

BOCCONI UNIVERSITY

Practice test

1.17

INSTRUCTIONS

The test is made up of multiple choice questions of various kinds; for each question there are five possible answers, of which you must choose *one only* which you consider to be correct. This booklet contains the questions. You must mark your answers on the *answer sheet* which is at the end of this booklet. Mark your answers by blacking out (■) the corresponding box on the *answer sheet*. Warning: *you must not mark the answers on this booklet*, but on the *answer sheet* provided. On the *answer sheet*, you must only black out (■) the boxes corresponding to your chosen answers; do not make any other marks on the sheet. To make sure that you compile the *answer sheet* correctly, carefully read the instructions on the sheet itself. At the end of the test check your answers with the “Scoring key” provided in the last page of this booklet.

Now start the test.

1. A bag contains 12 blue balls and 4 red balls. How many red balls must be added so that the chance of drawing a red ball is $\frac{2}{3}$?

1. 4
2. 6
3. 12
4. 18
5. 20

2. In the Museum of Man in Paris, at the entrance is continuously shown a 12 minutes documentary all day long, with a 3 minutes interval between one show and the other. The showing begins at 9.15 a.m. and stops at 6.00 p.m. Every morning, at the beginning of the showing, the documentary starts from the beginning. How many times is it shown in a day?

1. 36
2. 35
3. 40
4. 25
5. 20

3. How many solutions can the following system have?

$$\begin{cases} x + y = 3 \\ 2x + 2y = 6 \end{cases}$$

1. No solution
2. One solution
3. Two solutions
4. Four solutions
5. Infinite

4. In a test, each right answer is given 3 scores, each wrong answer 1 score is took off and each unanswered question is not given any score. There are 5 questions and the maximum score is 15. Which are the scores higher than 9 you can get?

1. 11, 12 and 15
2. 10, 12, 13 and 15
3. All numbers between 10 and 15
4. 12 and 15
5. 12, 13, 14 and 15

5. Which is the max value of the function $f(x) = 4x - x^2$?

1. 0
 2. 2
 3. 4
 4. 6
 5. 8
-

Read the passage below and use the information to answer the following five questions

Among actual advantages that companies and organizations may gain thanks to electronic commerce (EC) is: a global presence, as an inborn characteristic of the Internet; better quality for the service thanks to a prompt contact with the customers and the possibility to answer to their questions very quickly; custom-made goods offered at a limited price, because in some sectors direct contact makes it possible to produce customized goods at the same cost of “mass” production; cutting on the supply chain, lowering the end price and even gaining greater negotiation power against the distribution; cost saving thanks to the automation of the operations and processes; new product-market opportunities as new kinds of service may be needed or some goods may be offered in markets which were previously difficult to reach. The usage of EC is growing at an impressive rate, which is mainly related to the widespread of the Internet. Research by various sources shows that the number of “Internet surfers” was about 100 million people at the beginning of 2005, and should get to 250 million in 2007. The gap between the spread of the Internet in the USA and in Europe is quickly reducing, and indeed new websites are now being created in Europe three times as fast as in the USA.

6. From what can be inferred from the passage, global presence is:

1. a consequence of the increased turnover of a company
2. assured by the use of the Internet
3. a typical feature of mid-sized companies
4. it is not dealt with in the passage
5. a company which never closes

7. How is the growth rate of electronic commerce defined as in the passage?

1. Average
2. Slow
3. Insignificant
4. Considerable
5. It is not dealt with in the passage

8. In some sectors, direct contact with the customer:

1. causes the redundancy of work-force
2. causes a reduction of the company’s profit margin
3. makes it possible to automate commercial transactions
4. makes it possible to manufacture custom-made goods at low cost
5. is a source of stress for employees

9. Electronic commerce:

1. creates new market opportunities for products
2. limits the market opportunities for products
3. does not influence the market opportunities for products
4. is an old means of exchange
5. none of the above is correct

10. From what can be inferred from the passage, what will the increase of Internet users bring to in the near future?

1. Smaller negotiating power from companies against the distribution
2. The full automation of commercial transactions
3. An increase in electronic commerce
4. An impressive growth rate of sea commerce
5. The development of new technologies

11. For which values of a and b the system with variables x and y

$$\begin{cases} x + 2y = 3 \\ ax + by = -3 \end{cases}$$

has the following solution $x = -1, y = 2$?

1. For no values of a and b
 2. $a = 5$ and $b = 1$
 3. $a = 3$ and $b = 6$
 4. $a = 3$ and $b = 5$
 5. For every value of a and b
-

Number of cars sold in Italy (2009)*

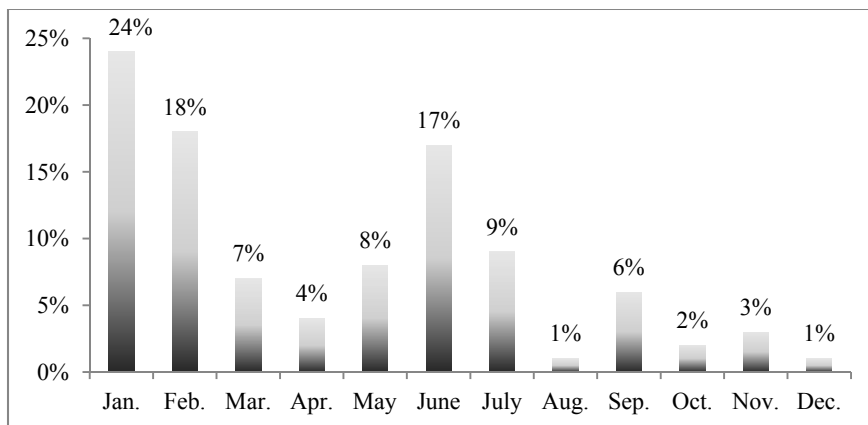
<i>Country of origin</i>	<i>MPV</i>	<i>Family</i>	<i>Utility</i>	<i>Saloon</i>	<i>4x4</i>	<i>Coupé</i>	<i>SUV</i>
Italy	62	48	86	56	15	17	10
France	45	52	68	63	8	19	4
Germany	32	43	56	52	6	3	9
USA	36	28	18	11	32	19	6
Japan	27	15	75	53	6	8	48
China	14	11	15	22	3	5	18

* The figures are expressed in thousands

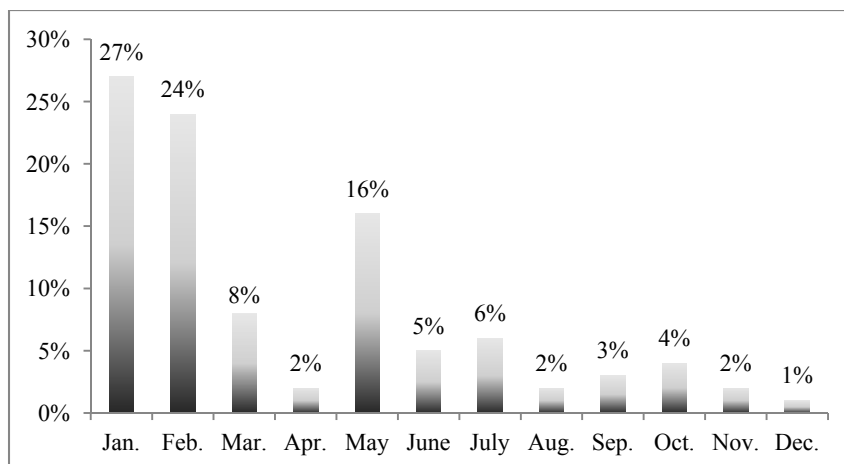
Car adverts in monthly magazines

<i>Type</i>	<i>For young people</i>	<i>Women's</i>	<i>Men's</i>
MPV	1	8	10
Family	2	7	6
Utility	5	13	11
Saloon	1	6	8
4x4	8	1	6
Coupé	4	5	7
SUV	12	4	15

**Car sales, over the course of the year, in Italy
(number of cars sold in 2009)**



**Car sales, over the course of the year, in the European Union (EU)
(number of cars sold in 2009)**



In order to answer the next five questions, refer also to the graphs and tables presented on the previous page

12. Italian marques outdid French marques for how many car types sold in Italy in 2009?
1. 2
 2. 3
 3. 4
 4. 5
 5. It is not possible to answer on the basis of the data provided
-
13. In reference to car sales in 2009, which are the busiest buying months?
1. January for the Italian market and February for the EU market
 2. January for both the Italian market and the EU market
 3. February for the EU market and June for the Italian market
 4. February for both the Italian market and the EU market
 5. It is not possible to answer on the basis of the data provided
-
14. The biggest percentage of car purchases in 2009, in both Italy and the EU, was made in the:
1. 1st quarter
 2. 2nd quarter
 3. 3rd quarter
 4. 4th quarter
 5. it is not possible to answer on the basis of the data provided
-
15. In reference to car adverts in monthly magazines, we can say that:
1. the “Utility” vehicle is the most advertised car type in men’s magazines
 2. the “4x4” is the most advertised car type in women’s magazines
 3. the “Utility” vehicle is the most advertised car type in both men’s magazines and women’s magazines
 4. the “SUV” is the most advertised car type in magazines for young people
 5. it is not possible to answer on the basis of the data provided
-
16. In reference to car production in the EU in 2009, we can say that:
1. Italy primarily produces “Utility” vehicles
 2. the SUV is the least produced type of car in France
 3. the “Coupé” is the least produced type of car in Germany
 4. Sweden primarily produces “Family” vehicles
 5. it is not possible to answer on the basis of the data provided
-
17. For which values of k does the equation $x^3 - kx = 0$ have only one real solution $x = 0$?
1. For no value of k
 2. $k > 1$
 3. $0 < k < 1$
 4. $k \leq 0$
 5. For every value of k
-
18. A safebox opens through a combination of 2 letters followed by 1 number (eg. PF5). How many different combinations are possible? Repeated letters are not allowed. Consider 26 letters (A-Z) and 10 numbers (0-9).
1. 6,500
 2. 6,760
 3. 5,100
 4. 6,100
 5. 6,250
-
19. For which angle α , it results $0 < \cos(\alpha) < \sin(\alpha) < 1$?
1. 40°
 2. 60°
 3. 50°
 4. 70°
 5. 80°
-

20. 10 old school friends meet in a pizzeria. Males are more than females and graduates are more than non-graduates. Thus:

1. there is at least one graduate male
2. there is at least one graduate female
3. there is at least one non-graduate female
4. there is at least one non-graduate male
5. graduate males are more than graduate females

21. If point $(1,0)$ is the vertex of a parabola with equation $y = ax^2 + bx + c$ which passes through point $(0,1)$, then the parabola passes also through point:

1. $(2,2)$
2. $(2,3)$
3. $(3,2)$
4. $(3,3)$
5. $(3,4)$

22. Michele and Fabrizio play chess and are same-level players, so each one wins with a 50% chance. Tomorrow, they will meet in the afternoon and play 5 games. What is the chance that Fabrizio wins one single game?

1. $5/32$
2. $1/32$
3. $5/16$
4. $1/4$
5. $5/8$

23. The real number $\log_{10}(1789)$ is included between:

1. 0 and 1
2. 1 and 2
3. 3 and 4
4. 2 and 3
5. 4 and 5

24. "In a hotel are lodged 350 people: 50 are French, 100 are males and 100 stay in a single room". On the basis of this information, of how many people you can affirmed that they are at the same time French, male and stay in a single room?

1. Twenty
2. None
3. Ten
4. Fifty
5. Thirty

25. A given population decreases by 20% every year. What is the approximate percentage left after 5 years?

1. 0%
 2. 10%
 3. 20%
 4. 30%
 5. 50%
-

BOCCONI UNIVERSITY

ANSWER SHEET

INSTRUCTIONS

Do not fill in the box corresponding to your answer until you are sure of it. Fill in the box fully and correctly as shown below. Do not use other marks.

1	2	3	4	5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
yes	no	no	no	no

If you want to change your answer, fill in fully the box corresponding to your new choice on the bottom line as shown below:

1	2	3	4	5
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

↑ **This is the correct answer**

In this way any answer on the top line is considered as cancelled.

To cancel your choice, fill in fully any other box on the top or on the bottom line as shown below:

1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.

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3.

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4.

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5.

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6.

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7.

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8.

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9.

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10.

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11.

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12.

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13.

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14.

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15.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.

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17.

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18.

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19.

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20.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25.

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QUESTION	CORRECT ANSWER	AREA
1	5	Mathematics
2	2	Logical Reasoning
3	5	Mathematics
4	1	Logical Reasoning
5	3	Mathematics
6	2	Text Comprehension
7	4	Text Comprehension
8	4	Text Comprehension
9	1	Text Comprehension
10	3	Text Comprehension
11	2	Mathematics
12	3	Numerical Reasoning
13	2	Numerical Reasoning
14	1	Numerical Reasoning
15	4	Numerical Reasoning
16	5	Numerical Reasoning
17	4	Mathematics
18	1	Logical Reasoning
19	3	Mathematics
20	1	Logical Reasoning
21	5	Mathematics
22	1	Logical Reasoning
23	3	Mathematics
24	2	Logical Reasoning
25	4	Mathematics