МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ  
 «ДОНСКОЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ»

Кафедра «Научно-технический перевод и профессиональная коммуникация»

Методические указания

по контролю знаний магистрантов группы МЗИН 11

Контрольная работа №1

Вариант 3

Ростов-на-Дону

2019

Составитель: к. пед. н., доцент кафедры «НТП и ПК» А.П. Жданько

МЕТОДИЧЕСКИЕ УКАЗАНИЯ МАГИСТРАНТАМ

Настоящие методические указания, созданные на базе действующей программы, позволят проверить лексико-грамматические навыки, умение работы с научно-технической информацией, навыки реферирования и аннотирования на иностранном языке. Для того чтобы выполнить контрольную работу, нужно усвоить лексико-грамматический материал основного курса рекомендуемого базового учебника: «Курс английского языка для магистрантов» / Н.А. Зинкевич, Т.В. Андрюхина, К.Э. Иванова и др. М.: Айрис-пресс, 2011. и других учебных пособий с учетом Вашей будущей специальности. Данные указания включают в себя вариант № 3 контрольной работы №1.

**Распределение материала:**

Работа с информацией научно-технического текста на иностранном (английском) языке. Аннотирование текста на иностранном (английском) языке. Представление темы научного исследования на иностранном (английском) языке.

**Как правильно определить свой вариант**

Для того чтобы определить свой вариант, Вам необходимо обратить внимание на последнюю цифру Вашей зачетной книжки:

цифры **0-1** соответствуют варианту **№1,**

цифры **2-3** соответствуют варианту **№2,**

цифры **4-5** соответствуют варианту **№3**,

цифры **6-7** соответствуют варианту **№4**,

цифры **8-9** соответствуют варианту **№5**.

**Порядок выполнения контрольных заданий**

1. Все контрольные задания, предусмотренные планом, следует выполнять в отдельной тетради. На титульном листе укажите факультет, курс, номер группы, фамилию, имя и отчество, дату, номер контрольного задания и варианта, используемые источники — учебники и учебные пособия.

2. Контрольные задания следует выполнять четким почерком с соблюдением полей, оставленных для замечаний, комментария и методических указаний преподавателя.

3. Строго соблюдайте последовательность выполнения заданий.

4. Перепишите тестовое задание с вариантами ответов, внесите правильный ответ в предложение, подчеркните его.

В конце работы поставьте свою личную подпись.

5.Контрольная работа, выполненная не полностью или не отвечающая предъявляемым к ней вышеперечисленным требованиям, возвращается без проверки и не засчитывается

6. Полученная от преподавателя проверенная контрольная работа с замечаниями иметодическими указаниями должна быть переработана.

7. Только после этого можно приступать к изучению и выполнению очередного контрольного задания.

8. Все контрольные задания с исправлениями и дополнениями необходимо сохранять до зачета и экзамена, так как они являются важными учебными документами. Помимо этого, они дают возможность повторить учебный материал к зачету или экзамену.

**При подготовке к контрольной работе рекомендуется использовать следующие учебники и учебные пособия:**

1. «Курс английского языка для магистрантов» / Н.А. Зинкевич, Т.В. Андрюхина, К.Э. Иванова и др. М.: Айрис-пресс, 2011.

2. Андрианова Л.Н., Багрова Н.Ю., Ершова Э.В. Курс английского языка для вечерних и технических вузов. 5-изд., перераб. и доп. М.: Высш. шк., 2001.

3. Полякова Т.Ю., Синявская Е.В., Тынкова О.И., Улановская Э.С. Английский язык для инженеров. 5-изд. М.: Высш. шк., 2000 и т.д.

4. Шевцова Г.В., Москалец Л.Е. Английский язык для технических вузов. М: Флинта, Наука. 2008.

5. Glendinning, E. Technology 1: Student's Book New York: Oxford University Press, 2007.

6. Англо-русский политехнический словарь. / Под редакцией А.Е. Чернухина. М.: Русский язык, 1979.

7.Большой англо-русский словарь по английскому языку.

/ Под редакцией И.Р.Гальперина. М.: Русский язык, 1987.

Вариант №3

ЗАДАНИЕ № 1 (- выберите один вариант ответа):

Прочитайте текст и выполните задание:

Определите, является ли утверждение:

“Human activities contribute to losses of good soil”.

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | В тексте нет информации | b) | Истинным |
| c) | Ложным | d) |  |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

 ЗАДАНИЕ № 2 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Определите, какое утверждение соответствует содержанию текста

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | Soil is an essential non-renewable resource. | b) | The soil is of significant value for feeding the world. |
| c) | The quality of soil doesn’t depend on soil organisms. | d) | All soil contains some salt, which is washed away when it rains. |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 3 (- выберите один вариант ответа)

Определите, какое утверждение соответствует содержанию текста

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | Soil structure doesn’t depend on humus. | b) | Under the best conditions, soil can accumulate 5 mm deep per year. |
| c) | Human-caused erosion prevents soil losses. | d) | Soil is a mass of rock particles and humus from which plants obtain essential materials. |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 4 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Завершите утверждение согласно содержанию текста:

The activity of organisms living in the soil ………………………..

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | destroys humus | b) | improves soil fertility |
| c) | reduces arable lands | d) | makes our food worse |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 5 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Завершите утверждение согласно содержанию текста:

Feeding the world on a sustainable basis ………………………..

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | depends on our research of soil | b) | is impossible |
| c) | leads to loss of arable lands | d) | could cause toxification |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 6 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Укажите, какой из абзацев текста (1, 2, 3, 4) содержит следующую информацию:

“Soil forming is long and complicated.”

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | 1 | b) | 2 |
| c) | 3 | d) | 4 |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 7 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Укажите, какой из абзацев текста (1, 2, 3, 4) содержит следующую информацию:

“Soil is composed of organic and mineral components.”

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | 1 | b) | 2 |
| c) | 3 | d) | 4 |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 8 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Ответьте на вопрос:

What is the factor responsible for the loss of arable lands?

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | dead plants and animals | b) | soil organisms activities |
| c) | feeding the world on a sustainable basis | d) | toxification by hazardous wastes |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 9 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Ответьте на вопрос:

How are the soil mineral particles formed?

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | They are formed by soil organisms. | b) | Building of the soil mineral particles depends on the weathering processes. |
| c) | They are derived from the bodies of dead plants and animals. | d) | They are created by human activities. |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 10 (- выберите один вариант ответа)

Прочитайте текст и выполните задание:

Определите основную идею текста:

ВАРИАНТЫ ОТВЕТОВ:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | Feeding the world on a sustainable basis is largely responsible for the destruction of our precious soil resources. | b) | The quality of soil can be improved by desertification. |
| c) | Our existence depends on knowledge and appropriate use of soil resources. | d) | Intensive farming methods lead to the rebuilding of good agricultural soil. |

To understand the potential for feeding the world on a sustainable basis we need to know how soil is formed, how it is being lost, and what can be done to protect and rebuild good agricultural soil. Building of good soil is a slow process. Under the best circumstances, good topsoil accumulates at a rate of about 10 tons per hectare (2.5 acres) per year – enough soil to make a layer about 1 mm deep when spread over a hectare. Under poor conditions, it can make thousands of years to build that much soil. Perhaps one-third to one-half of the world’s current croplands is losing topsoil faster than it is being replaced. With losses like that, agricultural production will soon begin to fall.

Most soil is about half mineral. The rest is air and water mixed with a little organic matter from plant and animal residue. The mineral particles are derived either from the underlying bedrock or from materials transported and deposited by glaciers, rivers, ocean currents, windstorms, or landslides. The weathering processes that break rocks down into soil particles are also of importance. Much of the organic material in soil is humus, a sticky, brown, insoluble residue from the bodies of dead plants and animals. Humus gives soil its structure, a description of how the soil particles clump together. It gives the soil a spongy texture that holds water and nutrients needed by plant roots.

Without soil organisms, Earth would be covered with sterile mineral particles far different from the rich, living soil ecosystems on which we depend for most of our food. The activity of organisms living in the soil creates its structure, fertility, and tilth (structure suitable for tilling or cultivation). A single gram of soil (about a teaspoonful) can contain hundreds of millions of microscopic soil organisms.

One of the main limitations to maintain current, high levels of agricultural production is loss of arable lands due to erosion, toxification, desertification, and conversion to non-agricultural uses.

ЗАДАНИЕ № 11

Составьте письменную аннотацию объёмом 10-15 предложений следующего текста:

Nanostructures in Nature

If we look closely, we can notice that many plants and animals around us have developed special features that are at the nanoscale level. Let’s examine some of the ways in which nature has used nanostructures.

A moth’s eye has very small bumps on its surface. They have a hexagonal shape and are a few hundred nanometers tall and apart. Because these patterns are smaller than the wavelength of visible light (350-800nm), the eye surface has a very low reflectance for the visible light so the moth’s eye can absorb more light. The moth can see much better than humans in dim or dark conditions because these nanostructures absorb light very efficiently.  In the lab, scientists have used similar man-made nanostructures to enhance the aborption of infra-red light (heat) in a type of power source (a thermo-voltaic cell) to make them more efficient!

On the surface of a butterfly’s wings are multilayer nanoscale patterns. These structures filter light and reflect mostly one wavelength, so we see a single bright color. For instance the wings of the male Morpho Rhetenor appear bright blue. But the wing material is not, in fact, blue; it just appears blue because of particular nanostructures on the surface.  More precisely, the nanostructures on the butterfly’s wings are about the same size as the wavelength of visible light and because of the multiple layers in these structures optical interferences are created. There is constructive interference for a given wavelength (around 450nm for the Morpho Rhetenor) and destructive interferences for the other wavelengths, so we see a very bright blue color.  In the laboratory, many scientific instruments use this same phenomena to analyze the color of light.

ЗАДАНИЕ № 12

Составьте письменный реферат объёмом 1-1,5 страницы своей магистерской диссертации.