Economics and Econometrics: Second-round Sample Tasks for the Open Doors Undergraduate Track

The variant includes 30 tasks, 19 of which are entry level tasks with one correct answer (a correctly completed task is 2 points), 8 are intermediate level tasks with several correct answers (a correctly completed task is 4 points), 3 are advanced level tasks with a detailed answer (the correctly completed task is 10 points).

In test tasks, correct answers are highlighted in bold.

For complex tasks with a detailed answer, assessment criteria and a standard answer are provided.

1. Finance

Task 1
Entry level (2 points)

Select a type of exchange rate that does not exist

a.   cross rate
b.   reverse quote
c.   fixed exchange rate
d.   monetary exchange rate

Answer: d.

Task 2
Entry level (2 points)

Choose a combination which provides a controlling interest in the stock

a.   50 % plus a share
b.   50% plus 1 per cent
c.   50% minus a share
d.   49% plus 1%

Answer: a.

Task 3
Entry level (2 points)

The central Bank has increased the discount rate, you can expect
a.   reduction in the money supply
b.   increase in the money supply
c.   fall in interest rates
d.   growth of loans issued
e.   rapid GDP growth

Answer: a.

Task 4
Entry level (2 points)

Monetary policy instruments are:

a.   tax rates
b.   required reserves ratio
c.   government purchases
d.   social transfers

Answer: b.

Task 20
Intermediate level (4 points)

Choose 2 pairs of options that illustrate the principles of economic rationality of market agents, if a bank offers the following options for the terms of a 4-year transaction

a.   **loan at a simple rate of 5% p.a., deposit at a simple rate of 5% p.a.**
b.   loan at a compound rate of 5% p.a., deposit at a simple rate of 5% p.a.
c.   loan at a simple rate of 5% p.a., deposit at a simple rate of 5% p.a.
d.   **loan at a simple rate of 5% per month, deposit at a compound rate of 5% per month**

Answer: a, d.

Task 23
Intermediate level (4 points)

In country X, there is a decline in GDP and a slowdown in industrial production. What fiscal policy measures should the government undertake to stimulate the economy?
a.   reduce government spending
b.   reduce taxes
c.   increase taxes
d.   increase government spending

Answer: b, d.

2. Economic Theory

Task 5
Entry level (2 points)

In the long-run study period, the price of a perfectly competitive market is set

a. at the point of maximum gross revenue
b. at the point of minimum average costs
c. at the point of minimum average variable costs
d. at the point of minimum marginal costs

Answer: b.

Task 6
Entry level (2 points)

If a businessman endeavours to purchase expensive goods (yachts, helicopters and islands in the Pacific) to demonstrate his wealth, there is

a. **the Veblen effect**
b. the Giffen effect
c. majority effect
d. the snob effect

Answer: a.

Task 7
Entry level (2 points)

Economic growth in different countries is measured using an indicator

a. Nominal Gross Domestic Product
b. The value of the consumer basket
c. **Real Gross Domestic Product**
d. Number of employed population

Answer: c.

Task 21
Intermediate level (4 points)

Select the characteristic features of a market for monopolistic competition

a. **differentiated products**
b. homogeneous products
c. **high advertising costs**
d. one producer in the industry

Answer: a, c.

Task 24
Intermediate level (4 points)

Select possible "failures" (imperfections) of the market in the economy:

a. **production of public goods**
b. shortage of goods and services
c. insufficient assortment of goods
d. **anti-monopoly policy**

Answer: a, d.

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Task 28
Advanced level (10 points)

Demand and supply functions on the ice-cream market in a certain region are given:
$Q_d=80-5P$, $Q_s=-40+10P$, where the price is in dollars and the quantity is in units.

Task:
1) determine the parameters of equilibrium in the market of this commodity: equilibrium price and equilibrium volume.
2) determine at what maximum price consumers are willing to buy ice cream and at what minimum price producers are willing to provide the goods to the market.
3) The producers have decided to increase the price by \$2 higher than at equilibrium. What will arise in this situation in the market and in what magnitude?
Note: the assessment takes into account the progress of the solution; writing only the answer is not enough for getting points.
Solution:
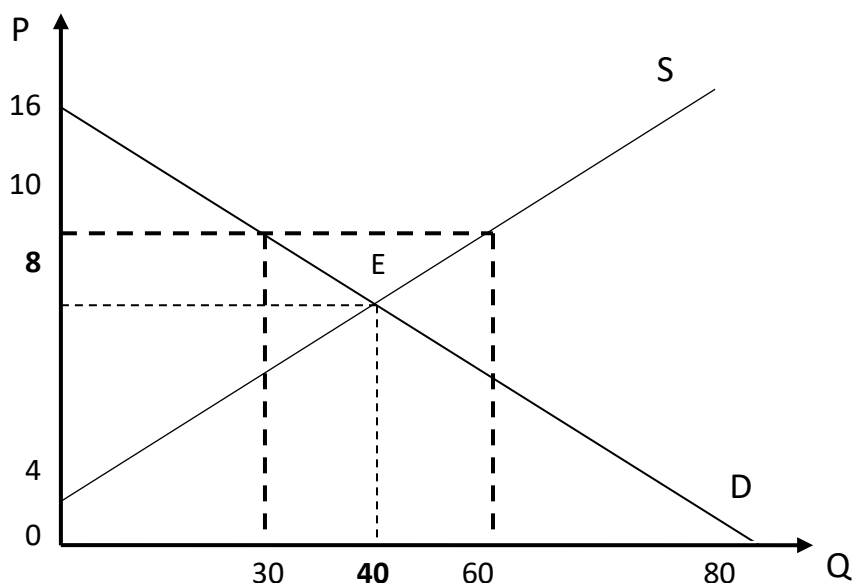1) $80-5P=-40+10P$
$120=15P$
Re=8 dollars
Qe=80-5*8=40 pcs.
2) The buyer has Pmah = \$16 (0=80-5P, hence P=16)
At the producer Pmin=4 dollars (0 = - 40 + 4P, hence P=4)
3) P2=8+2=10 dollars. There will be a surplus of goods in the market as.
Qd=80-5*10=30 pc, Qs=-40+10*10=60 pc. Surplus of goods = 60-30=30 pcs.

Answer: 1) Re1=8, Qe1=40, 2) Pmah = 16, Pmin=4. 3) Surplus of goods=30 pcs.

Assessment criteria:
Criterion 1 – the correct answer to 1 question is given – 1 point.
Criterion 2 – the correct solution is given for one question with minor flaws or inaccuracies that do not distort the cause-and-effect relationships that are bypassed to explain the course of the solution unambiguously - 2 points.

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Criterion 3 – the correct solution and correct answers to 3 questions are given – 1 point.

3. Regional and sectoral economics

Task 8
Entry level (2 points)

The consolidation into a single complex by merger or acquisition of several enterprises within the same industry producing identical goods or services is called

a. **horizontal integration**
b. agglomeration
c. industrial node
d. vertical integration

Answer: a.

Task 9
Entry level (2 points)

Indicate which industry would be classified as a chemical industry

a.   fertiliser production
b.   oil production
c.   gas
d.   coal

Answer: a.

Task 10
Entry level (2 points)

The government decides in which region to place a State Nature Reserve. Which factor can have a significant impact on the location of this enterprise in a particular region?

a. availability of raw materials
b. fuel availability
c. availability of energy
d. significant workforce
e. a large number of consumers
f. transport hubs and roads
g. the need to protect the environment

Answer: g.

Task 11
Entry level (2 points)

The region is a\an
a. socio-economic system

b. economic system
c. socio-ecological system
d. socio-political system

Answer: a.

Task 25
Intermediate level (4 points)

Select the causes of uneven economic and social development of regions:

a. concentrated electricity production in certain regions of the country
b. high entry barriers to enter the industry
c. developed interregional transport infrastructure
d. inflexible fiscal policy

Answer: a, d.

Scientific field 4. World economy

Task 12
Entry level (2 points)

The factors influencing the economic backwardness of countries in the global economy do not include

a. backwardness of the production
b. inefficiency in the use of labor
c. inefficiency of public administration
d. the emergence of pandemics

Answer: d.

Task 13
Entry level (2 points)

The international division of labor cannot be based on:

a. natural resources and geographical location
b. the desire and requirements of the government
c. particular features of culture and religion
d. the level of scientific development and technology

Answer: b.

Task 14
Entry level (2 points)

A positive trade balance has a direct positive effect in calculating the

a. unemployment rate
b. volume of foreign investment
c. gross domestic product
d. inflation rate

Answer: c.

Task 22
Intermediate level (4 points)

Tariff methods include (choose 2 possible answers)

a. ad valorem duty
b. quota
c. specific duty
d. value added tax

Answer: a, c.

Task 26
Intermediate level (4 points)

The production capabilities of the two countries for two goods (candies and biscuits) in thousands of tons per year are given. Which country has a comparative advantage in production of candies and should specialize in it?
Specify in your answer the country that specializes in production and the value of the opportunity cost.

	USA	China
Candies	1680	320
Biscuits	2340	200

a. China
b. USA
c. 0,625
d. 0,718
e. 1,393
f. 0,575

Answer: Answer a, Answer c.

Comment: China has a comparative advantage in the production of candies, because it has a lower opportunity cost (200/320=0.625) in comparison with the United States)

Task 29
Advanced level (10 points)

The functions of supply and demand in the grain market for two countries (country A and country B) are given:

$Q_{dA}=600–2P$, $Q_{sA}= –300+4P$

$Q_{dB}=200–P$, $Q_{sB}= –200+3P$

The price is in dollars and the quantity is in tons.

Tasks:
1) Determine the parameters of equilibrium in the market of this product in each of the countries if economy is closed and there is no foreign trade: specify the equilibrium price and the equilibrium volume for each country.
2) Determine the equilibrium parameters if there is a global grain market represented by these two countries: calculate the world price and sales volume on the world market
3) Calculate the volume of grain that will be sold/bought on the world market.

Note: the assessment takes account the progress of the solution; writing the answer only is not enough for getting points.
Solution:
1) Country A – equilibrium price and equilibrium volume
$600–2P = -300+4P$
$P= 150$
$Q= 300$
Country B – equilibrium price and equilibrium volume
$200–P= –200+3P$
$P= 100$
$Q= 100$
2) World price and sales volume in the world market
$Q_{dA}+ Q_{dB}= Q_{sA}+ Q_{sB}$
$600–2P +200–P = -300+4P+(-200+3P)$
$P_{world}= 130$
$Q_{world}= 410$
3) the volume of grain that will be sold/bought on the world market
$Q_d=600–2*130= 340$
$Q_s= –300+4*130=220$
$Q_d– Q_s = 340 –220=120$

Answer: 1) $P_A= 150$ dollars, $Q_A= 300$ tons, $P_B= 100$ dollars, $Q_B= 100$ tons
2) $P_{world} = 130$ dollars, $Q_{world} = 410$ tons.
3) the volume of grain that will be sold/ bought on the world market = 120 tons.

Assessment criteria:
Criterion 1 – the correct answer to 1 question is given – 1 point.
Criterion 2 – the correct solution is given for one question with minor flaws or inaccuracies that do not distort the cause-and-effect relationships that are bypassed to explain the course of the solution unambiguously - 2 points.
Criterion 3 – the correct solution and correct answers to 3 questions are given – 1 point.

5. Mathematical, statistical and instrumental methods in economics

Task 15
Entry level (2 points)

An indicator that characterises a measure of the feasibility of certain events is

a. probability
b. significance
c. completeness
d. dispersion

Answer: a.

Task 16
Entry level (2 points)

Misha wants to buy a stock. The probability of buying a stock with a yield of more than 10% leaves 0.8, with a yield of more than 20% is 0.5. What is the probability of Misha buying a stock with a yield between 10% and 20%, provided that all the stocks available for purchase are yielding.
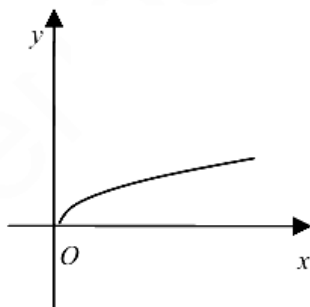
a. 0,2
b. 0,1
c. 0,3
d. 0,5

Answer: a.

Comment: 0,8= P(10-20%)+0,5; P(A)=0,3

Task 17
Entry level (2 points)

Profit of the firm (y) depends on the amount of costs (x) and is represented in the figure. Which analytical form of writing down the function is best suited to describe the dependence in the figure?

a. $y = \kappa x + в$
b. $y = x^2$
c. $y = \sqrt[2]{x}$
d. $y = x^3$

Answer: c.

Task 18
Entry level (2 points)

The entire population of a country is divided into the able-bodied and the unemployed. Some of the able-bodied population are those who have dropped out of the labour force, while the remainder are the employed and unemployed. The table shows the population of the Alpha country.

Indicator	Number, thousand people
National population	2 000 000
Unable to work	200 000
Dropped out of the labour force	100 000
Employed	1 400 000
Pensioners	40 000
Schoolchildren	20 000
Housewives	10 000

Using the data in the table, calculate the number of unemployed people in country "Alpha".

a. 230 000
b. 300 000
c. 400 000
d. 70 000

Answer: b.

Comment: 2,000,000 - 100,000 - 1,400,000 - 200,000 = 300,000 people

Task 19
Entry level (2 points)

Milk is sold in bottles of 2 liters and 3 liters each. The price of a bottle of 2 liters is 60 rubles, the price of a bottle of 3 liters is 80 rubles. How much can Masha save if she buys 6 liters of milk in 3-liter bottles instead of 2 liters?

a. 20 rubbles
b. 30 rubbles
c. 10 rubbles
d. 18 rubbles

Answer: a.

Comment: 2*80- 3*60 = rubbles

Task 27

Intermediate level (4 points)

Masha likes chocolate and Petya likes ice cream. Masha bought several bars of chocolate, Petya bought 5 portions of ice cream. Chocolate costs 100 rubles, ice cream costs 50 rubbles. Based on the problem condition, choose the correct statement:

a.   if the total expenditure is 750 rubles, Petya and Masha buy the same amount of chocolate and ice cream
b.   if Masha buys 4 portions of chocolate, then the total expenses for buying sweets will amount to 650 rubles
c.   If Masha's budget is 200 rubles and Petya's is 400 rubles, then Masha buys more chocolate than Petya buys ice-cream.
d.   Petya and Masha can buy the same number of servings of sweets if the budget is 1200 rubles

Answer: b, d.

Task 30
Advanced level (10 points)

The firm *Romashka* is one of many ice-cream producers that sells a serving of ice-cream at a price of 100 rubles. The cost function of the firm has
TC= 5 Q2 +20 Q+ 100, where Q is the number of servings of ice cream.

Task:
1) Calculate the value of marginal cost when the volume of sales is 10 servings of ice cream.
2) Calculate the volume of ice cream sales that is optimal for the firm in the short run.
3) Find the change in profit from the sale of ice cream, if the state compensates the manufacturer for the cost of transporting ice cream to the shop, in the amount of 200 rubles from all batches together.

Note: the assessment takes into account the progress of the solution; writing the answer only is not enough to get points.
Solution:
1) MC = (TC)`= 3 Q^2 +50
MC (Q=10) = 3 * 100+50 = 350 rubles.
2) π = TR-TC
MC=P – free n=market economy
3 Q^2 +50 = 125,
Q = 5 кг
TC (Q=5) = 5^3 +50 *5+ 100= 475 rubles.
TR (Q=5) = 125* 5= 625 rubles.
π =   625 – 475 = 150 rubles.
3) TC * = Q^3 +50 Q+ 100 + 100 = Q^3 +50 Q+ 200
MC = (TC)`= 3 Q^2 +50
Q^2 +50 = 125,
Q = 5 кг
TC (Q=5) = 5^3 +50 *5+ 200= 575 rubles.
TR (Q=5) = 125* 5= 625 rubles.
π =   625 – 575 = 50 rubles.

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$\Delta\pi$ = 150 -100= 50 rubles.

Answer: 1) 120 rubles 2) 8 portions 3) increased by 200 rubles.
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