



Entrance examination for the academic year 2026/2027 - Master's Degree Study Program

The complete wording of test questions – **Mathematics and Statistics**

1. The domain of a function of the form $f(x) = \pi r^2 + \ln(49 - x^2) + \sqrt{x}$ is equal to the set:
 - a) $x \in \langle 0; 7 \rangle$
 - b) $x \in \langle -7; 7 \rangle$
 - c) $x \in \langle 0; 49 \rangle$
 - d) None of the options
2. For a logarithm function defined as $f: y = \ln(5x - 1)$ specify the value of the first derivative at point $x = -1$.
 - a) None of the options
 - b) $f'(-1) = 7$
 - c) $f'(-1) = 1$
 - d) $f'(-1) = 2$
3. Calculate: $X = \begin{pmatrix} 2 & 3 \\ 3 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$.
 - a) $X = \begin{pmatrix} 2 & 3 \\ 3 & 1 \end{pmatrix}$
 - b) $X = \begin{pmatrix} 3 & 3 \\ 3 & 2 \end{pmatrix}$
 - c) $X = \begin{pmatrix} 2 & 0 \\ 0 & 1 \end{pmatrix}$
 - d) None of the options
4. The function $y = 2x^2 - \ln x$ is given. Determine for which x the function is decreasing.
 - a) $x \in \left(0; \frac{1}{2}\right)$
 - b) $x \in \left(-1; \frac{1}{2}\right)$
 - c) $x \in (0; 1)$
 - d) $x \in (0; 2)$
5. Find the probability that, in a throw of two dice, all 4 will be thrown?
 - a) $\frac{1}{36}$
 - b) $\frac{5}{36}$
 - c) $\frac{1}{6}$
 - d) None of the options



6. In a town there are 4 crossroads with traffic lights. Each traffic light opens or closes the traffic with the same probability of 0.5. Determine the probability of a car crossing first two crossroads without stopping.
- a) 0.25
 - b) 0.5
 - c) 0.625
 - d) None of the options
7. There are 16 cola bottles on the table. 10 of them are filled by Coca Cola and 6 of them are filled by Pepsi. Determine the probability of 4 randomly selected bottles to include 2 Coca Cola and 2 Pepsi bottles.
- a) 0.37
 - b) 0.25
 - c) 0.47
 - d) None of the options



The complete wording of test questions – Basic economic overview

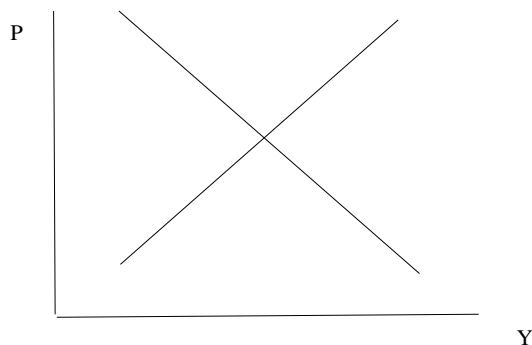
1. When the currency weakens, there is:
 - a. depreciation
 - b. appreciation
 - c. deflation
 - d. devaluation

2. Stagflation is the situation in the economy, when:
 - a. production stagnates, while the price level increases
 - b. production rises and price level decreases
 - c. price level and unemployment increase
 - d. price level and production rise

3. The relationship between the volume of investment and aggregate demand in Keynesian model is:
 - a. aggregate demand is constant regardless of the government spending in the economy
 - b. inversely proportional, negative
 - c. between variables is no dependence
 - d. directly proportional, positive

4. When the marginal slope to consumption is 0.75, then the marginal slope to savings is:
 - a. 0.25
 - b. -0.25
 - c. 0.75
 - d. -0.75
 - e.

5. What does the following figure show?
 - a. Recession gap in the Model AS-AD
 - b. Model IS-LM
 - c. Mundell-Fleming Model
 - d. Keynesian model of three sector economy





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6. The price index that measures differences between nominal and real product is called:
 - a. GDP deflator
 - b. Consumer Price Index
 - c. Producer Price Index
 - d. Retailers Price Index

7. The extensive factors of growth include:
 - a. increasing employment
 - b. technological progress
 - c. improving education
 - d. new work experience



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The complete wording of test questions – English

1. The car _____ already.
 - a. has been sold
 - b. had been sold
 - c. was sold
 - d. sold

2. We strongly suggest _____ notes during the meeting.
 - a. taking
 - b. to take
 - c. take
 - d. to taking

3. They would need more space if they _____ more staff.
 - a. Hired
 - b. Hire
 - c. will hire
 - d. have hired

4. If she sends her order by email, we _____ the goods immediately.
 - a. will deliver
 - b. delivered
 - c. will not deliver
 - d. not deliver

5. Unfortunately, the unemployment rate _____ this year.
 - a. is rising
 - b. rises
 - c. rose
 - d. has rose

6. I would like _____ you to Ms Thomson, our new project manager.
 - a. to introduce
 - b. introduce
 - c. Introducing
 - d. introduced

7. They said they were looking forward _____ with us.
 - a. to working
 - b. to work
 - c. for working
 - d. on work