. $p_x^* = 2$

C. $p_x^* = \frac{1}{2}$

D. $p_x^* = \frac{1}{3}$

9. At the equilibrium price, person 1 is a buyer of good x .

A. True.

B. False.

10. The Pareto frontier for this economy is

A. $y_1^{PF} = \frac{2x_1^2}{x_1 + 300}$

B. $y_1^{PF} = 2x_1$

C. $y_1^{PF} = \frac{500x_1}{3x_1 + 75}$

D. $y_1^{PF} = \frac{100x_1}{2x_1 + 175}$

11. The competitive equilibrium lies on the Pareto frontier.

A. True.

B. False.

12. The competitive equilibrium is in the core with respect to the endowment point.

A. True.

B. False.

Questions 13 – 19 refer to the following information.

Consider a two-person exchange economy with two goods in fixed amounts $X = 75$ and $Y = 150$. Person 1 has preferences represented by

$$u_1 = x_1^2 y_1^2$$

and person 2 has preferences represented by

$$u_2 = x_1 y_2$$

The endowment is $E = \{ \bar{X}_1 = 25, \bar{Y}_1 = 50, \bar{X}_2 = 50, \bar{Y}_2 = 100 \}$. These agents can buy and sell x and y at prices p_x and p_y respectively. Let y be the numeraire good.

Recall that the MRS for Cobb-Douglas preferences is

$$MRS = \frac{ay}{bx}$$

where a is the exponent on good x .

13. The consumption of x by person 2 as a function of p_x is

A. $\frac{25p_x + 50}{p_x}$

B. $\frac{25p_x + 50}{2p_x}$

C. $\frac{75p_x + 25}{3p_x}$

D. $\frac{50p_x + 25}{2}$

14. The consumption of y by person 1 as a function of p_x is

A. $\frac{25p_x + 50}{3p_x}$

B. $\frac{50p_x + 50}{2p_x}$

C. $\frac{25p_x + 50}{2}$

D. $\frac{25p_x + 50}{2p_x}$

15. The equilibrium price of x (relative to the price of y) in this economy is

A. $p_x^* = \frac{3}{2}$

B. $p_x^* = 2$

C. $p_x^* = \frac{1}{2}$

D. $p_x^* = \frac{1}{3}$

16. The Pareto frontier for this economy is

A. $y_1^{PF} = \frac{2x_1^2}{x_1 + 300}$

B. $y_1^{PF} = 2x_1$

C. $y_1^{PF} = \frac{500x_1}{3x_1 + 75}$

D. $y_1^{PF} = \frac{100x_1}{2x_1 + 175}$

17. The competitive equilibrium lies on the Pareto frontier.

A. True.

B. False.

18. At the equilibrium price, person 2 is a buyer of good x .

A. True.

B. False.

19. At the competitive equilibrium, there is no trade.

A. True.

B. False.

Questions 20 – 25 refer to the following information.

Consider a two-person exchange economy with two goods in fixed amounts $X = 90$ and $Y = 110$. Person 1 has preferences represented by

$$u_1 = x_1^2 y_1$$

and person 2 has preferences represented by

$$u_2 = x_1^3 y_2$$

The endowment is $E = \{ \bar{X}_1 = 30, \bar{Y}_1 = 90, \bar{X}_2 = 60, \bar{Y}_2 = 20 \}$. These agents can buy and sell x and y at prices p_x and p_y respectively. Let y be the numeraire good.

Recall that the MRS for Cobb-Douglas preferences is

$$MRS = \frac{ay}{bx}$$

where a is the exponent on good x .

20. The consumption of x by person 1 as a function of p_x is

A. $\frac{30p_x + 90}{2p_x}$

B. $\frac{60p_x + 30}{p_x}$

C. $\frac{20p_x + 60}{p_x}$

D. $\frac{30p_x + 60}{2}$

21. The consumption of y by person 2 as a function of p_x is

A. $15p_x + 5$

B. $\frac{30p_x + 10}{4p_x}$

C. $2p_x + 60$

D. $\frac{15p_x + 30}{2p_x}$

22. The equilibrium price of x (relative to the price of y) in this economy is

- A. $p_x^* = 1$
- B. $p_x^* = 2$
- C. $p_x^* = 3$
- D. $p_x^* = 4$

23. At the equilibrium price, person 2 is a seller of good x .

- A. True.
- B. False.

24. The Pareto frontier for this economy is

- A. $y_1^{PF} = \frac{x_1^3}{x_1 + 180}$
- B. $y_1^{PF} = \frac{90x_1}{3x_1 + 180}$
- C. $y_1^{PF} = \frac{330x_1}{x_1 + 180}$
- D. $y_1^{PF} = 3x_1$

25. The endowment point lies above the Pareto frontier.

- A. True.
- B. False.

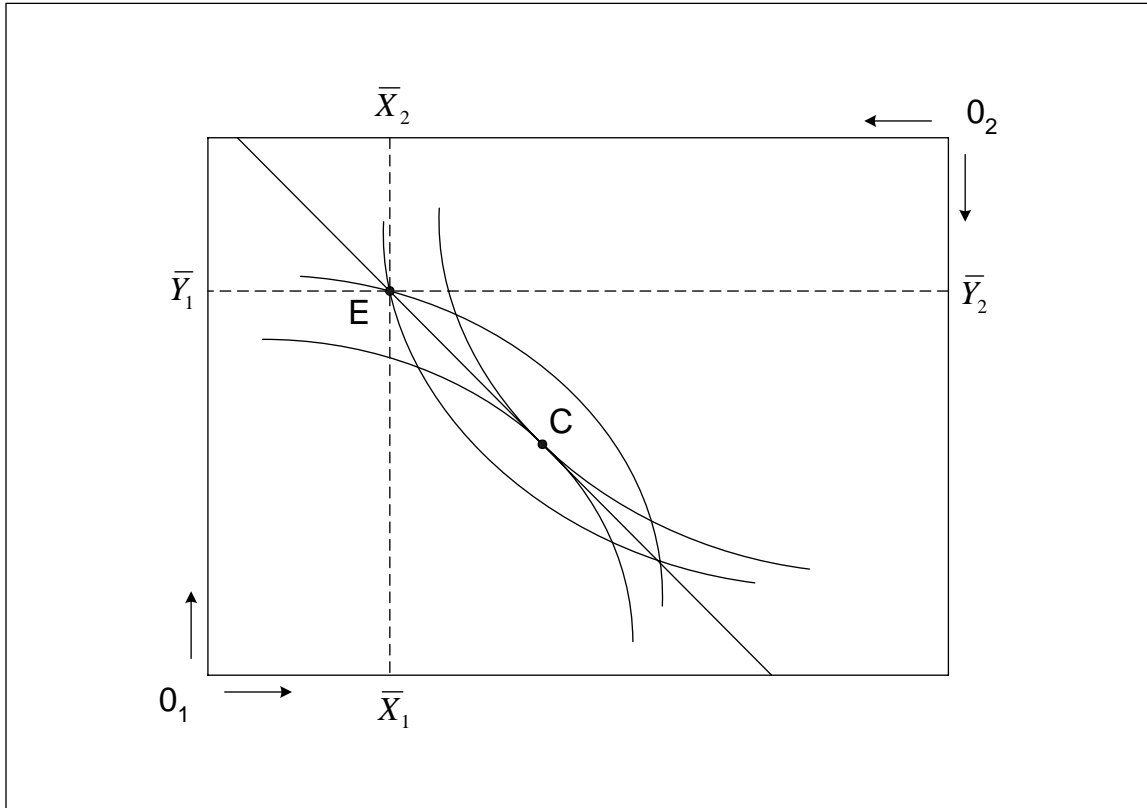


Figure R3-1

ANSWER KEY

1. A
2. A
3. D
4. D See Question 5.
5. A
6. C
7. D
8. B
9. B
10. C
11. A
12. A
13. A
14. C
15. B
16. B
17. A
18. B
19. A See Figure R3-2.
20. C
21. A
22. C
23. A
24. C
25. A See Figure R3-3.

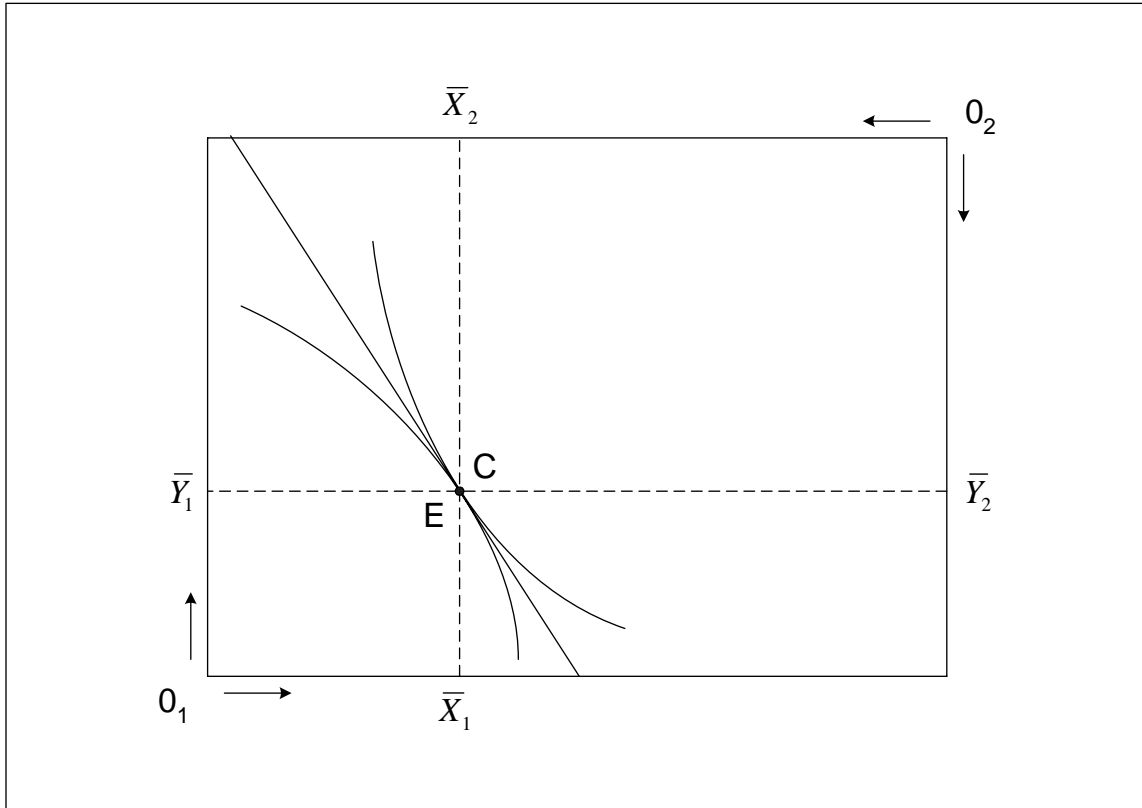


Figure R3-2

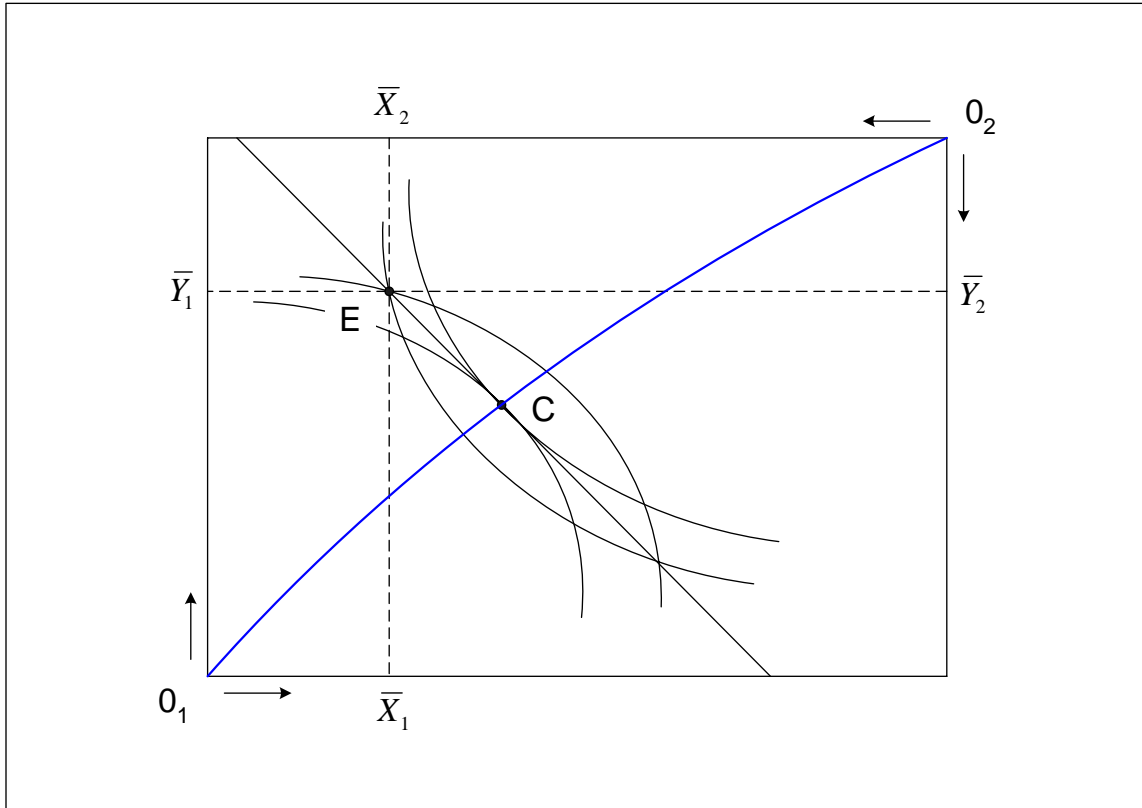


Figure R3-3