2. If a reallocation creates a Pareto improvement then it must also create social surplus.

A. True.

B. False.

3. If a reallocation creates a potential Pareto improvement then it must also create social surplus.

A. True.

B. False.

4. If allocation B is not Pareto efficient, and allocation A is Pareto efficient, then allocation A must Pareto-dominate allocation B.

A. True.

B. False.

5. Figure 1 depicts a two-person exchange economy. A proposed reallocation would move this economy from point E to point R. The proposed reallocation is a Pareto improvement.

A. True.

B. False.

6. Consider again the setting described in **Figure 1**. Which of the following statements are false?

A. Allocation Q Pareto-dominates allocation E.

B. Allocation Q is in the core with respect to allocation E.

C. Allocation P and allocation Q cannot be Pareto-ranked.

D. None of the above.

7. Consider again the setting described in **Figure 1**. The set of allocations that Pareto-dominate E includes allocations Q and P.

A. True.

B. False.

8. Which of the following is the best description of the "independence of irrelevant alternatives axiom" underlying Arrow's Impossibility theorem?

A. A social choice rule can rank at most two alternatives.

B. The preference ranking for an individual over *x* and *z*, and *y* and *z* should be irrelevant for the social ranking of *x* and *y*.

C. The preference ranking for an individual over *x* and *z*, and *y* and *z* should be irrelevant for the social ranking of *x* and *z*.

D. Any set of individual preferences that are complete, reflexive and transitive is permissible in the construction of a social choice rule.

9. One implication of Arrow's Impossibility Theorem is that a social choice can be found for ranking allocations if and only all individuals have identical preferences.

A. True.

B. False.

10. Consider a setting in which three individuals have the following preference rankings over three candidates *X*, *Y* and *Z*:

Person 1: $X > Y > Z$

Person 2: $Y > Z > X$

Person 3: $Z > X > Y$

A two-step pair-wise majority voting rule in this setting will produce *Z* as the winning candidate regardless of the voting agenda.

A. True.

B. False.

11. The competitive equilibrium in the two-person exchange economy is in the core with respect to the endowment because

A. price-taking behaviour leads to $MRS^1 = MRS^2$ and voluntary trade must be mutually beneficial if it takes place at all.

B. price-taking behaviour leads to $MRS^1 = MRS^2$ and the gains from trade are shared equally.

C. both agents act to maximize utility and so both agents must have the highest possible utility.

D. None of the above.

Questions 12 – 16 relate to the following two-person exchange economy. Person 1 has preferences represented by

$$u_1 = x_1 y_1^2$$

and person 2 has preferences represented by

$$u_2 = x_2^3 y_2$$

The fixed amounts of good *x* and good *y* are $X = 100$ and $Y = 100$ respectively.

Recall that the MRS for Cobb-Douglas preferences is

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

where a is the exponent on good x.

12. The MRS for person 1 is

A. $MRS_1 = 2x_1 y_1$

B. $MRS_1 = \frac{y_1}{2x_1}$ ****

C. $MRS_1 = \frac{2y_1}{x_1}$

D. None of the above.

13. The Pareto frontier for this economy is given by

A. $y_1^{PF} = \frac{600x_1}{5x_1 + 100}$ ****

B. $y_1^{PF} = \frac{300x_1}{100 - 3x_1}$

C. $y_1^{PF} = \frac{100x_1}{3x_1 + 300}$

D. $y_1^{PF} = \frac{100x_1}{600 - 5x_1}$

14. Suppose the current allocation in this economy is

$$\text{E} = \{ x_1 = 20,\ y_1 = 80,\ x_2 = 80,\ y_2 = 20 \}$$

This allocation is inefficient.

A. True.

B. False.

15. Consider the alternative allocation:

$$\text{A} = \{ x_1 = 30,\ y_1 = 72,\ x_2 = 70,\ y_2 = 28 \}$$

Which of the following statements are false?

A. Allocation A is Pareto efficient.

B. Allocation A and E cannot be Pareto-ranked.

C. Allocation A Pareto-dominates allocation E.

D. Allocation A is not in the core with respect to E.

16. Consider the alternative allocation:

$$\text{B} = \{ x_1 = 30,\ y_1 = 70,\ x_2 = 70,\ y_2 = 30 \}$$

Which of the following statements are false?

A. Allocation B is not Pareto efficient.

B. Allocation B and A can be Pareto-ranked.

C. Allocation B Pareto-dominates allocation E.

D. Allocation B is in the region of mutual benefit with respect to E.

Questions 17 – 21 refer to the following information.

Consider a two-person exchange economy with two goods in fixed amounts $X = 90$ and $Y = 190$. Person 1 has preferences represented by

$$u_1 = x_1^2 y_1$$

and person 2 has preferences represented by

$$u_2 = x_2 y_2^3$$

The endowment is $\text{E} = \{ \overline{X}_1 = 30, \overline{Y}_1 = 150,\ \overline{X}_2 = 60, \overline{Y}_2 = 40 \}$. 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.

17. The consumption of x by person 1 as a function of p_X is

A. $\frac{20p_X + 100}{p_X}$ ****

B. $\frac{30p_X + 190}{3p_X}$

C. $\frac{10p_X + 30}{p_X}$

D. $\frac{15p_X + 60}{2p_X}$

18. The consumption of y by person 2 as a function of p_X is

A. $\frac{45p_X + 50}{3}$

B. $15p_X + 10$

C. $45p_X + 30$ ****

D. $\frac{20p_X + 75}{2}$

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

A. $p_X^* = 3$

B. $p_X^* = 2$ ****

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

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

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

A. True.

B. False.

21. The Pareto frontier for this economy is

A. $y_1^{PF} = \frac{190x_1}{540 - 5x_1}$ and it lies above the endowment point in the Edgeworth box.

B. $y_1^{PF} = \frac{190x_1}{540 - 5x_1}$ and it lies below the endowment point in the Edgeworth box.

C. $y_1^{PF} = \frac{1140x_1}{90 - 5x_1}$ and it lies above the endowment point in the Edgeworth box.

D. $y_1^{PF} = \frac{1140x_1}{90 - 5x_1}$ and it lies below the endowment point in the Edgeworth box.

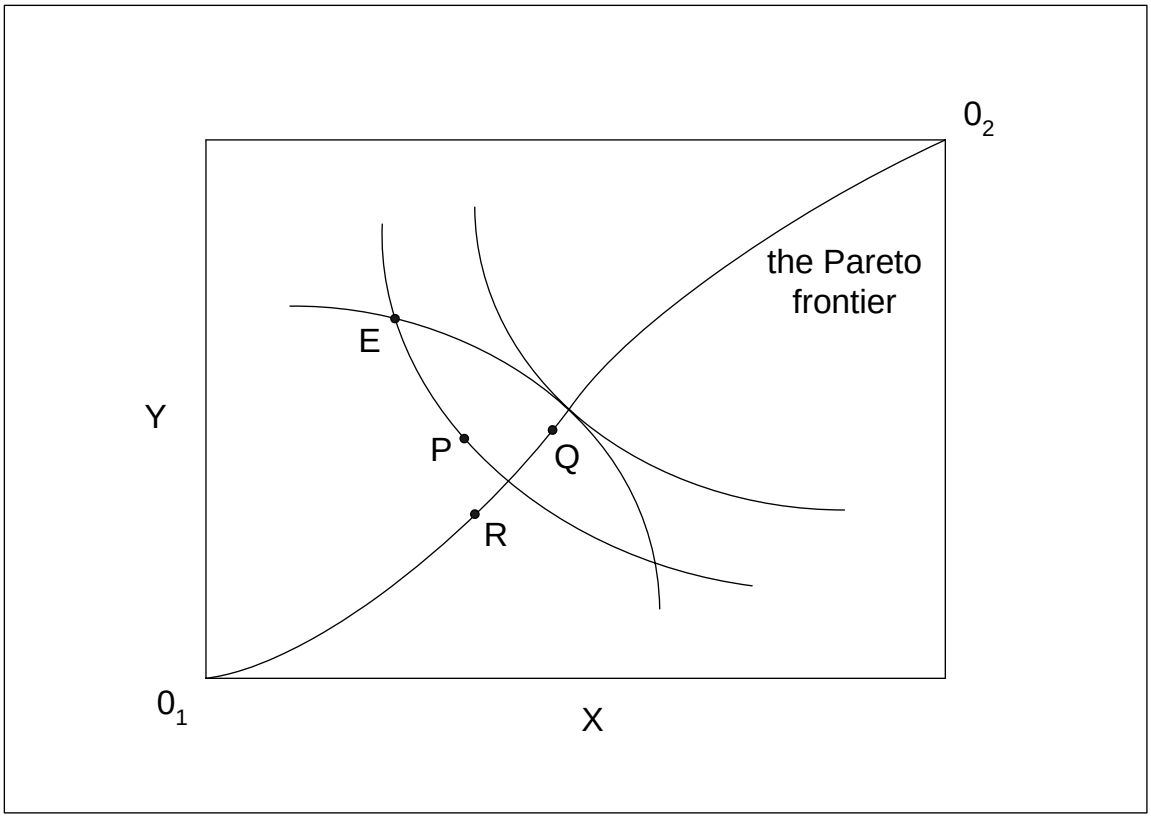

Figure 1