

ВАРИАНТ 1

МАТЕМАТИКА (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Для каждой из сформулированных задач приведите полное ее решение и запишите ответ.

1. (6 баллов) Найдите все целочисленные решения неравенства

$$\log_{15}(x+2)^2 \geq \log_3(x-2)^2 + \log_5(x+3)$$

2. (6 баллов) Найдите котангенс наименьшего положительного корня уравнения

$$\sin(2x) \cos x = \frac{4}{3\sqrt{3}}$$

3. (6 баллов) При каком наибольшем целом a найдутся два отрицательных значения p , при которых $2p^2 - ap + 1 = 0$?
4. (8 баллов) В трапеции диагонали равны 3 и 4, а площадь ее равна 6. Одно из оснований в четыре раза меньше другого. Найдите большее основание.
5. (8 баллов) Найдите площадь сечения единичного куба плоскостью, равноотстоящей от всех вершин куба.

Ответы на задания:

№	Ответ
1	
2	
3	
4	
5	

АНГЛИЙСКИЙ ЯЗЫК И ОБЩЕСТВОЗНАНИЕ (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Task 1 (Английский язык – 24 балла; обществознание – 20 баллов)

In this integrated task, you should read the text on the topic of environmental issues and answer the *essay* question. You have about **30 minutes** to read and analyse the text and **40 minutes** to plan, write, and revise your essay. Write your essay in **200–250 words** in an appropriate style. Use your own words as far as possible.

- Identify at least three key environmental challenges that Russia faces today and give your arguments for each of them.
- Using the information from the text, explain if the initiatives presented in the text could be used in Russia to protect and improve the environment.

From Afghanistan to Zimbabwe, 141 countries made significant progress in 2017 to **tackle** the most urgent environmental challenges facing humanity and our planet, inspiring us to seek out new and more innovative solutions.

СОВРЕМЕННЫЙ МЕНЕДЖЕР

The 2030 Agenda for Sustainable Development provides our vision for this work – connecting people and welfare with the planet; development with environment – and signals that our response to these complex and inter-connected challenges must do the same.

In this 10th annual performance report of the United Nations Development Programme (UNDP), we show how investments in the Sustainable Development Goals¹ (SDGs) – on affordable and clean energy, climate action, life below water, and life on land – accelerate the achievement of other goals aimed at ending poverty, achieving zero hunger, achieving gender equality, reducing inequalities, and building strong institutions.

The vast and diverse region of Africa is unified around two ambitious programmes for people, planet and welfare: the global Sustainable Development Goals and the continental Agenda 2063, which builds on and aims to accelerate existing continental initiatives for growth and sustainable development.

Since 1992, the Africa region has received 24% of all environmental grant financing mobilized by UNDP for 46 countries in the region. When combined with US\$8.1 billion in co-financing, this total investment of US\$9.9 billion over the past 25 years has made significant progress in addressing the root causes of environmental degradation, and has built capacity to recover and strengthened livelihoods across the region.

In Namibia, Integrated Forest Management Plans have been completed for 2.8 million hectares and will facilitate the use of improved agricultural, livestock, and forestry management practices in community forest areas. Managing community forests improves communities' fair and sustainable access to wood resources, firewood, poles, wild fruits, medicinal plants, etc. The National Agricultural Policy now has strategies that address forest concerns, including the protection and conservation of native plants and genetic material, agroforestry, and a strategy on sustainable utilisation of natural resources. Communities in the Central Province of Zambia are taking a lead role in sustainable forest management by: adopting local laws that encourage tree regeneration; planting 88,000 seedlings from an agro-forestry nursery to promote more diversified and sustainable land use practices; and adopting alternative income generating activities such as bee-keeping, conservation farming, small livestock rearing, and handicrafts in order to reduce pressures on forests. Mapping of historical trends of fire incidence and fire danger for the Central Province help identify areas at risk and contribute to the development of a fire incidence database at the Forestry Department Headquarters in Lusaka which form an integral part of draft fire management plans.

Senegal is working with Burkina Faso, Togo and Democratic Republic of Congo on the concept of an ecovillage model that combines the sustainable management of natural resources with the use of renewable and low-carbon energy sources, for multiple benefits. Healthcare management experts from Ghana, Kenya, Madagascar, Mauritius, South Africa, Uganda, Tanzania and Zambia participated in an intensive training session on advanced healthcare waste management, strengthening collaboration among country teams and promoting a broader regional effort on global green hospitals. Representatives from Burkina Faso traveled to Niger to observe the production of native bourgou grass (*Echinochloa stagina*) for livestock feeding, and to explore options for increasing production of bourgou back home.

A new bush fire management strategy developed for the Tsodilo Enclave in Botswana has significantly reduced fire incidents and burnt area by 60%. This has led to more effective range management which helps the flow of ecosystem services that support livelihoods of local communities. The creation of five new protected areas in the Dulombi-Boe-Tchetche complex in Guinea Bissau resulted in the expansion of the National Protected Area system from 15% of the country's territory to over 26%. Record numbers of lions and elephant groups and significant increases of chimpanzee populations have been recorded in the new PAs. In South Sudan, protected areas under improved management increased from 2 million to 6 million hectares. Improved management effectiveness of these areas is helping to preserve biodiversity conservation efforts via training on identification of illegal wildlife products, investigation procedures, aerial surveillance of ecosystems and species, among other activities.

Essay: Свободный ответ, правильного ответа нет

¹ Sustainable Development Goals – a plan of action to end poverty, protect the planet and guarantee the global well-being of people

Task 2 (Английский язык – 8 баллов; обществознание – 12 баллов)

Explain the meaning of the term “ecosystem” from the text in about 50–100 words.

Ответ (примерный): A community of organisms or the biotic component, and their physical environment or abiotic component, interacting as an ecological unit. Different ecosystems are united to form the biosphere.

Task 3 (Английский язык – 2 балла)

For each question 1-2, mark one letter.

1. In the text, the word in bold ‘tackle’ is closest in meaning to:
 - (A) define
 - (B) present
 - (C) handle**
 - (D) create

2. Sustainable forest management in the Central Province of Zambia includes all of the following EXCEPT:
 - (A) raising young animals
 - (B) breeding new varieties of trees**
 - (C) managing colonies of useful insects
 - (D) growing young plants

МАТЕМАТИКА (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Для каждой из сформулированных задач приведите полное ее решение и запишите ответ.

1. (6 баллов) Найдите сумму корней уравнения

$$(x - 2)(x - 3)(x - 4)(x - 5) = 24$$

2. (6 баллов) Сколько корней имеет уравнение $\sin(\pi/(x + 2)) = \cos(\pi x)$ на промежутке $[0; 10]$?

3. (6 баллов) При каком наибольшем целом b существует a такое, что неравенство $5x^2 - 6ax - 4b + 3 < 0$ не имеет решения?

4. (8 баллов) В прямоугольной трапеции радиус вписанного круга равен 2, а наклонная боковая сторона равна 5. Найдите площадь трапеции.

5. (8 баллов) Найдите площадь сечения правильного тетраэдра, все ребра которого равны 4, а сечение проходит через центр вписанного шара и параллельно одной из граней.

Ответы на задания:

№	Ответ
1	
2	
3	
4	
5	

АНГЛИЙСКИЙ ЯЗЫК И ОБЩЕСТВОЗНАНИЕ (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Task 1 (Английский язык – 24 балла; обществознание – 20 баллов)

In this integrated task, you should read the text on the topic of environmental issues and answer the *essay question*. You have about **30 minutes** to read and analyse the text and **40 minutes** to plan, write, and revise your essay. Write your essay in **200–250 words** in an appropriate style. Use your own words as far as possible.

- Identify at least three key environmental challenges that Russia faces today and give your arguments for each of them.
- Using the information from the text, explain if the initiatives presented in the text could be used in Russia to protect and improve the environment.

From Afghanistan to Zimbabwe, 141 countries made significant progress in 2017 to tackle the most urgent environmental challenges facing humanity and our planet, inspiring us to seek out new and more innovative solutions.

The 2030 Agenda for Sustainable Development provides our vision for this work – connecting people and welfare with the planet; development with environment – and signals that our response to these complex and inter-connected challenges must do the same.

СОВРЕМЕННЫЙ МЕНЕДЖЕР

In this 10th annual performance report of the United Nations Development Programme (UNDP), we show how investments in the Sustainable Development Goals² (SDGs) – on affordable and clean energy, climate action, life below water, and life on land – accelerate the achievement of other goals aimed at ending poverty, achieving zero hunger, achieving gender equality, reducing inequalities, and building strong institutions.

The vast and **diverse** region of Africa is unified around two ambitious agendas for people, planet and welfare: the global Sustainable Development Goals and the continental Agenda 2063, which builds on and aims to accelerate existing continental initiatives for growth and sustainable development.

Since 1992, the Africa region has received 24% of all environmental grant financing mobilized by UNDP for 46 countries in the region. When combined with US\$8.1 billion in co-financing, this total investment of US\$9.9 billion over the past 25 years has made significant progress in addressing the root causes of environmental degradation, and has built capacity to recover and strengthened livelihoods across the region.

Newly installed automatic weather stations in Malawi significantly increased the meteorological network coverage from 33% to 72% of the entire country. As a result, real-time hourly observations are helping residents make well informed decisions. New automated weather stations installed across Tanzania also transmit weather information every hour and are supported by a national integrated database for climate and hydrology information. Strengthened early warning systems in the important *Fynbos* biome in South Africa enable local fire protection associations to deliver higher quality services and to better protect against the spread of fire to at-risk communities and ecosystems.

Native groups in Namibia, including the San community in the Kavango West Region and Ovahimba community in the Kunene Region, are using new micro-drip irrigation systems for family, community and school vegetable gardens. These groups have also been trained on conservation agriculture techniques, which will further advance their ability to adjust to climate change.

The people of the Democratic Republic of Congo are heavily reliant on *cassava*, as it is highly adaptable to changes in climate. Its flour is used for baking bread and cakes, the leaves are consumed as a rich source of protein, calcium, vitamin A and Vitamin C, and the starchy root can be fermented, or processed for industrial use as a starch, alcohol or biofuel. New processing units managed by a women's producers group in Nkatabusongo allow residents to process *cassava* in a more cost-efficient manner, reducing the time to make flour from up to two weeks to five days. Because the product is whiter, drier and it sells at a higher price. Farming communities in the Bafata and Gabu regions of Guinea Bissau that are exposed to extreme weather conditions have learned how to use climate information for farming decision-making processes and management. Floodgates, dams, and artificial ponds supply water for communities and animals year round, and protect agricultural areas threatened by floods, droughts and irregular rainfall.

In view of the dangers that the use of charcoal poses to the environment and human health, over 7,000 energy efficient cookstoves were spread throughout targeted communities in Sierra Leone. In partnership with civil society organizations, UNDP is supporting Malawi with installing and expanding hydro-based and solar mini-grid units, which will provide affordable electricity to approximately 700 low-income households, schools, a clinic, and coffee processing plants in rural areas. The development of standards for the integration of energy efficiency in buildings in Senegal has laid a foundation for greenhouse gas (GHG) emission reductions in the commercial and residential sectors. With support from private sector partners, national standards on solar home systems, Injera baking stoves, and cooking stoves have been approved by the Government of Ethiopia as part of the country's commitment to promote renewable energy and lower GHG-producing technologies for household equipment for cooking, lighting and heating.

Essay: Свободный ответ, правильного ответа нет

Task 2 (Английский язык – 8 баллов; обществознание – 12 баллов)

² Sustainable Development Goals – a plan of action to end poverty, protect the planet and guarantee the global well-being of people

СОВРЕМЕННЫЙ МЕНЕДЖЕР

Explain the meaning of the term “irrigation systems” from the text in about 50-100 words.

Ответ (примерный): Artificial watering of land for growing crops. Irrigation enables crops to grow in regions with inadequate precipitation. The first irrigation systems date from before 3000 bc in Egypt, Asia and the Middle East. Today, most water for irrigation is surface water (from streams, rivers and lakes) or ground water (obtained from wells). In some regions, freshwater for irrigation is obtained by desalination. Canals, ditches, pumps and pipes are used to convey water to fields.

Task 3 (Английский язык – 2 балла)

For each question 1-2, mark one letter.

1. In the text, the word in bold ‘**diverse**’ is closest in meaning to:
 - (A) spacious
 - (B) various**
 - (C) mixed
 - (D) unlike
2. According to the last paragraph, in Malawi, affordable electricity will be available for all of the following users EXCEPT:
 - (A) educational institutions
 - (B) food production businesses
 - (C) houses with electricity below standard**
 - (D) individuals and families in need

МАТЕМАТИКА (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Для каждой из сформулированных задач приведите полное ее решение и запишите ответ.

1. (6 баллов) Найдите все целочисленные решения неравенства

$$\log_{15}(x + 2)^2 \geq \log_3(x - 2)^2 + \log_5(x + 5)$$

2. (6 баллов) Сколько корней имеет уравнение $\sin(2\pi x) = \log_2 x$ на промежутке $(0; 10)$?
3. (6 баллов) При каком наибольшем целом p найдутся два отрицательных значения a , при которых выражение $3a^2p + 6ap^2 - 1 = 0$ обращается в нуль?
4. (8 баллов) В параллелограмме перпендикуляры, опущенные из одной из вершин на противоположные стороны, равны 12, а одна из диагоналей равна 15. Найдите периметр параллелограмма.
5. (8 баллов) В кубе $ABCD A'B'C'D'$ через точки A , C и середину ребра $A'B'$ проведена плоскость. В каком отношении она делит объем куба?

Ответы на задания:

№	Ответ
1	
2	
3	
4	
5	

АНГЛИЙСКИЙ ЯЗЫК И ОБЩЕСТВОЗНАНИЕ (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Task 1 (Английский язык – 24 балла; обществознание – 20 баллов)

In this integrated task, you should read the text on the topic of environmental issues and answer the *essay question*. You have about **30 minutes** to read and analyse the text and **40 minutes** to plan, write, and revise your essay. Write your essay in **200–250 words** in an appropriate style. Use your own words as far as possible.

- Identify at least three key environmental challenges that Russia faces today and give your arguments for each of them.
- Using the information from the text, explain if the initiatives presented in the text could be used in Russia to protect and improve the environment.

From Afghanistan to Zimbabwe, 141 countries made significant progress in 2017 to tackle the most urgent environmental challenges facing humanity and our planet, inspiring us to seek out new and more innovative solutions.

СОВРЕМЕННЫЙ МЕНЕДЖЕР

The 2030 Agenda for Sustainable Development provides our vision for this work – connecting people and welfare with the planet; development with environment – and signals that our response to these complex and inter-connected challenges must do the same.

In this 10th annual performance report of the United Nations Development Programme (UNDP), we show how investments in the Sustainable Development Goals³ (SDGs) – on affordable and clean energy, climate action, life below water, and life on land – accelerate the achievement of other goals aimed at ending poverty, achieving zero hunger, achieving gender equality, reducing inequalities, and building strong institutions.

Many countries in the Arab States region continue to be marked by conflict and instability that threaten to destroy development achievements and, in some instances, reverse progress. Yet significant steps have been made on several development fronts over the past decades, including improved life expectancy and school enrollment. However, sustainable development challenges such as water scarcity, gender gaps in economic, political and social life, and forced migration could prevent the region from fully securing these achievements.

Since 1992, the Arab States region has received 5% of all environmental grant financing mobilized by UNDP for 15 countries in the region. When combined with US\$1.6 billion in co-financing, this total investment of US\$1.9 billion over the past 25 years has made significant progress in addressing the root causes of environmental degradation, and has built capacity to recover and strengthened livelihoods across the region.

Over 280,000 hectares of the archaeological and cultural sites of Petra, Dibeen, and Wadi Rum in Jordan are protected by biodiversity-friendly land-use plans. Biodiversity⁴ management needs and **concerns** are now integrated into Jordan's National Tourism Strategy and the new Biodiversity-Friendly Tourism Charter represents an effective intervention on biodiversity conservation efforts. Many of the threats to biodiversity that relate to tourism (e.g. off-road driving, camping and associated waste problems and cutting of wood, hunting, etc.) are being brought under control through better land-use planning and protected areas management.

Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda carried out water balance models that included physical, chemical and isotope data to estimate annual and monthly water balance information that is essential for sustained management of wetlands and lakes in the Nile River Basin. The results of these models fed into nine national reports and one Nile Basin Groundwater Report that will improve the joint management of the Nile River Basin and promote a common understanding of groundwater issues among the countries owning lands on river banks.

Over 6,000 households in the North-East and North-West regions of Somalia are benefiting from improved access to water, ecosystem services and reforestation. Land Use Policies to support natural resources management have been developed in Somaliland and Puntland. The Government has also developed a National Development Plan that aims to support natural resources management and increase capacities to cope with climatic disasters happening repeatedly. Households in Djibouti are using newly acquired seeds and training in ecosystem services and reforestation to upgrading their survival agricultural skills. A National Climate Change Strategy has been developed to coordinate such activities throughout the country and to support an integrated response to climate impacts.

Priority biodiversity conservation efforts are being carried out in protected areas in Egypt including the development of a resource mobilization and long-term financing strategy, the establishment of a concessions management system which includes an improved entrance fee collection system, identification of new sustainable business opportunities, and the creation of commercial services plans for selected parks. Visitor facilities in protected areas are being improved through partnerships with private sector companies. Sustainable practices in the management of forestlands, rangelands, and arable land are being introduced

³ Sustainable Development Goals – a plan of action to end poverty, protect the planet and guarantee the global well-being of people

⁴ Biodiversity – the variety of plant and animal life in the world or in a particular habitat

СОВРЕМЕННЫЙ МЕНЕДЖЕР

in the Qaraoun Catchment in Lebanon. In the targeted sites, these interventions will help to reduce land degradation, the conservation of natural habitats to maintain ecosystem services, and the restoration of natural productivity leading to improved livelihoods for local populations – with the potential to be spread across 78,000 hectares. Baseline ecological assessments have helped plan reforestation activities while socio-economic assessments have examined the impact of activities on the economy and natural resources, and policy interventions to foster further growth.

Essay: Свободный ответ, правильного ответа нет

Task 2 (Английский язык – 8 баллов; обществознание – 12 баллов)

Explain the meaning of the term “climatic disaster” from the text in about 50-100 words.

Ответ (примерный): A disaster that is caused by a climate event. This is a natural phenomenon, such as an earthquake, tsunami, avalanche, landslide, flood, hurricane, tornado, forest fire, over which humans usually have little, if any, control. Some of them have roots in human actions. For instance, mudslides occur on steep mountainsides that have been cleared of trees, leaving nothing to hold the soil after heavy rain or snow-melt. Many climate disasters have implications for population health, such as disruption of water purification and sewage systems, and some, notably earthquakes and tsunamis, can cause great loss of life.

Task 3 (Английский язык – 2 балла)

For each question 1-2, mark one letter.

1. In the text, the word in bold ‘**concerns**’ is closest in meaning to:

- (A) worries
- (B) doubts
- (C) interests
- (D) threats

2. In the Arab States region, development achievements can be threatened by one of the following:

- (A) lack of clean water
- (B) sexual inequality in the society
- (C) sex-ratio imbalance
- (D) increasing number of refugees in the region

МАТЕМАТИКА (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Для каждой из сформулированных задач приведите полное ее решение и запишите ответ.

1. (6 баллов) Найдите сумму корней уравнения

$$(x^2 + 4x + 3)(x^2 + 6x + 8) = 24$$

2. (6 баллов) Найдите $\sin(4x)$, где x – наименьший положительный корень уравнения

$$\operatorname{tg}(3x) = \sqrt{2} + 1$$

3. (6 баллов) При каком наибольшем x неравенство $a^2x + (1 - x)a - 1 \leq 0$ выполняется при всех a из промежутка $[1; 2]$?
4. (8 баллов) В выпуклом четырехугольнике точка пересечения диагоналей делит каждую из них в отношении $1:2$. Четырехугольник, образованный последовательным соединением середин сторон, является квадратом со стороной 3 . Найдите периметр исходного четырехугольника.
5. (8 баллов) В правильной четырехугольной пирамиде $ABCD$ через точки A , B и середину ребра CS проведена плоскость. В каком отношении она делит высоту пирамиды?

Ответы на задания:

№	Ответ
1	
2	
3	
4	
5	

АНГЛИЙСКИЙ ЯЗЫК И ОБЩЕСТВОЗНАНИЕ (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Task 1 (Английский язык – 24 балла; обществознание – 20 баллов)

In this integrated task, you should read the text on the topic of environmental issues and answer the *essay* question. You have about **30 minutes** to read and analyse the text and **40 minutes** to plan, write, and revise your essay. Write your essay in **200–250 words** in an appropriate style. Use your own words as far as possible.

- Identify at least three key environmental challenges that Russia faces today and give your arguments for each of them.
- Using the information from the text, explain if the initiatives presented in the text could be used in Russia to protect and improve the environment.

From Afghanistan to Zimbabwe, 141 countries made significant progress in 2017 to tackle the most urgent environmental challenges facing humanity and our planet, inspiring us to seek out new and more innovative solutions.

СОВРЕМЕННЫЙ МЕНЕДЖЕР

The 2030 Agenda for Sustainable Development provides our vision for this work – connecting people and welfare with the planet; development with environment – and signals that our response to these complex and inter-connected challenges must do the same.

In this 10th annual performance report of the United Nations Development Programme (UNDP), we show how investments in the Sustainable Development Goals⁵ (SDGs) – on affordable and clean energy, climate action, life below water, and life on land – accelerate the achievement of other goals aimed at ending poverty, achieving zero hunger, achieving gender equality, reducing inequalities, and building strong institutions.

Many countries in the Arab States region continue to be marked by conflict and instability that threaten to destroy development achievements and, in some instances, reverse progress. Yet significant steps have been made on several development fronts over the past decades, including improved life expectancy and school enrollment. However, sustainable development challenges such as water scarcity, gender gaps in economic, political and social life, and forced migration could prevent the region from fully securing these achievements.

Since 1992, the Arab States region has received 5% of all environmental grant financing mobilized by UNDP for 15 countries in the region. When combined with US\$1.6 billion in co-financing, this total investment of US\$1.9 billion over the past 25 years has made significant progress in addressing the root causes of environmental degradation, and has built capacity to recover and strengthened livelihoods across the region.

New agro-meteorological stations in Djibouti are monitoring floods and drought for communities who have been trained in early warning systems, disaster risk and in collecting data produced by the equipment. A National Strategy on Climate Change has been developed to support such on-the-ground activities and also the coordination of mechanisms and financing strategies for long-term adaptation measures. Automatic weather stations and rain measurement devices have been installed in targeted communities covering six states in Sudan, increasing coverage for weather monitoring by 30%. These stations help with effectively monitoring extreme weather risks by providing climate and rainfall measurements for farmer groups. A study on flexible loan products for the six states has been **conducted**. Loan testing and delivery to target groups will be carried out jointly with weather index insurance products.

Private manufacturers in Egypt are supplying energy efficient lighting as part of an effort to gradually stop using inefficient lighting products in the country by 2020, making energy efficient lighting products the first choice for residential, commercial and administrative buildings, as well as for street lighting. Also in Egypt, private recycling facilities are benefiting from legal, technical, managerial, and operational support to help formalize their role in getting rid of e-waste. A confederation of private enterprises in Morocco is supporting the development of a national scheme of access and benefit sharing (ABS) of genetic resources by sharing knowledge on key issues regarding ABS markets, supply chains⁶ and the impact such a scheme might have on transactions, commerce and private research involving the use of genetic resources.

Due to the concentration of the majority of agricultural land, infrastructure and development along and within the low coastal lands of Egypt, coastal floods that can be caused by anthropogenic climate change can severely impact Egypt's entire economy. Coastal protection measures are being taken, including: implementing environmentally friendly techniques such as beach nourishment, which is the practice of adding large quantities of sand to beaches to increase beach width, and protection dams; developing an integrated coastal zone management plan (ICZM) for the North Coast as an institutional scheme for climate change adaptation activities in the country; and carrying out a study on coastal dynamics, sensitive habitats, social, urban and economic trends, and the policy and institutional context. In Tunisia, the Coastal Protection and Planning Agency is collaborating with the Department of Land Planning and the Ministry of Equipment, Land Planning and Sustainable Development on implementing coastal and land planning

⁵ Sustainable Development Goals – a plan of action to end poverty, protect the planet and guarantee the global well-being of people

⁶ Supply chain – the system of people and organizations that are involved in getting a product from the place where it is made to customers

СОВРЕМЕННЫЙ МЕНЕДЖЕР

measures on the island of Djerba where climate change adaptation is needed to protect goods and services provided by coastal ecosystems.

Djibouti, Egypt, Jordan, Lebanon, Eritrea, and Ethiopia are working together to develop new agriculture development plans that will take into account the safety of migratory soaring birds in the Rift Valley/Red Sea flyway. Measures are being taken to achieve a 40% increase in the land managed for agriculture, energy, hunting, and waste management at selected sites along the flyway.

Essay: Свободный ответ, правильного ответа нет

Task 2 (Английский язык – 8 баллов; обществознание – 12 баллов)

Explain the meaning of the term “insurance products” from the text in about 50-100 words.

Ответ (примерный): The products based on a legal contract in which an insurer promises to pay a specified amount to another party, the insured, if a particular event (known as the peril), happens and the insured suffers a financial loss as a result. The insured’s part of the contract is to promise to pay an amount of money, known as the premium, either once or at regular intervals. The insurance products cover the following areas: accident insurance, fire insurance, holiday and travel insurance, household insurance, liability insurance, livestock and bloodstock insurance, loss-of-profit insurance.

Task 3 (Английский язык – 2 балла)

For each question 1-2, mark one letter.

1. In the text, the word in bold ‘**conducted**’ is closest to the meaning:

- (A) controlled
- (B) made**
- (C) provided
- (D) presented

2. In the Arab States region, development achievements can be threatened by one of the following:

- (A) sexual inequality in the society**
- (B) increasing number of refugees in the region
- (C) lack of clean water
- (D) sex-ratio imbalance

МАТЕМАТИКА (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Для каждой из сформулированных задач приведите полное ее решение и запишите ответ.

1. (6 баллов) Найдите сумму корней уравнения

$$(x + 1)(x + 2)(x + 3)(x + 4) = 24$$

2. (6 баллов) Сколько корней имеет уравнение $\cos(\pi/(x + 2)) = \sin(\pi x)$ на промежутке $[0; 10]$?

3. (6 баллов) Найдите наибольшее значение функции

$$f(x, y) = \frac{x\sqrt{y-2} + y\sqrt{x-2}}{x^2 + y^2}$$

4. (8 баллов) В параллелограмме одна из диагоналей равна боковой стороне и равна 4, а другая диагональ является биссектрисой двух углов параллелограмма. Найдите его площадь.
5. (8 баллов) В кубе $ABCD A' B' C' D'$ точка P лежит на ребре $B' C'$ и при этом $B' P : P C' = 1 : 2$. Через точки B , D и P проведена плоскость. В каком отношении она делит объем куба?

Ответы на задания:

№	Ответ
1	
2	
3	
4	
5	

АНГЛИЙСКИЙ ЯЗЫК И ОБЩЕСТВОЗНАНИЕ (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Task 1 (Английский язык – 24 балла; обществознание – 20 баллов)

In this integrated task, you should read the text on the topic of environmental issues and answer the *essay question*. You have about **30 minutes** to read and analyse the text and **40 minutes** to plan, write, and revise your essay. Write your essay in **200–250 words** in an appropriate style. Use your own words as far as possible.

- Identify at least three key environmental challenges that Russia faces today and give your arguments for each of them.
- Using the information from the text, explain if the initiatives presented in the text could be used in Russia to protect and improve the environment.

СОВРЕМЕННЫЙ МЕНЕДЖЕР

From Afghanistan to Zimbabwe, 141 countries made significant progress in 2017 to tackle the most urgent environmental challenges facing humanity and our planet, inspiring us to seek out new and more innovative solutions.

The 2030 Agenda for Sustainable Development provides our vision for this work – connecting people and welfare with the planet; development with environment – and signals that our response to these complex and inter-connected challenges must do the same.

In this 10th annual performance report of the United Nations Development Programme (UNDP), we show how investments in the Sustainable Development Goals⁷ (SDGs) – on affordable and clean energy, climate action, life below water, and life on land – accelerate the achievement of other goals aimed at ending poverty, achieving zero hunger, achieving gender equality, reducing inequalities, and building strong institutions.

The Asia and the Pacific region is home to more than half of the world's population and faces a range of development challenges. These are often worsened by natural disasters which strain efforts to sustain economic growth and work to improve environmental sustainability.

Since 1992, the Asia and Pacific region has received over 28% of all environmental grant financing mobilized by UNDP for 37 countries in the region. When combined with close to US\$7 billion in co-financing, this total investment of US\$9 billion over the past 25 years has made significant progress in addressing the root causes of environmental degradation, and has built capacity to recover and strengthened livelihoods across the region.

The Kokoda Trail, Papua New Guinea's most famous tourist site, is now protected by the government's Conservation and Environment Protection Agency. Preserving the unique biodiversity along the 100km corridor is vital, as the number of visitors to the country is rising. The trail brings the equivalent of over US\$1 million annually to the country. Tourism Development Area (TDA) management plans developed and **launched** in Samoa identify sensitive tourism locations, provide alternative destinations, and provide recommendations for climate change adaptation action on the ground. More than 75% of tourism operators in targeted TDAs have already invested in and implemented sustainable adaptation measures.

Over 1,300 home gardens using climate-adaptive agriculture and water management practices have been planted in the North Western province of Sri Lanka, supplying an average of 20,000 kg of fruits and vegetables monthly to eight newly established regional farmers markets. The annual income of participating families has increased by 34% and the distance between a farmer and a consumer has been reduced thereby lowering emissions from the transportation of produce. Over 5,400 small-scale farmers in Mindanao in the Philippines are getting compensation for climate risks through weather-indexed based insurance, which provides fast payouts to affected farmers after a climate shock; they then have the opportunity to replant and recover more quickly.

Detailed risk maps were developed for 15 mountainous provinces in Vietnam to assist local governments with making informed decisions on risk reduction measures, help in managing climate change impact, prioritizing investments for infrastructure upgrades, including the timing of such investments. In Timor Leste, climate sensitive rural infrastructure activities – including new and restored water supply systems (reservoirs, irrigation systems) – are bringing clean water to rural communities that experience frequent droughts. Farmers and residents have received training on soil bioengineering and management practices concerning rainwater collection.

In Tonga, the Fanga'uta Lagoon Environmental Management Plan was approved by the Cabinet. Efforts to improve long-term sustainability of the lagoon include development of a full monitoring system for the area of land from which water flows into the lagoon to improve water quality and *mangrove* (type of a tropical tree found near water) conservation work. China and the Republic of Korea border the Yellow Sea Large Marine Ecosystem (YSLME) are working together to foster long-term sustainable institutional, policy and financial arrangements for effective management of the area which covers 400,000 km². A special YSLME

⁷ Sustainable Development Goals – a plan of action to end poverty, protect the planet and guarantee the global well-being of people

СОВРЕМЕННЫЙ МЕНЕДЖЕР

Commission was set up to coordinate and strengthen legal mechanisms for governing the YSLME which tens of millions of residents rely on.

The East Godavari River Estuarine Ecosystem holds the second largest area of *mangroves* along the east coast of India and is rich in floral and faunal diversity. It generates significant ecological and economic benefits such as shoreline protection, livelihood provision and services to reduce the effect of global warming by protecting forests that absorb large amounts of carbon dioxide. This area is being protected via significant reforms including sustainable fishing and aquaculture regulations integrated into the Andhra Pradesh Marine Fisheries Act and specific protections for marine and coastal biodiversity in the Wildlife Act. These protect water and land ecosystems including manmade landscapes and native biodiversity from risks associated with non-native species.

Essay: Свободный ответ, правильного ответа нет

Task 2 (Английский язык – 8 баллов; обществознание – 12 баллов)

Explain the meaning of the term “gender equality” from the text in about 50-100 words.

Ответ (примерный): This is the notion of equal treatment and equal opportunities for women and men, irrespective of their sexed identity. Gender equality has been the aim of successive feminist movements, from focusing on equality of participation in the public sphere through the campaigns for votes for women, to equality in the workplace through campaigns for equal pay for equal work. There has been some debate on whether gender equality refers to the same in everything for women and men (for instance, women and men competing in sport in the same races), or to equality of opportunity, or to equality of outcome.

Task 3 (Английский язык – 2 балла)

For each question 1-2, mark one letter.

1. In the text, the word in bold ‘**launched**’ is closest in meaning to:

- (A) started
- (B) agreed
- (C) completed
- (D) outlined

2. According to paragraph 7, sustainable development measures taken in Sri Lanka and Philippines resulted in the following EXCEPT:

- (A) people are given better security
- (B) people earn more money than they used to
- (C) trading zones for groceries appeared
- (D) newly produced cars give off less fumes

МАТЕМАТИКА (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Для каждой из сформулированных задач приведите полное ее решение и запишите ответ.

1. (6 баллов) Найдите сумму корней уравнения

$$(4x^2 + 8x + 3)(x^2 + 3x + 2) = 6$$

2. (6 баллов) Сколько корней имеет уравнение $\operatorname{tg}(\pi x) = 2^{-x}$ на промежутке $(0; 10)$?

3. (6 баллов) Найдите наибольшее значение функции

$$f(x, y) = \frac{x \ln y + y \ln x}{x^2 + y^2}$$

4. (8 баллов) В выпуклом четырехугольнике последовательно соединены середины сторон. Образовавшийся «серединный» четырехугольник является ромбом, в котором стороны и одна из диагоналей равны 3. Найдите площадь искомого четырехугольника.
5. (8 баллов) В правильной треугольной пирамиде $ABCDS$ через точки A , B и середину ребра CS проведена плоскость. В каком отношении она делит высоту пирамиды?

Ответы на задания:

№	Ответ
1	
2	
3	
4	
5	

АНГЛИЙСКИЙ ЯЗЫК И ОБЩЕСТВОЗНАНИЕ (СОВРЕМЕННЫЙ МЕНЕДЖЕР)

Task 1 (Английский язык – 24 балла; обществознание – 20 баллов)

*In this integrated task, you should read the text on the topic of environmental issues and answer the **essay** question. You have about **30 minutes** to read and analyse the text and **40 minutes** to plan, write, and revise your essay. Write your essay in **200–250 words** in an appropriate style. Use your own words as far as possible.*

- Identify at least three key environmental challenges that Russia faces today and give your arguments for each of them.
- Using the information from the text, explain if the initiatives presented in the text could be used in Russia to protect and improve the environment.

From Afghanistan to Zimbabwe, 141 countries made significant progress in 2017 to tackle the most urgent environmental challenges facing humanity and our planet, inspiring us to seek out new and more innovative solutions.

СОВРЕМЕННЫЙ МЕНЕДЖЕР

The 2030 Agenda for Sustainable Development provides our vision for this work – connecting people and welfare with the planet; development with environment – and signals that our response to these complex and inter-connected challenges must do the same.

In this 10th annual performance report of the United Nations Development Programme (UNDP), we show how investments in the Sustainable Development Goals⁸ (SDGs) – on affordable and clean energy, climate action, life below water, and life on land – accelerate the achievement of other goals aimed at ending poverty, achieving zero hunger, achieving gender equality, reducing inequalities, and building strong institutions.

The Asia and the Pacific region is home to more than half of the world's population and faces a range of development challenges. These are often worsened by natural disasters which strain efforts to sustain economic growth and work to improve environmental sustainability.

Since 1992, the Asia and Pacific region has received over 28% of all environmental grant financing mobilized by UNDP for 37 countries in the region. When combined with close to US\$7 billion in co-financing, this total investment of US\$9 billion over the past 25 years has made significant progress in addressing the root causes of environmental degradation, and has built capacity to recover and strengthened livelihoods across the region.

In Nepal, a lift irrigation system for the Chepang and Magar communities uses electricity from micro hydro pumps to transfer clean water 100m uphill, saving residents the 90 minute trip needed to fetch the water by foot. The water is used for drinking and irrigation on land that had previously only been rain fed. Because of the support from the micro hydro pump, income has gone up tenfold in the community. At the national level, the Government of Nepal approved the Renewable Energy Subsidy Policy and the Renewable Subsidy Delivery Mechanism. Malaysia has reduced GHG emissions from the building sector almost twice the targeted amount. The biggest contributor of the reduced greenhouse gas (GHG) emissions from the building sector is from the Energy Performance Contract Financing Scheme which provides financing support to energy service companies. This enables the uptake of energy efficient technologies and the growth of the building renovation market.

Lessons from autonomous power supply systems and rural electrification models in Nepal were shared with the State Council of Science, Technology and Environment in India for an autonomous power supply initiative in Meghalaya. Tonga and Fiji organized a study tour to compare and contrast the challenges and benefits of establishing locally managed marine areas (LMMAs) and to develop a structure for LMMA's in Nauru. A delegation from Timor Leste traveled to Bangladesh, which supports the world's largest single tract of *mangrove* (type of a tropical tree found near water) forest, to learn about and share experiences on community based management of *mangrove* ecosystems. Vietnam and Timor Leste have exchanged knowledge and experience on promoting climate-adaptive infrastructure, which includes, among others: sensitivity assessments, mapping of essential rural infrastructure, integration of climate change adaptation into policies and designs of rural roads, irrigation and river embankments, and low-cost bio-engineering using locally-available resources. Sri Lanka and China have discussed the applicability of technology transfer from China for facilities to produce fertilizer out of ash waste, biomass heaters for the tea industry, and activated carbon based product manufacturing in Sri Lanka.

Native groups in Myanmar are involved in strengthening the sustainability of protected areas by identifying their **customary** land use practices and being involved in zoning processes. In addition, community guardians have been identified and trained to participate in protected area management. Selected native youth have been employed as community guards in protected areas. In Laos, native communities in targeted areas have been involved in prioritizing development interventions for increasing climate change adaptation and in land use planning at the village level, e.g. through their local knowledge, and in developing management plans for ecosystem areas.

Essay: Свободный ответ, правильного ответа нет

⁸ Sustainable Development Goals – a plan of action to end poverty, protect the planet and guarantee the global well-being of people

Task 2 (Английский язык – 8 баллов; обществознание – 12 баллов)

Explain the meaning of the term “energy efficient technologies” from the text in about 50-100 words.

Ответ (примерный): Energy efficiency is understood to mean the utilization of energy in the most cost effective manner to carry out a manufacturing process or provide a service, whereby energy waste is minimized and the overall consumption of primary energy resources is reduced. In other words, energy efficient technologies will seek to use less energy while conducting any energy-dependent activity: at the same time, the corresponding (negative) environmental impacts of energy consumption are minimized.

Task 3 (Английский язык – 2 балла)

For each question 1-2, mark one letter.

1. In the text, the word in bold ‘**customary**’ is closest in meaning to:

- (A) experimental
- (B) client-oriented
- (C) trial
- (D) traditional**

2. According to paragraph 7, Vietnam and Timor Leste have shared the information about all of the following EXCEPT:

- (A) adopting climate adjusting solutions in economic sphere
- (B) examining areas needing special care in changing climate conditions
- (C) planning basic systems and services in the countryside**
- (D) adopting climate adjusting solutions in agricultural sphere