

Шифр:

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**ПИСЬМЕННАЯ РАБОТА УЧАСТНИКА
ОЛИМПИАДЫ ШКОЛЬНИКОВ СПБГУ
2016–2017**

заключительный этап

Предмет (комплекс предметов) Олимпиады : **СОВРЕМЕННЫЙ МЕНЕДЖЕР**

Город, в котором проводится Олимпиада Санкт-Петербург

Дата 25 марта 2017 г.

Вариант 1

Математика (Современный менеджер)

Первые 6 задач оцениваются в 3 балла каждая. Остальные по 4 балла.

Часть 1. В задачах 1 – 4 Вам следует обвести в соответствующей графе правильный ответ. (Если Вы случайно выделили не ту клетку, то обведите нужный ответ и напишите его еще раз на полях.)

Задачи		Ответы			
1.	Укажите наименьшее из чисел $a = \log_{0,2} 2$; $b = \log_{0,02} 22$; $c = \log_{0,22} 22$; $d = \log_2 0,22$	a	b	c	d
2.	Вычислите $A = \frac{\cos 3x - \cos x}{\sin 3x + \sin x}$, если $\operatorname{tg} \frac{x}{2} = 2$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{4}{3}$	2
3.	Меньший положительный корень уравнения $\sin^3 x = \frac{\sqrt{5}-2}{8}$ равен	$\frac{\pi}{24}$	$\frac{\pi}{15}$	$\frac{\pi}{12}$	$\frac{\pi}{10}$
4.	Сколько корней имеет уравнение $x^3 - x^2 + x = 2$?	0	1	2	3

Часть 2. В задачах 5 – 8 следует записать ответ справа от условия задачи (в пустой графе)

5.	Найдите наибольшее a , при котором неравенство $\sqrt{x-a} + \frac{a^2}{\sqrt{x-a}} \leq 2$ имеет целое решение.	1
6.	В окружность радиуса $\sqrt{2}$ вписан прямоугольный треугольник, в который вписан другой круг радиуса $\sqrt{3} - \sqrt{2}$. Найдите площадь треугольника.	15
7.	Решите уравнение $2\sqrt{2x+1} = x^2 - 1$.	$\frac{7}{3}$
8.	В прямоугольную трапецию, острый угол которой равен 30° , вписан круг единичного радиуса. Найдите площадь трапеции.	4

Часть 3. В задачах 9–10 следует справа в соответствующей графе написать ответ, однако дополнительно к этому следует кратко записать решение

9. Через ребро основания правильной четырехугольной пирамиды проведена плоскость, которая делит объем и полную поверхность пирамиды на две равные части. Найдите двугранный угол при основании пирамиды.	
10. При каком значении x достигается наибольшее значение функции $y = \sqrt{x^2 + 2 - x} + \sqrt{6 + x - x^2}$?	-2 ; 3

Математика, решения заданий 9 и 10:

10. ОДЗ: $\begin{cases} x^2 - x + 2 \geq 0 \\ -x^2 + x + 6 \geq 0 \end{cases} \Rightarrow \begin{cases} x^2 - x + 2 \geq 0 \\ x^2 - x - 6 \leq 0 \end{cases} \begin{matrix} x = -2 \\ x = 3 \end{matrix}$

~~Handwritten scribbles and crossed-out work.~~

$$y'(x) = \frac{1}{2}(x^2 + 2 - x)^{-\frac{1}{2}} \cdot (2x - 1) + \frac{1}{2}(6 + x - x^2)^{-\frac{1}{2}} \cdot (-2x + 1) = \frac{1}{2}(2x - 1) \cdot \left(\frac{1}{\sqrt{x^2 - x + 2}} - \frac{1}{\sqrt{-x^2 + x + 6}} \right) = 0$$

$$(2x - 1) \left(\frac{-x^2 + x + 6 - x^2 + x - 2}{\sqrt{(x^2 - x + 2)(-x^2 + x + 6)}} \right) = 0 \Rightarrow (2x - 1) \left(\frac{-2x^2 + 2x + 4}{\sqrt{(x^2 - x + 2)(-x^2 + x + 6)}} \right) = 0$$

$x = \frac{1}{2}$

$y(-2) = \sqrt{4 + 2 + 2} + \sqrt{6 - 2 - 4} = 2\sqrt{2}$
 $y(3) = \sqrt{9 + 2 - 3} + \sqrt{6 + 3 - 9} = 2\sqrt{2}$

\Rightarrow наиб. знач. достигается при $x = -2$ или $x = 3$.

Обществознание (Современный менеджер)

1. Перечислите функции политической власти *регулятивная, коммуникативная, символическая, защитная*
2. Установите соответствие между особенностями общественных отношений и типом социальной стратификации: к каждой позиции, данной в первом столбце, подберите соответствующую позицию из второго столбца.

ОСОБЕННОСТИ ОБЩЕСТВЕННЫХ ОТНОШЕНИЙ	ТИПЫ СТРАТИФИКАЦИИ
А) юридическое закрепление прав и обязанностей за основными социальными группами	1. кастовая
Б) преимущественно наследственный характер принадлежности к элите общества	2. сословная
В) запрещение перемещения из одной социальной группы в другую	3. классовая
Г) в основе деления на группы – различия в характере труда и размерах и формах его оплаты	
Д) запрет на браки с представителями других групп	

Запишите в таблицу выбранные цифры под соответствующими буквами

А	Б	В	Г	Д
2	2	1	3	1

3. Пенсионеры задержали выплату пенсии. От инфляции:
- 1) пенсионер выиграет
 - 2) пенсионер проиграет
 - 3) государство и пенсионер выиграют
 - 4) государство и пенсионер проиграют

4. Запишите слово, пропущенное в таблице

ГОСУДАРСТВЕННОЕ РЕГУЛИРОВАНИЕ РЫНОЧНОЙ ЭКОНОМИКИ

НАПРАВЛЕНИЯ ПОЛИТИКИ	ХАРАКТЕРИСТИКА НАПРАВЛЕНИЙ
Фискальная	Регулирование государственного бюджета
<i>Монетарная</i>	Контроль за денежной массой

5. Верны ли следующие суждения о ценных бумагах?

А. К ценным бумагам относятся векселя и облигации.

Б. Ценной бумагой, которая приносит доход в форме дивиденда, является акция.

- верно только А верны оба суждения
 2) верно только Б 4) оба суждения неверны

6. Одной из задач экономической науки является исследование

- 1) влияния окружающей среды на работоспособность человека
- 2) закономерностей взаимодействия социальных общностей
- 3) влияния инвестиционной политики на профессиональный состав безработных
- 4) факторов, способствующих социальной мобильности

7. Рынок спортивной одежды области Z поделён между четырьмя крупными компаниями-операторами, другие производители не представлены. Выберите в приведённом ниже списке характеристики данного рынка и запишите цифры, под которыми они указаны.

- 1) рынок услуг
- 2) совершенная конкуренция
- 3) региональный рынок
- 4) рынок товаров
- 5) олигополия
- 6) рыночный дефицит

8. Иван выполнял задание по теме: «Человек как результат биологической и социокультурной эволюции». Он выписывал из учебника черты, свойственные человеку. Какие из них отражают специфику социальной природы человека, в отличие от животного? Запишите цифры, под которыми они указаны.

- 1) использование предметов, данных природой
- 2) способность к целенаправленному поведению
- 3) забота о потомстве
- 4) приспособление к условиям окружающей среды
- 5) стремление понять окружающий мир
- 6) общение с помощью членораздельной речи

partly in company time, and usually on projects initiated by the company. The financial services provider Zurich sends staff on one-month secondments to help with projects in India. Marks & Spencer sets up 100-hour part-time secondments for staff who want to get involved with local community projects.

However, it is not only in order to present themselves as caring employers that companies are becoming increasingly concerned about ethical issues. Professor Malcolm McIntosh of Warwick University Corporate Citizenship Unit explains that in our rapidly changing world, organisations need to have values. Now, he says, businesses have to take responsibility for such matters as human rights, environmental impact and social responsibility. 'Business does not operate in a vacuum. The rules of the game are such that we have to be aware of all stakeholders, customers, staff and the communities in which companies operate. You can't make money unless you understand people's values.'

8 In paragraph 1, why does the writer say some companies are introducing codes of ethics?

- A to help attract new employees
- B to encourage their staff to behave ethically
- C to prove to suppliers that they treat their staff well
- D to help improve their employees' working conditions

9 The Ethical Trading Initiative's objective is to

- A advise companies about ethical issues and check on ethical standards.
- B ensure acceptable pay and working conditions for everyone involved in producing goods.
- C improve the quality of goods sold by its members.
- D make sure suppliers behave ethically.

10 David Steele believes people are more aware of ethical issues nowadays

- A because of the efforts of the organisation he works for.
- B because of media coverage of these issues.
- C because some well-known companies have drawn up codes of ethics.
- D because they buy goods from foreign suppliers over the Internet.

11 Job candidates should ask to see a company's code of ethics because

- A some companies haven't yet written one.
- B the company may be pretending to have one.
- C it may not be posted on the company's website.
- D the company may not really care about ethical issues.

12 Some companies now encourage their employees

- A to do charity work in their spare time.
- B to go abroad in order to get job experience.
- C to help people during their working hours.
- D to work for one month in the local community.

13 According to Professor McIntosh, paying attention to ethical issues will

- A help companies adapt to a changing world.
- B teach companies social responsibility.
- C improve companies' public image.
- D help companies stay profitable.



VOCABULARY AND GRAMMAR

A. Complete the adjectives below filling the gaps with missing letters. Each adjective has a clue to help you.

Nick never frowns (1. I v g ht - h e a c t e d) and will always tell you if he does not like something in you (2. c _ n _ id). Everybody enjoys his company and he is the heart and soul of any party (3. e a _ y - g o _ i n g). He knows what he wants and he usually gets it (4. strong - will) because he knows he is good (5. self - as_sured). He likes to be the boss, the one on top (6. dominant), and hates to lose, in business or tennis (7. competitive), and also expects high standards of performance from others (8. demanding).

As to Kate, she thinks she is superior to everyone (9. acrogant). You can often hear her saying, "Of course, I could have beaten him easily, but I wanted to give him a chance!" (10. boasthand). She spends half her day in front of the mirror (11. van) and thinks the whole world revolves around her (12. self - centred).

Nick and Kate are so different, but they manage to be good friends!

B. For questions 1-4, think of one word only which can be used appropriately in all three sentences. Write ONLY the missing word.

Here is an example:

0 The thief the watch into his pocket when he thought no one was looking. Several visitors to the castle almost on the newly polished floor. The speaker a few references to the local football team into his speech, which the audience appreciated greatly.

Answer: slipped

1. Peter has been under a lot of stress recently and it's beginning to on his health. At the beginning of the lesson I often ask the children in my class to me a story. It's hard to how old James is - he behaves as if he is middle-aged but looks quite young.

tell

2. The old maths teacher always used to us a lot of homework. I hoped I've managed to your mind at rest. The judge's decision a precedent for similar cases.

give

3. I can't see the of going so far for such a short time. There was a of excitement in the theater as the curtain rose. You are in no obliged to do what she has asked you to do.

way

4. If you move along a little there will be enough at the table for us all. Your work is getting better but there is still for improvement. Mrs Benson the company single-handed after her husband's death.

space

C. For questions 1-4, complete the second sentence so that it has a similar meaning to the first sentence, using the word given. Do not change the word given. You must use between TWO and FIVE words, including the word given.

Example:

(0) Fernanda refused to wear her sister's old dress.

NOT

Fernanda said that SHE WOULD NOT WEAR her sister's old dress.

1. If I were you, I wouldn't stay at that guesthouse because the service is dreadful.

WORTH

In my opinion, ...it does not worth staying..... at that guesthouse because the service is dreadful.

2. Steve moved house three months ago.

SINCE

It has been three months since Steve moved house.

3. "Why are you talking so loudly in the library?" George asked.

WHY

Jane.....early in the morning.

George asked them why they were talking so loudly in the library

4. Andy doesn't usually complain about everything.

LIKE

It is not like that Andy complains about everything.

Reading

TEXT I

- You are going to read a magazine article about interns – young people doing work placements for a limited period, usually without pay.
- For questions 1-7, choose from the sections of the article (A-C).
- The sections may be chosen more than once.

Which intern mentions

1. the fact that some of her work can be seen? B
2. her feeling about the people she works with? A
3. having no regrets about a choice she made previously? C
4. the outcome of some of the work she does? A
5. a desire not to be in the same situation in the future? C
6. something she regarded as unpredictable? A
7. a preference concerning the work she does as an intern? C

The intern's tale

*Many workplaces have interns. Is it useful work experience or an unpaid waste of time?
Sarah Barnes meets three young interns.*

A Jessica Turner: Future Films

Working on scripts that you know are going to become films one day is really exciting. We get a broad variety of genres sent to us here. Personally, I love anything that's been adapted from a book, especially if I've read it. I read scripts, sometimes I attend meetings with writers, and I've also researched potential writers and directors online. My placement was due to come to an end this month but I've just been offered the paid role of production and development assistant. I'm pleased to be able to stay – I didn't want to leave everyone. It's been tough getting to this point, but you can't expect too much because it's a competitive industry. Because my degree was in film theory, I didn't come away with the practical experience of being able to go on set and know

what's what. Maybe I would have progressed more quickly if I had.

B Paula Morison: Whitechapel Gallery

I came to London with no plans. I didn't know how long it would take to get a job. I'd saved up some money and resigned myself to staying on a friend's sofa for a while, but luck was on my side and I found a job as a seamstress within a couple of weeks. My placement at the gallery came along a week later. I've helped install exhibitions and create gallery publications. One of the most exciting tasks was helping the artist Claire Barclay create the installation that's now on display in the gallery. Because some of the piece is sewn, my seamstress skills came in handy. The hardest thing is at the start, when you don't know anything. Someone asks: 'Can you courier this?' and you have to ask so many questions, like 'Which courier company?' and 'Where are the envelopes?' I'm about to finish my placement and I'm planning my own curatorial project with a friend. It will be a lot of work but I think I have to go for these things now, otherwise I'll regret it later.

Hannah Sanderson: Merlin

Over the past few years I've been doing volunteer work in Calcutta, Bogota and Teheran, so it's quite hard to adjust to being back in the UK. Most of my friends are buying houses, have cars and go on holidays. But I never feel I've missed out because I'm doing what I've always wanted to do. I work three days a week, receiving a small sum to cover expenses. Money from my father has gone towards funding my placement and I'm really fortunate that I can live with my mum, although it does mean my commute can take up to two hours. Without my family, I don't think I could be doing this. Next month I'm starting a six-month placement in Myanmar, monitoring the health facilities the charity supplies there. After that, I might actually be in a position to earn a salary. If I was 35 and still working unpaid, I'd think 'What am I doing?'

TEXT II

Read the following article about a code of ethics in business. For each question (8-13), choose one letter (A, B, C or D).

Ethics count

Bored with lining your boss's pockets? Want to work for a company you feel is doing some good in the world? Join the club. Research shows that nowadays employers' ethics are often the deciding factor when someone opts for a particular post. Increasingly companies in Britain are responding to this situation by drawing up codes of ethics so that current and prospective staff can see how seriously they take their moral responsibilities. A typical code will address corporate policy towards its various stakeholders: employees, shareholders, customers, suppliers and the wider public. Standards relating to suppliers frequently include a commitment to ensuring that there is no child labour at any stage of the supply chain, and that wages and working hours are reasonable.

As part of their code, some companies, including chain store Marks & Spencer, have joined the Ethical Trading Initiative (ETI), 'a membership body that exists to set standards for labour within supply chains,' explains David Steele, its Information Officer. Other employers send inspectors on regular visits to check the ethical standards and practices of all their suppliers of goods and services – whether in east London or the Far East.

'Recently there have been a lot of documentaries highlighting conditions in factories overseas, as well as on issues like child labour in this country. As a result, workers are now taking a broader interest in the companies for which they work,' claims David Steele. 'The fact that the Internet has created a global economy is also significant. We no longer think of a sweatshop in Korea as being so far away.'

Nevertheless, research also shows that some employers write a code of ethics simply to enhance their image. Upon closer inspection, there may be little real commitment. 'That's why candidates who care about ethical issues should ask at the interview stage not only whether there is a code, but whether they can see it,' advises Rachel Ormond, an academic researcher in ethics and employment. 'It should exist in document form, and in many cases it is now included on the company website.'

'You might also want to ask whether your prospective employer encourages staff to get involved in giving something back to society,' she adds. Employees sometimes do voluntary work, for example, either wholly or