International Economics Olympiad

Moscow

Economics

Test

All 20 multiple choice questions will be graded (4 raw points for the correct answer, minus 1 raw point for the incorrect answer, zero points for no answer).

l. What does UK GDP per capita measure?

1. the total output of London's economy
2. the average disposable income of a UK resident
3. the total output of the UK citizens, divided by the number of the citizens
4. the total output of the UK's economy, divided by the country's population

2. Currently you work for 40 hours per week at the wage rate of $20 an hour. Your free hours are defined as the number of hours not spent in work per week, which in this case is 24 hours x 7 days — 40 hours = 128 hours per week. Suppose now that vour wage rate has increased by 25%. If you are happy to keep your total weekly income constant, then:

1. Your total number of working hours per week will fall by 25%.
2. Your total number of working hours per week will be 30 hours.
3. Your total number of free hours per week will increase by 25%.
4. Your total number of free hours per week will increase by 6.25%.

3. Four farmers are deciding whether to contribute to the maintenance of an irrigation project. For each farmer, the cost of contributing to the project is $10. But when any one farmer contributes, all four of them will benefit from an increase in their crop yields, in particular each gains additional $8.

Which of the following statements is correct?

1. If all the farmers are selfish, none of them will contribute.
2. There are multiple Nash equilibria in this game.
3. If Kim is altruistic and contributes $10, the others might contribute too, even if they are selfish.
4. If the farmers have to reconsider this decision every year and consider infinite horizon of planning, they will never choose to contribute to the project if they are selfish.

4. Which of the following statements about the outcome of an economic interaction is correct?

1. If the allocation is Pareto efficient, then you cannot make anyone better off without making someone else worse off.
2. All participants are happy with what they get if the allocation is Pareto efficient.
3. There cannot be more than one Pareto-efficient outcome.
4. Pareto-efficient outcome is always fair.

5. Maria earns $12 per hour in her current job and works 35 hours a week. Her disutility of effort is equivalent to a cost of $2 per hour of work. If she loses her job, she will receive unemployment benefit equivalent to $6 per hour. Additionally, being unemployed has psychological and social costs equivalent to $1 per hour. Then:

1. The employment rent per hour is $3.
2. Maria's reservation wage is $6 per hour.
3. If she is offered a job with the wage $11 and disutility of $0,5, she will refuse.
4. If she is offered a job with the wage $14 and disutility of $3, she will take it.

6. The table represents market demand Q for a good at different prices P.

Q 100 200 300 400 500 600 700 800 900 1,000

P $270 $240 $210 $180 $150 $120 $90 $60 $30 $0

The firm's unit cost of production is $60. Based on this information, which of the following is correct?

1. At Q = 100, the firm's profit is $20,000.
2. The profit-maximizing output is Q = 400.
3. The maximum profit that can be attained is $50,000.
4. The firm will make a loss at all outputs of 800 and above.

7. Which of the following statements is correct?

1) A fall in the mortgage interest rate would shift down the demand curve for new houses. 2) The launch of a new Samsung smartphone would shift up the demand curve for existing iPhones.

3) A fall in the oil price would shift up the demand curve for oil.

4) A fall in the oil price would shift down the supply curve for plastics.

8. Which of these measures will by itself decrease the Gini coefficient of income distribution?

1. Flat rate income tax
2. Regressive income tax
3. Progressive income tax
4. Income tax at the rate of 80% for the richer half of the population and income tax at the rate of 20% for the poorer half.

9. Which of the following statements is correct?

1. The fundamental value of the shares in a firm is determined by expected future profits and systematic risk.
2. If there is no new information regarding the future profitability or systematic risk of a firm, but its share price keeps rising, the fundamental value must be increasing.
3. Buying a share at a price above its fundamental value in the hope that someone else would buy it from you at an even higher price is guaranteed to lose money.
4. All investors always agree on the fundamental value of the shares in a firm.

10. Consider the situation where the noise of a factory's production affects nurses in the dormitory next door. If there are no transaction costs to impede bargaining, which of the following statements is correct?

1) Whether the final output level will be Pareto efficient depends on who has the initial property rights.

2) The nurses would be better off in the bargained allocation if they initially had a right to undisturbed sleep than they would if the factory has the right to make noise.

1. If the factory has the right to make noise, it will prefer not to bargain with the nurses.
2. If the nurses have the initial rights, they will obtain all of the net social gain from factory production.

I l. Which of the following statements is correct?

1. GDP can be measured either as the total spending on domestically produced goods and services, or the total value added in domestic production, or the sum of all incomes received from domestic production.
2. Both exports and imports are included in the measurement of GDP.
3. Government production is not included in the GDP.
4. Domestically consumed goods are included in GDP with more weight than exports.

12. Which of the following statements is correct?

1. Maintaining fiscal balance in a recession helps to stabilize the economy.
2. Automatic stabilizers refer to the fact that economic shocks are partly offset by households smoothing their consumption in the face of variable income.
3. The multiplier. on a fiscal stimulus is higher when the economy is functioning at full capacity.
4. A fiscal stimulus can be implemented by raising spending to directly increase demand, or by cutting taxes to increase private sector demand. 13. Which of the following statements is correct?
5. When interest rates go down, asset prices go up.
6. The zero lower bound refers to the central bank's inability to set the real interest rate to below zero.
7. Quantitative easing involves the central bank lowering its official interest rate.
8. Interest rates cannot be set in a currency union.

14. Which of the following statements is correct?

1. In the short-run model the amount of some factor is fixed, while in the long-run model the amount of this factor can vary.
2. Labour-saving technological progress raises unemployment in both the short and long run. 3) Firms are more likely to enter the market when the markup is low.

4) The markup is independent of the number of firms.

15. Which of the following statements is correct, ceteris paribus?

1) An increase in the trade surplus would lead to a decrease in a country's current account. 2) A country with zero trade balance but historically high foreign direct investment would always have a current account deficit.

1. An increase in remittances by a country's nationals abroad would lead to a lower current account.
2. An increase in the official aid payment sent to other countries means a lower current account.

16. The following diagram shows Alex's and Jose's feasible production frontiers for oranges and melons. (Resourse allocation is equal between them.)

1. Jose has an absolute advantage in the production of melons but not oranges.
2. Jose has a comparative advantage in the production of melons.
3. With trade and specialization, Jose will specialize in the production of oranges while Alex will specialize in the production of melons.
4. The relative price of melons after trade will be 1.75.

17. Which of the following statements is correct?

1. Lump-sum taxes equal for all citizens decrease inequality.
2. Providing high-quality education to citizens is a way of raising the endowments of less well off people.
3. An increase in the minimum wage increases unemployment, leading to higher inequality unambiguously.
4. Non-complete contracts mean that workers can demand higher wages, leading to reduced inequality.

18. Which of the following statements is correct?

1. Bargaining between affected parties is always effective in reducing the inefficiencies caused by externalities, even in the presence of transaction costs.
2. The market price of pesticides is unlikely to reflect the full social cost of their use.
3. All externalities result in the good producing the external effect being overused.



1. Reducing air travel is an unfortunate and inefficient by-product of taxing flights.

19. Which of the following statements is correct?

1. There is no innovation in the absence of patents.
2. Longer patent duration will always lead to an increase in the probability of innovation.
3. There is trade-off between greater incentive to innovate from higher innovation rent income and the disincentive for potential innovators from using patented knowledge.
4. The optimal duration of patents is where the probability of innovation is maximized.

20. Which of the following cases represents the concept of a natural experiment?

1. People play Ultimatum game differently in different experimental setups
2. The placebo effect of a drug was confirmed in the laboratory

3) The difference between the economies of South and North Korea

4) People sometimes cooperate in the Prisoner's dilemma game conducted for writing papers in experimental economics

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Problems

Solve no more than 4 problems out of 5. Indicate your choice of problems to grade on page 3 of your paper.

If you provide solutions for all 5 problems, all of them will be commented by the Jury but only 4 will add to your score. In this case, if you do not specify which to grade, the maximum grade of 5 will be excluded.

Every problem is worth 30 points.

If not stated otherwise, think of all goods, services and assets as of infinitely divisible. Numbers of firms and people may be only integer.

Convey your ideas clearly. Don't skip important logical transitions in your reasoning. Take care of handwriting. If you strike something out, it won't be graded.

If you want to leave the room for a while, raise your hand and ask a volunteer. Good luck!

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| Problem 1. "True cost?" |  | (30 raw points) |

In Moscow, there exists a restaurant chain that uses the following pricing mechanism. A consumer must pay some entrance fee, after that they can order whatever they want for the price that is equal to the cost of ingredients.

The price of an entry ticket depends on the time of the day (being higher in the evening than in the morning), but prices of menu items remain the same and are very low for Moscow standards. For instance, a portion of pasta costs only about $2—2.5, the price of a ribeye steak is about $4, a burger with grilled tiger prawns and arugula can be purchased for merely $3. For only $3—4 a customer can drink a glass of decent wine. These prices are very low compared to other restaurants in the city. Customers must eat and drink inside; if they want to take something away, the price doubles.

1. (15 rp) One of the well-known models of price discrimination explains how similar pricing scheme can be profitable for a seller (for instance, in Disneyland entrance fee is high while using most of its facilities is free). Using this model, explain, how such pricing technique helps this restaurant maximize profits (use graphical analysis where appropriate).
2. (15 rp) While such a scheme is successful in the theme park industry and restaurant business, we don't see supermarkets or clothes shops pricing this way. Explain why.

# Problem 2. "Substitutes and complements" (30 raw points)

Consider two commodities, A and B, that are substitutes in consumption.

1. (10 pr) Suppose that the number of consumers of good A increased, thus shifting the demand for it. Assuming perfect competition in both markets, what can you say about the resulting change in the price of B? Explain in detail.
2. (10 pr) Suppose that A and B are not only substitutes in consumption but also complements in production. What can you say about the resulting change in the price of B? Explain in detail.
3. (10 pr) Give a real-world example of two commodities that are both substitutes in consumption and complements in production.

# Problem 3. "Letting the Briber Go Free" (30 raw points)

A situation where a government official uses his position to acquire illicit benefit is called corruption. Corruption is a big problem in many countries and governments design different policies to curb it. According to one of the proposed policies (sometimes called the Basu proposall ), the government should make it legal to give bribes and severely punish only bribetakers.

1. (10 rp) Explain the logic behind this proposal: why may it work?
2. (10 rp) Suppose Alice and Beatrice are trying to pass a test to get the driver's licenses. Alice is a good driver. However, Beatrice is a hazard to other drivers and is about to fail the test. The examiner is corrupt and tries to maximize his revenue from bribes. How will implementing the Basu proposal might affect Alice and Beatrice?
3. (10 rp) Generalise the example above: for what class of bribes the Basu proposal can be an efficient policy?

I see Basu, K. (2011). Why, for a Class ofBribes, the Act of Giving a Bribe should be Treated as Legal.

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# Problem 4. "Intergenerational Elasticity" (30 raw points)

The degree to which members of society have equal opportunity of success, irrespective of their family background, is often measured by intergenerational elasticity of income. Roughly, it measures what percentage of inequality between members of the generation is passed on to the members of the next generation. Here is a definition from The Economy by CORE:

[C]onsider two pairs offathers and children. The father in the first pair is richer than the father in the second. The intergenerational elasticity measures how much richer the child of the well offfather will be than the child of the poorer father. An elasticity of 0.5, for example, means that if one father is 10% richer, then his child, when grown up, will be on average 5% richer than the other child.

The following graph show the relation between inequality and intergenerational income elasticity. Sometimes it is called The Great Gatsby Curve[[1]](#footnote-1)

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| e PeruJapanBrazilGermany'O AustraliaSwedenFinland Norway, e O CanadaDenmark o |

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20 30 40 50 60 Inequality (Gini Coefficient)

Corak, M. (2012). Inequality from generation to generation: The United States in comparison.

Provide two distinct economic arguments that explain the positive correlation between current inequality (measured by the Gini coefficient) and intergenerational inequality.

Problem 5. "Current Account Deficit" (30 raw points) During his lecture at Sberbank Corporate University, Ilya Androsov was talking about countries that find themselves in a situation of current account deficit.

1. (15 rp) Using the example of Turkey, explain why this deficit can be detrimental to economic growth.
2. (15 rp) Can you tell a story where such current account deficit can be beneficial for the economy of the country?
1. The term is attributed to Alan Krueger.

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