

BOCCONI UNIVERSITY

**ANNOTATED GUIDE
TO THE TEST**

MASTERS OF SCIENCE

Examples of questions with explanation

VERBAL REASONING questions

The admission test to the Master of Science Programs contains a series of questions designed to test the comprehension of passages and the quality of the processing of the information contained in them. Please read the passage carefully and answer the question that will follow. To answer it correctly, you need to have assimilated the meaning and information contained in the text.

Read the following passage carefully:

The term “spread” indicates the difference in return between two government bonds; in particular, German government bonds, considered the most reliable in Europe, are used as a comparison with Italian ones. So the difference between the return offered by 10-year BTPs (*Buono del Tesoro Poliennale*—multi-year treasury bonds—issued by the Italian government to finance its debt) and that offered by its German equivalent, the Bund, is calculated. The return on government bonds is a good indicator of the health of a country’s economy. The more robust a system, the less risky are its bonds and they therefore offer investors lower returns in terms of interest rates. The spread between Italian BTPs and German Bund indicates how much riskier it is to lend money to Italy than to Germany, which is considered particularly reliable because of the exceptional nature of its economy. In Italy the spread has affected, firstly, public debt: the increase in interest rates forces the government to spend more to finance its debt, i.e. to pay the interest to those who bought BTPs.

1. Which of the following alternatives presents elements in line with the Italian economic situation described in the passage?

1. Increase in the government bond return – Increase in the spread – The government spends more to finance its public debt
2. Reduction in the spread – Increase in the government bond return– Firms have difficulties accessing credit
3. Increase in the interest rate of government bonds – The government spends less to finance its public debt – Firms find it easier to access credit
4. Reduction in the interest rate of government bonds – The government spends more to finance its public debt – Firms find it easier to access credit

Explanation

The correct answer is number 1. In order to answer this question, it is necessary to refer to three sentences of the passage, where it says: “The term *spread* indicates the difference in return between two government bonds; in particular, German government bonds, considered the most reliable in Europe, are used as a comparison with Italian ones”, “The more robust a system, the less risky are its bonds and they therefore offer investors lower returns in terms of interest rates”, and “In Italy the spread has affected, firstly, public debt: the increase in interest rates forces the government to spend more to finance its debt”. Combining the information from these three sentences allows us to deduce that Italy, which is considered riskier than Germany, offers higher returns to investors by registering an increase in the *spread*, which means the Italian government will need to spend more to finance its public debt. Therefore the correct answer is number 1. The other answers are not supported anywhere in the passage.

Read the following passage carefully:

Rome, March 2017 - This is a positive moment for stipulating, renegotiating, or subrogating a mortgage with rates at record lows. For example, for a "main dwelling" mortgage of 120 thousand euros, lasting 20 years and for a property value of 220 thousand euros, the best spreads in October 2016 were hovering around 1% for floating rate mortgages and around 0.9% for fixed rate mortgages. In 2016, there was a reduction in prices per square metre equal to –1.9% for properties mortgaged (after recording a decrease of 2.4% in 2015 compared to 2014). Economy experts claim that these excellent conditions will not persist in the coming months.

2. What is the message of the passage?

1. Conditions for stipulating, renegotiating or subrogating a mortgage are excellent compared to previous years, but the presence of better conditions could be plausible in the near future
2. Conditions for stipulating, renegotiating or subrogating a mortgage are excellent compared to previous years, but this trend may not continue
3. Considering all the favourable indices, it is advisable to buy a property before the end of 2017
4. The period of global financial crisis has passed by now

Explanation

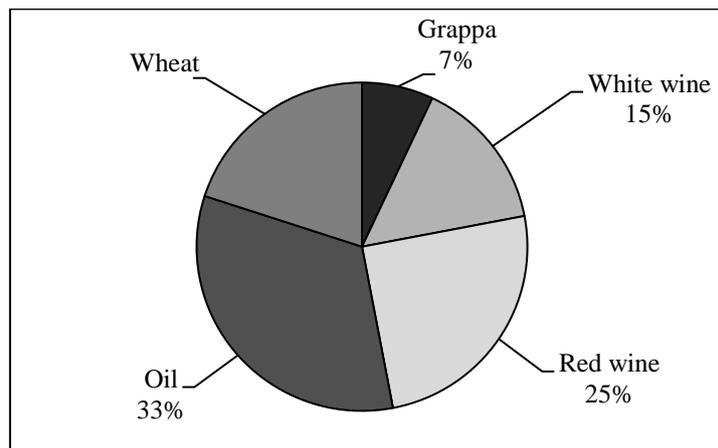
The correct answer is marked with the number **2**. To answer this question, it is necessary to refer to the last sentence of the passage which states: "Economy experts claim that these excellent conditions will not persist in the coming months". The other answers are not supported anywhere in the passage that was presented.

NUMERICAL REASONING questions

The following are examples of questions used to assess the numerical reasoning ability. Tables, histograms, graphs or simple passages are presented, followed by several questions. Your task is to solve the problem that is presented by using reasoning, primarily, and by paying close attention to the information that is provided.

Here is an example:

**Breakdown of turnover for the farm FTG
(2018 figures)**



1. We know that the farm FTG turned over 87,500 euros in red wine sales for 2018. How many euros did it turn over for wheat sales?

1. 70,000 euros
2. 7,000 euros
3. 80,000 euros
4. 8,000 euros

Explanation

The correct answer is number 1. First, you need to find the percentage of turnover generated by wheat. By adding together the four percentage values supplied in the graph, and then subtracting this amount from 100, we get 20%. The text of the question tells us that 25% of the turnover (red wine) corresponds to 87,500 euros, so the turnover for the farm FTG for 2018 will be 350,000 ($87,500 \times 4$, which is equivalent to $25\% \times 4 = 100\%$). Now we have all the information we need to answer the question: 20% of 350,000 equals 70,000.

2. We know that the farm FTG turned over 87,500 euros in red wine sales for 2018. What is the difference, in euros, between the money turned over for white wine sales and the one turned over for grappa?

1. 2,800 euros
2. 30,000 euros
3. 28,000 euros
4. 8,000 euros

Explanation

The correct answer is number 3. First, you need to calculate the turnover for the farm FTG for 2018, which is 350,000 ($87,500 \times 4$, which is equivalent to $25\% \times 4 = 100\%$). At this point we can calculate the turnover, in euros, for the two products indicated in the question: for white wine, the turnover in euros corresponds to 15% of 350,000 (52,500 euros), and for grappa, it corresponds to 7% of 350,000 (24,500 euros). At this point, all we need to do is find the difference between the two calculated values ($52,500 - 24,500$), giving us 28,000 euros.

LOGICAL REASONING questions

The test also includes questions designed to assess your ability to reason logically. These questions come in three different types. For the first type, you will be given some data and some propositions. You will need to figure out whether each proposition is true or false based on the given data.

DATA

Anna is a good swimmer
 Claudia does not know how to swim
 Anna's best friend is in the swimming pool
 Everyone who is in the swimming pool knows how to swim

PROPOSITIONS

A. Claudia is Anna's best friend
B. Anna is in the swimming pool
C. Claudia is in the swimming pool
D. Anna's best friend knows how to swim

1. On the basis of the above data, which propositions are true?

1. Both C and D
2. Only B
3. Both A and B
4. Only D

Explanation

The only proposition that is true is **D** (answer number 4), because, based on the data provided, we know that: everyone who is in the swimming pool knows how to swim, and that Anna's best friend is in the swimming pool, and thus knows how to swim. Propositions **A** and **C** are false, while we have no data to determine whether proposition **B** is true or false.

DATA

Marco is older than Alessio
 Luca is older than Debora
 Alessio is younger than Lucia
 Lucia is younger than Debora

PROPOSITIONS

A. Alessio is younger than Debora
B. Marco is older than Luca
C. Lucia is older than Luca
D. Lucia is younger than Marco

2. On the basis of the above data, which propositions are true?

1. Both A and B
2. Only A
3. Both C and D
4. Only D

Explanation

The only proposition that is true is **A** (answer number 2), because based on the data provided we know that: Luca is older than Debora, who is in turn older than Lucia, who is older than Alessio. Proposition **C** is false, while we have no data to determine whether **B** and **D** are true or false.

The second type of logical reasoning questions will present a short passage describing a specific situation. At the end of the passage, a question is asked to assess the critical reasoning capacity of the candidate, e.g., by asking which condition would best support the thesis proposed in the passage, or what is the logical assumption from which the thesis sustained in the passage comes. Assume that what is said in the passage is true—even though you might not always agree—and meditate, based on this assumption, on the cause-effect relationships implicit in the passage.

Read the following passage carefully

A retailer of essential household goods has one hundred and fifty employees on the minimum wage. After the minimum wage increased—a decision made by national government—operating costs increased significantly; however, the retailer’s earnings increased substantially as well.

3. Which of the following statements, if true, can help to resolve this apparent paradox?

1. Most of the retailer’s operating costs are staff wages
2. The retailer’s typical customer is someone on the minimum wage
3. The retailer’s operating costs, apart from wages, increased substantially after the increase in the minimum wage came into effect
4. When the increase in the minimum wage came into effect, the retailer increased the wages of all his employees, including senior executives

Explanation

The correct answer is number **2**, since it is the only proposed option that explains the “increased operating costs–increased retailer’s earnings” paradox. If the typical customer also has more cash available, then he/she will spend more in the retailer’s store, and this could generate increased profits even though the store’s operating costs increased as well. Options **1**, **3** and **4** contain additional information that has no impact on the “increased operating costs–increased retailer’s earnings” relationship.

Finally, in the third type of logical reasoning questions, we ask you to interpret statements and draw conclusions from these through deductive reasoning (for example syllogisms, logical implications).

Here is an example:

4. “All lawyers are precise; Maria is enthusiastic about cooking; all cooking enthusiasts are precise”.

If the above statements are true, which of the following statements is necessarily true?

1. Maria is a lawyer
2. Maria is precise
3. All lawyers are enthusiastic about cooking
4. All precise people are enthusiastic about cooking

Explanation

The correct answer is number **2**, “Maria is precise”, as it is the only certainly true statement which can be deduced from the statements given: in fact, if Maria is enthusiastic about cooking and all cooking enthusiasts are precise, it follows that Maria is also precise. Answer options **1** and **3** are alternatives which cannot be valid since no element of the passage authorises us to reach one of these conclusions. Option **4**, “All precise people are enthusiastic about cooking”, is completely inadmissible, as the inclusion relationship is the reverse one: all cooking enthusiasts are precise and not vice versa.

CULTURE-SPECIFIC questions

MATHEMATICS

1. A random variable X has the following distribution:

x_i	1	4
p_i	$4/5$	$1/5$

What is the expected value of X ?

1. 1.5
2. 1.6
3. 2
4. 2.5

Explanation

The correct answer is number **2**. The expected value of a discrete finite random variable is the sum of the products of values x_i assumed by the variable for the corresponding probabilities p_i .

In this case, therefore, the expected value is:

$$1 \times 4/5 + 4 \times 1/5 = 8/5 = 1.6$$

BUSINESS

2. As the rate of growth in demand increases, the intensity of competition:

1. increases
2. decreases
3. remains unchanged
4. decreases for durable goods only

Explanation

The correct answer is number **2**. According to the Porter's Framework (1979), intensity of competition is inversely related to the rate of growth in demand. In market sectors or segments characterized by decreasing or stagnant demand, in fact, we can observe greater intensity of competition between companies of the sector in order to preserve their market share. With an increase in the rate of growth in demand, in contrast, companies avoid aggressive price policies, given that they can increase the quantity of products and services supplied without taking market shares from rivals, resulting in a reduction in the intensity of competition.

MICROECONOMICS

3. If free time is an inferior good, then:

1. the labour supply curve is upward sloping
2. the labour supply curve is downward sloping
3. the demanded amount of free time increases with increasing hourly wages
4. none of the other answers is correct

Explanation

The correct answer is number **1**. With increasing hourly wage, free time becomes relatively more expensive, thus the substitution effect tends to reduce its demanded amount. An increase in hourly wages also causes enrichment of the individual being equal the hours dedicated to work. If free time is an inferior good, then the income effect will also tend to reduce its demanded amount. Given these two effects, and given the fact that the total time at the individual's disposal is fixed, we can conclude that the number of hours dedicated to work increases with the increase in hourly wages, or that the labour supply curve is upward sloping.

MACROECONOMICS

4. Which of the following definitions of GDP is false?

1. It is the sum of the final goods and services produced in an economy over a given period of time
2. It is the sum of the added value produced in an economy over a given period of time
3. It is the sum of the remuneration of the productive factors in an economy over a given period of time
4. It is the sum of the intermediate goods produced in an economy over a given period of time

Explanation

The correct answer is number 4. As an example, take an economy in which there are only one farmer, one foodstuffs industry and one pizzeria. The farmer produces tomatoes, which are transformed into tomato sauce, which is used on the pizza. The GDP of this economy is the value of the pizzas sold (answer 1). Alternatively, it could be calculated as the sum of the added value created at the different stages of production (the value of harvesting tomatoes, the value of processing into tomato sauce, the value of creation of the pizza) (answer 2). Lastly, it corresponds to the sum of the salaries of the workers and the profits of the different businesses (answer 3). If we add up the value of the intermediate goods, as suggested by answer 4, we find ourselves adding tomatoes, tomato sauce (made from tomatoes), and pizza (made with tomato sauce made from tomatoes), committing the error of counting the same quantities more than once.

PRIVATE LAW

5. The power of attorney is:

1. a contract
2. a unilateral act which confers representative power
3. a declaration based on personal knowledge
4. an act which renounces legal capacity

Explanation

The correct answer is number 2. The power of attorney is the act which confers to third party the power to perform legal acts on someone's behalf. Thus it is a unilateral legal act, consisting in expression of the will of the person granting the power of attorney. Unlike a contract, therefore, it does not presume a meeting of the minds of two parties. Furthermore, given its nature, the power of attorney does not eliminate legal capacity.

MARKETING

6. One of the goals of communication is to generate *brand awareness*, i.e.:

1. to develop a favourable impression of the brand in the target segments
2. to inform customers about the company's products and activities
3. to stimulate the intention to try or buy the product
4. to hook and reinforce relationships with the customers at a cognitive and emotive level

Explanation

The correct answer is number 2. *Brand awareness* refers to the target's knowledge of the brand and answer number 2 emphasizes the informational role, i.e., the development of knowledge about a brand, that communication can provide.

The other answers refer instead to other communication goals:

- answer number 1 is about *brand preference*, that is the goal of generating a preference for the brand;
 - answer number 3 is about *brand action intention*, that is the goal of eliciting the intention to buy;
 - answer number 4 is about *brand loyalty*, that is the goal of creating a more intimate link with the customer, of faith and loyalty to the brand.
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PUBLIC POLICY

7. Which of the following international organizations has a procedure for settling disputes between countries with coercive power?

1. GATT
2. WTO
3. NATO
4. ISO

Explanation

The correct answer is number 2. GATT was succeeded by the WTO, and GATT was more exemplary of an *international regime* than an *international organization*. The WTO is an international organization that has a formal mechanism for settling disputes between member countries - the *dispute settlement system*. NATO does not have a mechanism for settling disputes between countries because it is a military defence mechanism. Lastly, ISO is an organization that develops standards, e.g., quality standards, for businesses and institutions and is not involved in dispute settlement between countries.