

BOCCONI UNIVERSITY

Practice test

International 2.20

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. I ride a certain distance on my bicycle in 18 minutes. If I increase my average speed by 50%, how much time will it take me to cover the same distance?

1. 6 minutes
2. 9 minutes
3. 12 minutes
4. 15 minutes
5. 27 minutes

2. A company produces a t-shirt in two versions, male and female, in 13 colours and in 4 male and 5 female sizes. How many different types of t-shirts are produced?

1. 234
2. 117
3. 130
4. 169
5. 338

Read the passage below and use the information to answer the next question

According to the IPCC, a panel for studying and fighting against pollution, from now to 2100 the world commercial energy system will be replaced at least twice. This will be an advantage for far-seeing countries which will replace their system for producing, carrying and using energy without untimely replacing the invested capitals, too. Such manoeuvre would allow to intervene at the end of the economic life of plants and machinery, thus highly or totally reducing the economic costs for a community who wish and need to limit climate-changing gas emissions.

3. By intervening at the end of the economic life of the plants and machinery, it would be possible to:

1. benefit the environment, although with a great economic loss
2. save much time and money
3. benefit the environment without great economic loss
4. recycle
5. none of the above statements is correct

4. Which of the following numbers does **not** fall between $\frac{2}{3}$ and $\frac{3}{4}$?

1. $\frac{5}{7}$
2. $\frac{7}{10}$
3. $\frac{8}{11}$
4. $\frac{9}{13}$
5. $\frac{11}{14}$

Reply to the next question referring also to the table below

Number of cars sold in Italy (2019)*

<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

5. In reference to car production in the EU in 2019, 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

6. Anna has a snack choosing three fruits among apples, pears and oranges. She can eat three fruits of the same type, or two of one type and one of another, or three different fruits. How many different ways are there for her to have a snack? (the order in which Anna eats the fruits doesn't matter).

1. 20
2. 10
3. 27
4. 9
5. 6

7. The straight line that passes through points (1,2) and (3,3) does **not** pass through point:

1. (-3,0)
2. (7,5)
3. (10,7)
4. (9,6)
5. (-1,1)

Read the passage below and use the information to answer the next question

Among actual advantages that companies and organizations may gain thanks to electronic commerce (EC) are: 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; 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.

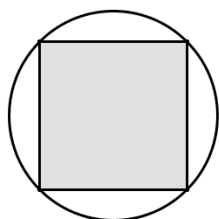
8. Electronic commerce:

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

9. Elena goes jogging and usually runs for 3 km in 18 minutes. One day she meets Teresa and stops to talk to her for a minute but forgets to stop her stopwatch. Compared with usual, the rhythm (minutes per km) of that day is:

1. 10% lower
2. 5% lower
3. 5% higher
4. 10% higher
5. 20% higher

10. How much is the ratio Q/C between the area of the square Q and the area of the circle C ?



1. $\frac{2}{\pi}$
 2. $\frac{\sqrt{2}}{\pi}$
 3. $\frac{\sqrt{2}}{2\pi}$
 4. $\frac{\sqrt{3}}{2\pi}$
 5. $\frac{2}{3}$
-

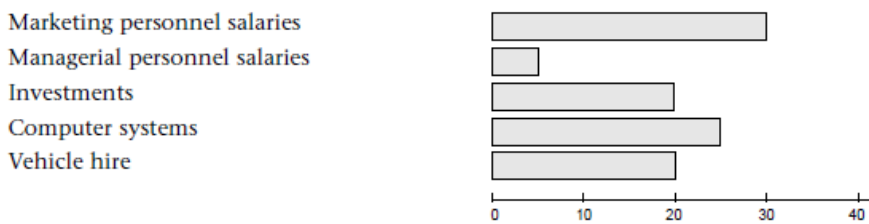
Read the passage below and use the information to answer the next question

Every year, the State operations are listed in the balance sheet, which can either be “estimate” or “final”. The balance sheet gives a comprehensive view on the revenue and the expenditure, both foreseen and actual: it translates the decisions of the public body for the future into figures as well as recording the activities carried out in the past. The budget for the next year is drawn up by the Government and it is approved by the Parliament. Public operators forcedly and unilaterally levy taxes on the citizens so as to found their activity. The State withdraws a part of the citizens’ income through taxation.

11. The balance sheet gives information:
1. about how much the actual revenue was higher than the expected one
 2. about past and foreseen revenue and expenditure
 3. about the most urgent needs in order to get economically positive results
 4. about public bodies which presented a deficit balance sheet
 5. none of the above statements is correct

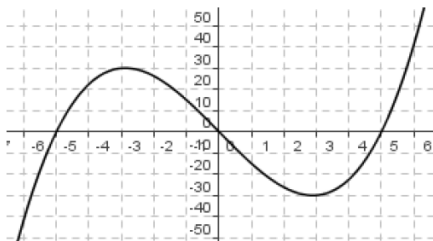
Reply to the next question referring also to the bar chart below

In Sussex company costs are distributed as shown in the bar chart below.



12. If T is the amount available for costs, we can say that:
1. managerial personnel salaries are equal to $5T$
 2. vehicle hire plus marketing personnel salaries amount to $0.50T$
 3. costs for computer systems are more than $0.30 T$
 4. the salaries of the managers are greater than $9T$
 5. none of the above answers is correct

13. The following figure shows the graph of function $f(x)$.



For which values of k does the equation $f(x) = k$ result in three solutions?

1. $k = -5, k = 5$
 2. $k < -5, k > 5$
 3. $-30 < k < 30$
 4. $k = -30, k = 30$
 5. $k < -30, k > 30$
-
14. A sequence of numbers begins with 2 and 3. The rule for writing another number is: you must double the last number written and subtract the one that precedes it. Which number appears in tenth place in the list?
1. 20
 2. 9
 3. 10
 4. 11
 5. 12
-
15. How many points of intersections are there between the parabola $y = x^2 + 8x$ and the line $y = 2x - 10$?
1. 0
 2. 1
 3. 2 distinct points
 4. 2 coincident points
 5. Infinite

Read the passage below and use the information to answer the next question

Over recent decades Tuscany has undergone vast changes that have profoundly altered the territory and its image. The pressure of technological society has brought indubitable advantages in terms of standards of living but this does not always correspond to improvements in the quality of life. We now find ourselves facing a territory furrowed by roads and motorways, disfigured by hydrogeological disaster, despoiled of many of its most beautiful forests, impoverished of the life blood of its rivers, frequently transformed into cold channels of cement, and increasingly less enhanced by the many sounds and colours of multiform natural biodiversity. And if the rural environment suffers, the situation is certainly no better in our cities, assailed by pollution, noise, waste and the lack of green spaces. In the face of such a picture, there is an increasingly imperative need for a voice calling for change, for a force that will exert itself to improve the situation.

16. The tone of the passage could be defined as:

1. conciliatory
2. ironic
3. denunciatory
4. sarcastic
5. none of the above statements is true

17. Consider the set $A = \{1,2,3,\dots,100\}$. How many elements of A are divisible by 3 or by 5 or by both?

1. 53
2. 47
3. 33
4. 20
5. 59

18. Federica is writing notes on her computer. The probability of her making a typing error on a page is 40%. When writing 3 pages, what is the approximate probability that there is at least one mistake in the 3 pages?

1. 100%
2. 40%
3. 80%
4. 50%
5. 120%

Read the passage below and use the information to answer the next question

Today, the expression “electronic commerce” (EC) tends to assume a particular meaning in relation to the development on a planetary scale of telecommunication networks, thus distinguishing the realisation of a new channel with which companies can take advantage of new ways of making commercial contact with its suppliers and clients. And so one may think of a technology that leads to a radical change of our habits, comparable with the advent of television as far as speed and broadcast range are concerned. Object of the exchange are goods, services, certifications and information, whereas the principals are private citizens, companies and public institutions.

19. Why is the development of the Internet comparable to the advent of television?

1. Because it deals with phenomena which utilize long distance transmission
2. For the simple fact that it deals with typically modern phenomena
3. Because it deals with phenomena that can have a rapid and widespread transmission
4. Because it deals with phenomena that can be used for advertising
5. None of these statements is correct

Reply to the next question referring also to the table below

Number of visitors per website (visits)

<i>Type</i>	<i>Teenagers</i>	<i>Young adults</i>	<i>Adults</i>
Clothing	390	210	132
Tourism	124	410	215
Glasses	185	317	348
Shoes	105	122	101
Jewellery	74	63	34
Cars/Motorbikes	342	384	357

20. In decreasing order, which types of websites are visited online by Adults?

1. Cars/Motorbikes, Glasses and Clothing
 2. Jewellery, Shoes and Clothing
 3. Cars/Motorbikes, Glasses and Tourism
 4. Cars/Motorbikes, Tourism and Glasses
 5. It is impossible to establish based on the information provided only
-

21. The sum of two real numbers is 10. The sum of their squares is:

1. 10
2. 20
3. 50
4. 100
5. the data is insufficient

22. Mixing 2 litres of a 4% solution and 4 litres of a 10% solution produces a solution of what percentage?

1. 7%
2. 8%
3. 14%
4. 4.8%
5. 9%

Read the passage below and use the information to answer the next question

The State withdraws a part of the citizens' income through taxation. Direct tax affects personal income and property, because owners directly show their ability to pay tax. Indirect tax affects wealth transfers and consumption. In such cases, the ability to pay tax is shown indirectly through the expenditure. The most important indirect tax is the VAT, which affects the purchase of goods and services. Levies are classified as tolls, when they represent the monetary equivalent for the public services given to a person and partially cover their cost, and contributions, paid by employees and employers in relation to the work income for founding the social welfare system. In order to offer public services, the State has to invest, that is a capital expenditure, so as to increase the State property.

23. What are taxes?

1. Contributions which may be paid in various instalments after a specific request
2. Fixed levies which affect every citizen
3. A payment which is increased year by year to face the property expenditure carried out by the State
4. The request for money to the citizens by the State administration, which contributes to satisfying their needs for a public service
5. None of the above statements is correct

24. The width of the interior angle of a regular 15-sided polygon is:

1. 120°
2. 156°
3. 108°
4. 150°
5. 180°

25. How many anagrams are there (including those without meaning) of the word CONTEXT?

1. 49
 2. 5,040
 3. 2,520
 4. 1,260
 5. 720
-

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
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1.

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10.

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11.

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16.

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17.

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18.

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19.

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21.

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22.

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23.

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24.

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25.

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