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РАЗВИТИЕ УМЕНИЙ РАБОТАТЬ С ОРИГИНАЛЬНЫМИ ТЕКСТАМИ

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Учебное пособие предназначено для студентов, магистрантов и аспирантов архитектурно-строительных специальностей. Цель пособия – подготовить учащихся к самостоятельному чтению оригинальной литературы по специальности. Тексты пособия взяты из оригинальных английских и американских источников, но частично адаптированы, исходя из методических соображений. Пособие содержит основные темы по специальностям архитектуры и строительства, упражнения для глубокого усвоения лексико-грамматического материала разделов.

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СОДЕРЖАНИЕ

ПРЕДИСЛОВИЕ	4
INTRODUCTORY TEXT	5
Unit 1	7
Unit 2	21
Unit 3	38
Unit 4	58
Unit 5	79
Unit 6	103
Unit 7	125
Unit 8	150
ИСТОЧНИКИ.....	164

ПРЕДИСЛОВИЕ

Пособие предназначено для студентов, магистрантов и аспирантов архитектурно-строительных специальностей. Цель пособия – подготовить студентов к самостоятельному чтению оригинальной литературы по специальности. Тексты пособия взяты из оригинальных английских и американских источников, но частично адаптированы, исходя из методических соображений. Пособие содержит основные темы по специальностям архитектуры и строительства, включая планировку города, здания и их части, строительные материалы, вентиляцию, строительные машины, канализацию и водоснабжение, архитектуру, гидротехнические сооружения. Для глубокого усвоения материала в пособие включены лексико-грамматические упражнения.

Особое внимание в пособии уделено развитию умений и навыков различных видов чтения: углубленному, просмотровому, беглому, со словарем или без словаря. Система упражнений нацелена на развитие навыков извлечения, понимания и конкретизации полученной информации, умение тематически обобщать, аннотировать и реферировать информацию.

Лексические предтекстовые упражнения содержат необходимый лексический минимум, обеспечивающий понимание основного текста. Лексические послетекстовые упражнения уточняют и углубляют понимание текста студентами, обогащая их словарный запас.

Учитывая основную цель пособия, упражнениям на развитие навыков устной речи отводится ограниченное место.

INTRODUCTORY TEXT

The Planning of the Scientific Revolution

By the XXIst century Russia has forged ahead to become the world's second economic power and is increasingly pre-eminent in field after field. Long the leader in hydroelectric technology, Russia has recently arrived as the largest producer of steel and oil with first-rate electronics and machine-building capacity and know-how, a developing computer industry - in short, the technical and economic foundation has been laid for the country's visible pioneering performance in space exploration which in a way is a symbol of the whole Russian achievement. It is worth noting that the entire "All-Union power potential" of the first Five-Year plan of the former Soviet Union, which power expert Gleb Krzhizhanovsky dreamed of, was about equal to two generating units of today's St. Petersburg atomic power station. Before so called "Perestroika" every fourth researcher in the world is a Russian citizen.

Science in our times is a direct productive force and it becomes such a force only if its discoveries are introduced into the process of production. The speed of change is determined by the times and the social objectives. It took 80 years for the steam engine to establish itself. It took the telephone half a century, the airplane - 20 years and transistor technologies - three years. The laser "arrived" with the speed of the scientific and technological revolution - in two months. The objective of the country being people's well-being, Russia has developed a draft of the comprehensive program of scientific and technological progress and its social and economic results for the next fifteen years up to the year of 1990 which will provide guidelines for successful economic management of the country.

All the sections of economy plan adopted after Perestroika and the entire economic strategy of the government are determined by the development of scientific research. The tasks set are backed by the necessary resources and are tied with the plans of production, capital construction and material and technological supply.

But as it was pointed out by Russian Parliament the country cannot be satisfied with the present rate of introducing the achievement of

science and technology into the production According to the program the emphasis is to be laid on speeding up practical realization of scientific advances, efficiency and quality in all spheres of production rather than on quantity.

УПРАЖНЕНИЯ

1. Прочитайте текст. В ходе чтения найдите ответ на поставленный вопрос:

In what fields is the priority and progress of Russian science recognized?

2. Найдите в тексте предложения, являющиеся ответом на следующие вопросы:

1. How is the planning of scientific research development in Russia backed? 2. What makes science a productive force? 3. What is the main task of the development of scientific research in planning? 4. What is the great progress of Russian science illustrated by? 5. What determines the rate of changes in science?

3. Найдите, в каких абзацах текста раскрывается содержание следующих положений. Установите их последовательность в тексте:

1. The main demands of planning. 2. Long-term planning provides guidelines for the country's economic progress. 3. Conditions on which the speed of science development depends. 4. Advantages of the nature of a new Russia in developing economy. 5. The effect of the former five-year plans on the economy of the country. 6. Specific conditions ensuring scientific research development in Russia.

4. Составьте план пересказа текста.

UNIT 1

URBAN PLANNING AND URBAN DEVELOPMENT

1. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

regulation, focus, physical, form absorb, active, activity, adapt, central, circulation, communications, control, cultural, diagram, distance, fix, functional, individual, industrial, interest, master, modify, natural, organic, part, position, public, reconstruct, social, structure, traditional, topography, zone, , economic, engineering, architectural, political concerns, academic discipline, collection, analysis, strategic, public, consultation, technology, geographic, information systems, project, sum, consensus, general , conflict, modern, reaction, industrial, reform, period, the origins, result, master, formal, policy, sponsors, partnerships, community

2. Подберите русские эквиваленты из второго столбца к следующим английским словам:

accept (v)	движение
adapt (v)	изменять
change (v)	недавний
complete (v)	нужды
connect (v)	общество
creation (n)	окружать
define (v)	описание
description (n)	определять
development (n)	основной
exist (v)	полный
freedom (n)	принимать
main (adj)	приспособлять(ся)
movement	развитие; расширение
needs (n)	свобода
purpose (n)	соединять
recent (adj)	создание
society (n)	существовать
surround (v)	цель

3. Переведите на русский язык следующие слова и словосочетания:

Городское планирование, проектирование, регулирование использования пространства с упором на физическую форму, социальное воздействие городской среды, участие общественности, освоение открытых земель, прогнозирование, картографирование, «устойчивое развитие», компромиссы, градостроительство, эстетическая привлекательность, генеральный план, мегаполис, микрорайон, планировщик, государственное управление, частный сектор, «государственно-частное партнерство», физический дизайн, землепользование, репрезентативный, идеальный город, достижение консенсуса, коммуникация, санитария, возрождение городов, регулирование использования пространства с учетом физической формы

4. Прочитайте текст. Найдите определение термина «устойчивое развитие»

Urban planning

Urban planning includes design and regulation of the uses of space that focus on the physical form, economic functions, and social impacts of the urban environment and on the location of different activities within it. Because urban planning draws upon engineering, architectural, and social and political concerns, it is variously a technical profession, an endeavour involving political will and public participation, and an academic discipline. Urban planning concerns itself with both the development of open land (“greenfields sites”) and the revitalization of existing parts of the city, thereby involving goal setting, data collection and analysis, forecasting, design, strategic thinking, and public consultation. Increasingly, the technology of geographic information systems (GIS) has been used to map the existing urban system and to project the consequences of changes. In the late 20th century the term sustainable development came to represent an ideal outcome in the sum of all planning goals.

As advocated by the United Nations-sponsored World Commission on Environment and Development in *Our Common Future* (1987), sustainability refers to “development that meets the needs of the present without compromising the ability of future generations to meet their

own needs.” While there is widespread consensus on this general goal, most major planning decisions involve trade-offs between subsidiary objectives and thus frequently involve conflict.

The modern origins of urban planning lie in a social movement for urban reform that arose in the latter part of the 19th century as a reaction against the disorder of the industrial city. Many visionaries of the period sought an ideal city, yet practical considerations of adequate sanitation, movement of goods and people, and provision of amenities also drove the desire for planning.

Contemporary planners seek to balance the conflicting demands of social equity, economic growth, environmental sensitivity, and aesthetic appeal. The result of the planning process may be a formal master plan for an entire city or metropolitan area, a neighbourhood plan, a project plan, or a set of policy alternatives.

Successful implementation of a plan usually requires entrepreneurship and political astuteness on the part of planners and their sponsors, despite efforts to insulate planning from politics. While based in government, planning increasingly involves private-sector participation in “public-private partnerships.”

Маковська Г.Я. Робоча навчальна програма з дисципліни «Англійська мова» для студентів I-II курсу спеціальності 7.092.103. Луцький Государственный Технический университет, 2005. URL: <http://elib.lutsk-ntu.com.ua/book/fof/im/2010/10-119/page5.html>

5. Ответьте на следующие вопросы:

1. What is urban planning? 2. What does urban planning concern itself with? 3. When did the term sustainable development come to represent an ideal outcome in the sum of all planning goals? 4. Why do most major planning decisions involve frequently involve conflicts? 5. What may be the result of the planning process? 6. What does successful implementation of a plan usually require? 7. What do contemporary urban planners seek to balance?

6. Подберите английские эквиваленты из второго столбца к следующим русским словам:

жилище

загрязнение

исследование, изыскание

communication

community

congestion

недавний	design
образец	development
общественный	dwelling
общество (население)	environment
окрестности	forecast
окружающая среда	housing
отдых	pattern
подготовка	pollution
прогноз	recent
проект	recreation
развитие (расширение)	suburbs
сквозное движение	survey
скопление (перенаселенность, затор)	through
снабжение жильем, жилищное строительство	traffic
транспортная сеть, коммуникационные линии	rest

7. *Озаглавьте параграфы текста*

8. *Определите, какие из утверждений истинны, а какие не соответствуют содержанию текста:*

1. Urban planning does not involve private-sector participation.
2. Urban planning involves goal setting, data collection and analysis, forecasting, design, strategic thinking, and public consultation.
3. The modern origins of urban planning lie in an ecological movement for urban reform that arose in the latter part of the 19th century as a reaction against the disorder of the industrial city.
4. Most major planning decisions involve trade-offs between subsidiary objectives and thus frequently involve conflict.
5. Contemporary planners don't take into account the conflicting demands of social equity, economic growth, environmental sensitivity, and aesthetic appeal.
6. The technology of geographic information systems is used to map the existing urban system and to project the consequences of changes.
7. Practical considerations of adequate sanitation, movement of goods and people, and provision of amenities put at odds with "ideal city".

9. Сверяясь с текстом, подберите нужное значение выделенных слов в данных сочетаниях и переведите их.

draws upon - течь, черпать, заимствовать, опираться, рассчитывать на

an endeavour involving – попытка, старание, покушение, деятельность, дерзание

concerns itself – иметь дело, заниматься, интересоваться, быть связанным

data collection – информационный фонд, сбор информации, совокупность данных, коллекция данных

to project the consequences of changes - отражать последствия изменения, проектировать, планировать, прогнозировать, передавать, выдвигать

as **advocated** by – отстаивать, защищать, пропагандировать, в соответствии с рекомендацией, ходатайствовать

to meet the needs – встречать, покрывать нужды, идти навстречу, отвечать потребностям, обеспечить нужды

subsidiary **objectives** – объекты, цели, ориентиры, технические требования

to involve conflict – включать, содержать, влечь за собой, нагружать, угнать

neighbourhood plan – окрестный план, придворовой план, план микрорайона, соседний план, прилегающий план.

10. Сформулируйте главную мысль текста.

11. Составьте план пересказа текста.

12. Переведите предложения, обращая внимание на выделенные слова.

1. Urban **planning** draws upon engineering, architectural, and social and political concerns. 2. Contemporary **planners** seek to balance the conflicting demands of social equity, economic growth, environmental sensitivity, and aesthetic appeal. 3. The result of the **planning process** may be a formal **master plan** for an entire city or metropolitan area, a neighbourhood plan, a project plan, or a set of policy alternatives.

4. In the late 20th century the term **sustainable development** came to represent an ideal outcome in the sum of all **planning goals**. 5. While there is **widespread consensus** on this **general goal**, most **major planning decisions** involve trade-offs between subsidiary objectives and thus frequently involve conflict. 6. Successful implementation of a **plan** usually requires entrepreneurship and political astuteness on the part of **planners** and their sponsors, despite efforts to insulate **planning** from politics. 7. **Urban planning** emerged as a **scholarly discipline** in the 1900s.

13. Вставьте пропущенные предлоги in, for, to, of, with, from, on, upon, within, into

... choosing a location ... the satellite towns now being planned ... Kyrgyzstan preference is given ... the southern and south-eastern slopes ... hills ... big green belts and reservoirs ... the vicinity. A necessary condition ... making the choice is the availability ... convenient means ... communication ... the city best ... all being an electrified railway line and a good automobile highway.

The distance ... the satellite town ... the city depends ... how well developed the electrified railway and the highway systems are. ... the case ... Bishkek, which has highly ramified networks running ... all directions it is possible ... locate the satellite cities ... 46 ... 50 km., whereas ... the case ... Talas, ... example, the sensible thing apparently is ... place them nearer.

It is taken ... consideration that even when there are some enterprises and offices ... its own ... the satellite town, a certain portion ... the population may still work ... the city; thus Kyrgyz architects are ... the opinion that the town and city are not be ... long distance apart.

14. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами

In considering the (дизайн) of a town or city we (должны) always (помнить) that the (город) must (быть расположен) in a healthy (зона), free from (пыль), fogs, its (расположение) must not encourage (ветра) through, (городской) spaces, and it must not (загрязнять) its own (атмосфера). It must (обеспечивать) proper standards of (про-

странство) and sunlight, to its (здания) and (открытый) spaces, and it must (иметь возможность) to move about the town (легко) and without (опасность) to life. Its parts must be so (расположены) that it is a (удобное) place for dwelling, (работа) and playing.

(Связанная) with these and many other (технические проблемы) is the problem of (экономики). The problem (должна быть) thoroughly (изучена) which does not (предполагать) that the (самая дешевая) scheme may be the (наилучшая).

The (город) must (быть построен) properly. It should also give (удовольствие) to those who (смотреть) at it. When we say that a (город) should be (красивый), we do not (иметь в виду) that it should have some fine (парки) and noble (здания), we mean that (весь) of the (окружающая среда), down to the most (незначительный) details, should be (красивый).

(Если) we examine a (типичный) urban scene we see all (виды) of objects like (здания), (фонарные столбы), pavings, (плакаты) and (деревья). It is all of them, (вместе) with all the other (виды) of objects that (находиться) in the (городе), that are (называться) the raw (материалы) of a (городской дизайн). (Каждый из них) down to the least (важный) should be (эстетически) satisfying.

The town (дизайнер) must (думать) of his (сырье) in terms of (время). Not the (время) it takes to walk about them, (хотя) that is an (важный) consideration, but their (место) in (исторический) time, their (влияние) on (традиции), their (непосредственный) effect as (современных) objects, and their (влияние) in (будущий) time.

All new (развитие) takes (место) in an (существующий) environment. That (среда) has taken (века) to form and the design must (уважать) any features that have (визуальный) significance. It is more than (вандализм) to fall a tree that has taken (года) to (вырасти), or to (снести) a building of (прекрасный) architectural (качества).

(Проектирование) in terms of (прошедший) time does not imply the (имитация) of the existing (окружающая среда) but (уважение) of the form, (цвет), texture, and (общих) qualities of the existing (развитие). That which is being constructed is for (немедленный) use

which is not to (предполагать) that there must be an (попытка) to ignore the (прошлое) and be («современный»).

(Будущее) time must (также) be thought of in terms of the (предполагаемый) life of the (объекты). (Объекты) like buildings and lamp posts (стареть) and become out-of-date, and the (дизайнер) must (отбирать) those (материалы) that are (адекватный) for their (жизнь), no more and no (менее).

Until (сравнительно) recent (времена) the (рост) of cities has been without (цель) in any sense. (Города) must (расти), for (рост) is a (закон) of life. But this (естественный) overgrowth should have aroused action to (восстановить) balance. Mere (размер), as such, is no (показатель) of greatness.

An (чрезмерный) growth means overcrowding, which is (потеря) of space, one of the (жизненный) needs of (города). The (урок) that has (быть выученным) is that (естественный) growth, and (все) the other (формы) of (рост) have to be made subject to (воля) and intelligence, or the (город) must be harmed. This is a (определенный) lesson of (истории).

It is (сейчас) becoming (общепризнанный) that we need to (восстановить) the balance of (население) between one (город) and (другой), and between towns and the (сельская местность). Very (крупный) towns (не следует) be allowed to (поглощать) more of the (сельская местность) and the (группы) of town should (быть защищены) from (превращение) into amorphous (застроенный) areas.

<https://myleksii.ru/10-15341.html> 19.04.2019

15. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

16. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

aesthetically, adequate, amorphous, architect, atmosphere, balance, concentration, date, details, economy, effect, examine, expansion, form, historical, ignore, intelligence, imitation, mechanical, natural, position, primitive, problem, scheme, scene, standards, term, texture, tradition, urban, vandalism, visual.

17. Прочитайте текст, составьте таблицу «за» и «против» проектов «совершенных местных сообществ».

Complete Community

Complete communities is an urban and rural planning concept that aims to meet the basic needs of all residents in a community, regardless of income, culture, or political ideologies through integrated land use planning, transportation planning, and community design. While the concept is used by many communities as part of their community plan, each plan interprets what complete community means in their own way. The idea of the complete community has roots in early planning theory, beginning with The Garden City Movement, and is a component of contemporary planning methods including Smart Growth.

The Garden City Movement was one of the first proponents for creating communities that accommodate a wide range of community members through a mix in housing types and uses. Increasing urban sprawl, and its associated negative social, environmental, and health effects, prompted a turn in theory towards increasing density in urban areas. This idea has been brought into contemporary theoretical movements including Smart Growth, New Urbanism, and Sustainable Development, which all advocate high-density ‘compact’ communities, and also increase the mix of activities and land uses that contribute to a complete community. The move toward compact and complete communities in modern planning is summarized in the first two Ahwahnee Principles, a landmark document created by the California Local Government Commission that provided the foundation for Smart Growth and New Urbanism: (1) “all planning should be in the form of *complete and integrated communities* including housing, shops, workplaces, schools, parks and civic facilities essential to the daily life of the residents” and (2) “community size should be designed so that housing, jobs, daily needs, and other activities are within easy walking distance of each other.”

Since the 1970s, Canadian planning policy has aimed to make communities more attractive and efficient through compact form, mixed-use, higher densities and a range of housing types. Households in North America are becoming smaller, have a different form than

previous generations and are more socially and economically diverse; while housing costs have increased dramatically in some parts of the country, resulting in smaller lot sizes and an increase in multi-family housing options and suburban density.

One of the typical critiques of past suburban growth patterns is that they replicate trends of a homogeneous landscape consisting mainly of white, middle class, nuclear families. Social diversity and affordability looked to be addressed through the creation of a different form, through the design of new communities that look to promote diversity. When measured on a scale looking at four elements of complete communities - living, working, moving, and thriving - New York City and San Francisco rank at the top, while Atlanta and Dallas ranked quite low.

https://en.wikipedia.org/wiki/Complete_communities (21.04.2019)

18. Обсудите в группе преимущества и недостатки проживания в «совершенных местных сообществах».

19. Вставьте пропущенные слова, используя правильную форму. Переведите текст:

architect, civil, combine, to develop, direction, encompass, field, infrastructure, initially, inter-dependent, multi-dimensional, planner, pollution, practically, profession, provide pursue, quality, realize, regard, scope, solution, superficial, supply, train understand, without

What is the ... of an MTech in urban and town planning after civil engineering?

Urban planning is an interesting ... if you want to understand the dynamics of why and how an area ... in a certain manner. How different components of functioning of a city or a village like ..., economy, environment, ecology etc. are inter-related and ... on each other. A ... has to bring to reality his vision through his plans.

Most of the planners in field today are architect-planners and most ... engineers do not even know during graduation about this field of planning and how can they ... it. What does it ... and what all lies in

future. But I think it needs to change and it will change in future. Civil engineers are more apt at providing ... to problems of a city whether it is water ..., waste management, energy, transportation, ... or any other such issue. Not because I'm an engineer but due to the technical know how of an engineer he can ... the problem in detail and workout a solution which is technically viable and ... executable. Whereas ... planners provide solutions based on their ... studies and improper analysis most of the times. Most engineers ... look at a problem from a single dimension ... realizing that the problem they are addressing is After reading planning as a subject you would realize how different parameters ... to result into a problem. If civil engineers ... to develop a vision and think in these ... then they can become good planners.

Scope develops only when a region/ nation and their citizens ... the importance of a particular profession, when they feel the need for it. Most people do not know that urban planning as a ... even exists. They do not have a feel of what kind of ... of life a planned city can provide and it is their right to ask the governments ... them that. We need to work in this ... a lot.

<https://www.quora.com/What-is-the-scope-of-an-MTech-in-urban-and-town-planning-in-India-after-civil-engineering>, 20.04.2019

20. Прочитайте текст и вопросы к нему. Перескажите текст на английском языке.

Городское планирование стало научной дисциплиной в 1900-х годах. В Великобритании первая программа Академического планирования началась в Ливерпульском университете в 1909 году, а первая североамериканская программа была создана в Гарвардском университете в 1924 году. Дисциплина преподается главным образом в аспирантуре, и ее учебная программа широко варьируется от одного университета к другому.

Некоторые программы сохраняют традиционный акцент на физическом дизайне и землепользовании; другие, особенно те, которые предоставляют докторские степени, ориентированы на социальные науки. Теоретическое ядро дисциплины, лучше определяется вопросами, которые оно затрагивает, чем любой доминирующей парадигмой или предписывающим подходом.

Репрезентативные вопросы особенно касаются признания общественного интереса и того, как он должен определяться, физического и социального характера идеального города, возможности достижения изменений в соответствии с сознательно определенными целями, степени достижения консенсуса по целям посредством коммуникации, роли граждан по сравнению с государственными должностными лицами и частными инвесторами в формировании города и, на методологическом уровне, уместности количественного анализа и “рациональной модели” принятия решений. Большинство программ в области городского планирования состоят главным образом из прикладных курсов по различным темам: от экологической политики до транспортного планирования и жилищного строительства и экономического развития населения.

1. When did urban planning emerge as a scholarly discipline? 2. Where did the first academic planning program begin? 3. What was established at Harvard University in 1924? 4. Do the academic planning program and its curriculum vary widely from one university to another? 5. Do some programs maintain the traditional emphasis on physical design and land use? 6. Are some programs, especially those that grant doctoral degrees, oriented toward the social sciences? 7. Is the discipline’s theoretical core, being somewhat amorphous, better defined by the issues it addresses than by any dominant paradigm or prescriptive approach? 8. What do representative issues especially concern? 9. What is the physical and social character of the ideal city? 10. Is consensus on achieving city changes in accordance with consciously determined goals attainable through communication? 11. What is the role of citizens versus public officials and private investors in shaping the city? 12. Should quantitative analysis and the “rational model” be the basis for decision making?

21. Прочитайте эссе.

Role of a Town Planner

Who is a town planner and what does he do?

The answer to this question is not as simple as it seems. A “Town planner” is a person who not only designs a town but he is an influential person who can change the lifestyle of the people.

Now some people reading out there might just think... HOW? How could anyone possibly change or influence somebody’s lifestyle??

Before we start our discussion on what the role of a town planner is and what all he thinks, understands and executes...?

Let’s start with analyzing our own life styles... How did we start to live in a way we are living today? Has anyone given a thought about that? I don’t think so...

Let’s make three broad categories that influence us for the way we live today:

First and foremost, our culture

Our culture and traditions do have a major impact on our minds that mould us and help us live morally and in a specific way. Different countries have different cultures and every person belonging to a particular country or state thinks and follows particular things. This is something that is at spiritual levels.

Second: by your city or town in which you live.

The town or city, the way it is designed or has gradually developed radiates some negative emotions and some positive. Our mood swings are very prone to the kind of surroundings we live in. Our habits and our mannerisms are also influenced by the way the city is developed and the people you are surrounded by.

For example:

If you are a person living in a metropolitan city, you have very less exposure to the nature and good recreational activities that would actually help you feel better and happy.

Instead, you would find concrete jungles, all the sources of entertainment that have no relation to the nature such as clubs, pubs etc.

Lack of emotional outlet results in the increase in the criminal activities in the city...

WHY? Because this is exactly the way the cities have been fantasized and designed by the Town planners.

Now let's discuss about the third most important thing that influence your life at the very root levels... YOUR OWN HOUSE...

Most of you wouldn't be aware of the fact that a house generates a feeling of happiness or sorrow. It radiates negative and positive emotions. Just give it a thought...

For example, there is a house which is planned in a compact manner with haphazard furniture design and dull and dark colour schemes. The design of the house with respect to its interiors and exteriors are not in tandem with the beauty of the outside surroundings.

What kind of feeling would you get??? THINK...

You would always feel suffocated, nauseous and tired because of the lack of positive energy.

Now let's take an example of the house which is planned in a compact manner but with systematic furniture design, lighter colour schemes used to help make the space look spacious and nicer.

Now think again... What kind of feeling would this house generate??

Happy, positive, energetic...??? Isn't it?

The credit goes to the designer... who is an Architect who later studies to qualify as a town planner and then thinks, understands, relates and executes the projects in order to maintain harmony among people and create an aesthetically pleasing and peaceful place to live in.

<http://www.architecture-student.com/town-planning/role-of-a-town-planner-town-and-country-planning/> (19.04.2019)

22. Обдумайте и обсудите в группе следующие вопросы:

- What is the main idea of the essay?
- What are the author's concerns?
- What parts does the essay consist of?
- Do you agree with the author's arguments?
- What stylistic techniques allow the author to be convincing?

23. Напишите эссе о том, как вы представляете себя на месте будущего Градостроителя Бишкека.

UNIT 2

ROADS AND HIGHWAYS

1. Какие русские слова имеют те же корни, что и следующие английские слова:

arteries, centre, civilization, classify, collector, combination, community, conditions, constructed, controlled, direct, driver, elevated, express, formed, group, history, individual, information, interact, limited, metaphors, modern, originate, passproblem, process, reduce, society, technology, term, typical, various

2. Подберите русские эквиваленты из второго столбца к следующим английским словам:

adjacent	ветвь, отделение
ancient	вход
antecedent	дефицит
attitude	древний
branch	исследующий
charge	колесный
deficiency	котлован
derived	магистрала
ditch	местность
entrance	обвинить
exploring	отношение
frailty	полученный
highways	предыдущий
inherited	примыкающий
rural	транспорт
terrain	сельский
traffic	унаследованный
vehicle	трафик, движение
wheeled	хрупкость

3. Переведите на русский язык следующие слова и словосочетания:

... traveled way; in modern usage; lesser traveled way; highway refers to; in either a rural or urban area; seems to be the antecedent period; in turn; which branches from the Latin; elevated Roman roads; formed by earth from the side ditches; to inherit from; constructed roads were to be found; the more recent; “a mounted journey”; vehicular ways; conventional undivided two-way road; divided roads; expressways; at-grade intersections; an access-controlled road; be known as a tollway; freeways, motorways, which serve only adjacent properties; collector; distributor; feeder roads; arterial roads; to trace the history of roads; that in many ways roads have directly reflected the conditions and attitudes of their times; interact with the terrain and community.

4. Прочитайте текст. Найдите определения различным типам дорог

Roads and Highways

Roads and highways are traveled way on which people, animals, or wheeled vehicles move. In modern usage the term *road* describes a rural, lesser traveled way, while the word *street* denotes an urban roadway. *Highway* refers to a major rural traveled way; more recently it has been used for a road, in either a rural or urban area, where points of entrance and exit for traffic are limited and controlled.

The most ancient name for these arteries of travel seems to be the antecedent of the modern *way*. *Way* stems from the Middle English *wey*, which in turn branches from the Latin *veho* (“I carry”), derived from the Sanskrit *vah* (“carry,” “go,” or “move”). The word *highway* goes back to the elevated Roman roads that had a mound or hill formed by earth from the side ditches thrown toward the centre, thus *high way*. The word *street* originates with the Latin *strata* (initially, “paved”) and later *strata via* (“a way paved with stones”). *Street* was used by the Anglo-Saxons for all the roads that they inherited from the Romans. By the Middle Ages, constructed roads were to be found only in the towns, and so *street* took on its modern limited application to town roads. The more recent word *road*, derived from the Old English word *rád* (“to ride”) and the Middle English *rode* or *rade* (“a mounted journey”), is now used to indicate all vehicular ways.

Modern roads can be classified by type or function. The basic type is the conventional undivided two-way road. Beyond this are divided roads, expressways (divided roads with most side access controlled and some minor at-grade intersections), and freeways (expressways with side access fully controlled and no at-grade intersections). An access-controlled road with direct user charges is known as a tollway. In the United Kingdom freeways and expressways are referred to as motorways.

Functional road types are local streets, which serve only adjacent properties and do not carry through traffic; collector, distributor, and feeder roads, which carry only through traffic from their own area; arterial roads, which carry through traffic from adjacent areas and are the major roads within a region or population centre; and highways, which are the major roads between regions or population centres.

This Unit traces the history of roads from earliest times to the present, exploring the factors that have influenced their development and suggesting that in many ways roads have directly reflected the conditions and attitudes of their times. The road is thus one of the oldest continuous and traceable metaphors for civilization and society. The second half of the Unit explains the factors behind the design, construction, and operation of a modern road. It is shown that a road must interact closely and carefully with the terrain and community through which it passes, with changing vehicle technology, with information technologies, and with the various abilities, deficiencies, and frailties of the individual driver.

Roads and highways. Transportation. Written by: Maxwell Gordon Lay and Fred J. Benson // <https://www.britannica.com/technology/road> 20.04.2019

5. *Ответьте на следующие вопросы:*

1. What are roads and highways?
2. What do the terms *road* and *street* describe in modern usage?
3. Where are points of entrance and exit for traffic limited and controlled?
4. How can you describe the elevated Roman roads?
5. What does the word *street* originate with?
6. Who for inherited roads from the Romans?

7. Where were constructed roads to be found by the Middle Ages?
8. How can modern roads be classified?
9. What types of roads are mentioned in the text?
10. What are arterial roads?
11. How the conditions and attitudes of life influence the roads?
12. What must a road interact closely and carefully with?

6. *Переведите следующие словосочетания:*

колесные транспортные средства; основные сельские дороги; самое древнее название; являться предшественником; производное от санскритского; возвышенные римские дороги; образованный землей из боковых канав; брать свое начало; позднейшие напластования; “путь вымощен камнями”; унаследовать от римлян; ограниченное применение; обычная неразделенная дорога с двусторонним движением; разделенные дороги; скоростные дороги; автострады; функциональные типы дорог; смежные объекты; транспортные потоки; коллекторные, распределительные и подъездные дороги; магистральные дороги; в пределах региона или населенного пункта; исследовать факторы, повлиявшие на их развитие; проектирование, строительство и эксплуатация современной дороги; информационные технологии; недостатки и слабости.

7. *Озаглавьте параграфы текста*

8. *Определите, какие из утверждений истинны, а какие не соответствуют содержанию текста:*

1. Roads and highways are traveled way on which only wheeled vehicles move.

2. In modern usage the term *street* describes a rural, lesser traveled way, while the word *road* denotes an urban roadway.

3. The term *highway* more recently has been used for a road, in either a rural or urban area, where points of entrance and exit for traffic are limited and controlled.

4. The most ancient name for these arteries of travel seems to be the antecedent of the modern *street*.

5. The elevated Roman roads had a mound or hill formed by earth from the side ditches thrown toward the centre.

6. *Street* was used by the Americans for all the roads that they inherited from the Romans.

7. Modern roads can be classified by type or function.

8. The basic type is the conventional expressway road.

9. An access-controlled road with direct user charges is known as a collector.

10. In the United Kingdom freeways and expressways are referred to as motorways.

11. It is shown that a road must interact closely and carefully with vehicles.

9. Сверяясь с текстом, подберите нужное значение выделенных слов в данных сочетаниях и переведите их. Составьте предложения с данными словосочетаниями.

<u>modern usage</u>	<u>обращение; использование; обычай; обывковение; обхождение</u>
<u>points of entrance and exit</u>	<u>суть, смысл, точка, деление, запятая</u>
<u>arteries of travel</u>	<u>артерия, канал, магистраль, дорога</u>
<u>modern limited application</u>	<u>прибор, аппаратура, старание, применение</u>
<u>conventional undivided two-way road</u>	<u>приличный, вежливый, конвенционный, традиционный, условный</u>
<u>an access-controlled road</u>	<u>с управляемым доступом, с контролируемым доступом, с контролируемым въездом</u>
<u>local streets</u>	<u>ближайший, местный, частный, ограниченный, городской</u>
<u>to influence their development</u>	<u>предприятие, разработка, эволюция, развитие, улучшение</u>
<u>suggesting that</u>	<u>предлагая, что свидетельствует о, наталкивая на мысль</u>

10. Сформулируйте главную мысль текста.

11. Составьте план пересказа текста.

12. Переведите предложения, обращая внимание на выделенные слова.

1. There are environmental **disbenefits** from heavy **traffic**.

2. Large increases in **traffic** capacity can exacerbate congestion problems, not solve them.

3. This article signified some fundamental shifts in **attitudes** to roads.

4. The scale of **traffic** growth envisaged would soon overtake any **benefits** that **small-scale** road improvement would offer.

5. These **solutions** would be very expensive and could only be **justified** if they were **comprehensively** planned, including social as well as **traffic** needs.

6. The author saw **no turning** back from people's new-found **dependence** on the car.

7. There would be limits to how much **traffic** could be transferred to **railways** and buses.

Traffic in Towns //http://www.architecture-student.com/ (20./04.2019)

13. Вставьте пропущенные предлоги **in, for, to, of, with, from, on, upon, within, into, by, at, into, per**.

From the History ... Roads

The first roads were paths made ... animals and later adapted ... humans. The earliest records ... such paths have been found around some springs near Jericho and date ... about 6000 BC. The first indications ... constructed roads date ... about 4000 BC and consist ... stone-paved streets .. Ur ... modern-day Iraq and timber roads preserved ... a swamp ... Glastonbury, England. During the Bronze Age, the availability ... metal tools made the construction ... stone paving more feasible; ... the same time, demand ... paved roads rose ... the use of wheeled vehicles, which were well established ... 2000 BC.

During the 2nd millennium BC, trade ways developed ... Europe. One route, ... example, ran between Italy and Spain via Marseille and nearby Heraclea, close ... present-day Avignon, France. ... about 1500 BC many ... the ways in eastern and central Europe had linked together ... an extensive trading network known as the Amber Routes.

While the Amber Routes were not roads ... the modern sense, they were improved ... river crossings, over mountain passes, and across wet and swampy areas. A few remnants ... these roads survive today.

The greatest systematic road builders ... the ancient world were the Romans, who were very conscious ... the military, economic, and administrative advantages ... a good road system. The Romans drew their expertise mainly ... the Etruscans -particularly ... cement technology and street paving - though they probably also learned skills ... the Greeks (masonry), Cretans, Carthaginians (pavement structure), Phoenicians, and Egyptians (surveying). Concrete made ... cement was a major development that permitted many ... Rome's construction advances.

The Romans began their road-making task ... 334 BC and ... the peak ... the empire had built nearly 53,000 miles ... road connecting their capital ... the frontiers ... their far-flung empire. Twenty-nine great military roads, the *viae militares*, radiated ... Rome. The most famous ... these was the Appian Way.

The typical Roman road was bold ... conception and construction. Where possible, it was built ... a straight line from one sighting point ... the next, regardless ... obstacles, and was carried over marshes, lakes, ravines, and mountains. ... its highest stage ... development, it was constructed ... excavating parallel trenches about 40 feet apart ... provide longitudinal drainage - a hallmark ... Roman road engineering.

This massive Roman road section, adopted about 300 BC, set the standard ... practice ... the next 2,000 years.

The public transport ... the Roman Empire was divided ... two classes: (1) *cursus rapidi*, the express service, and (2) *agnarie*, the freight service. ... addition, there was an enormous amount ... travel by private individuals. The two most widely used vehicles were the two-wheeled chariot (колесница) drawn by two or four horses and its

companion, the cart used ... rural areas. A four-wheeled *raeda* ... its passenger version corresponded ... the stagecoaches (почтовая карета, дилижанс) ... a later period and ... its cargo version ... the freight wagons (грузовой вагон). Fast freight *raedae* were drawn ... 8 horses ... summer and 10 ... winter and, ... law, could not haul ... excess of 750 pounds (340 kilograms). Speed ... travel ranged ... a low ... about 15 miles ... day ... freight vehicles ... 75 miles ... day ... speedy post drivers.

Roads and highways. Transportation. Written by: Maxwell Gordon Lay and Fred J. Benson // <https://www.britannica.com/technology/road> (20.04.2019)

14. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами

Road engineering

Since the (начало) of the 20th (век), as the (автомобили) and (грузовика) have offered ever higher (уровни) of mobility, (транспортное средство) ownership per head of (населения) has increased. (Дорога) needs have been strongly influenced by this (популярность) and also by the mass (движение) of (люди) to cities and (оттуда) to (пригородный) fringes—a trend that has led to (увеличение, рост) travel needs and (дорога) congestion and to low-density (города), which are (трудный) to service by (общественный транспорт). Often the building of (новый) roads to (решение) such problems has encouraged further urban (разрастание) and yet more (дорога) travel. (Долгосрочный) solutions (требовать) the provision of (альтернатива) to car and (грузовой) transport, controls over (землепользование), and the proper (ценообразование) of road travel. To this end, (дорожный) managers must be concerned not merely with (линии на картах) but also with the (количество), (тип), (скорость), and loading of individual (транспортное средство), the (безопасность), comfort, and (удобство) of the (путешествующий) public, and the (здоровье) and (благополучие) of bystanders and (прилегающий) property (владельцы).

(В идеале), the (развитие) of a major road (система) is an orderly, (непрерывный) process. The (процесс) follows (несколько) steps:

assessing road (потребности) and (транспортный) options; (планирование) a system to meet those (потребности); designing an (экономически), (социально), and environmentally (приемлемый) set of roads; obtaining the required (одобрение) and financing; building, (эксплуатация), and maintaining the (система); and providing for (будущий) extensions and (реконструкция).

*<https://www.britannica.com/technology/road/The-modern-road#ref71918>
(20.04.2019)*

15. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

16. Прочитайте текст, сопоставьте управление движением в странах Европы и в нашей стране. Составьте диаграмму Венна.

Traffic management

Road users are subject to traffic control via instructions and information provided by roadway markings, signs, and signals, and they are subject to legal control via the rules of the road (particularly those concerned with vehicular priority).

Traffic control

The marking of roadway surfaces with painted lines and raised permanent markers is commonplace and effective, despite high maintenance costs and visibility problems at night, in heavy traffic, and in rain or snow. A solid line is a warning or instruction not to cross, and a broken line is for guidance. Thus, solid lines indicate dangerous conditions (such as restricted sight distance where overtaking would be dangerous), pavement edges, stop lines, and turning lanes at intersections; broken lines indicate interior lane lines and centre lines on two-way roads where the sight distance is good. Lines are usually white, but yellow is used for centre lines in North America.

Signs advise the driver of special regulations and provide information about hazards and navigation. They are classified as regulatory signs, which provide notice of traffic laws and regulations (e.g., signs for speed limits and for stop, yield or give-way, and no entry); warning signs, which call attention to hazardous conditions

(e.g., sharp curves, steep grades, low vertical clearances, and slippery surfaces); and guide signs, which give route information (e.g., numbers or designations, distances, directions, and points of interest).

Signs have standard shapes and colours -for instance, the red octagon used for the stop sign, the triangle for warning signs, the green rectangle with white lettering for freeway directional signs (commonly mounted over the roadway and of large size for easy reading at high speeds). Tourist signs are brown rectangles, and special shapes and colours are used for route markers. Many signs, such as the stop sign, are universally used, but there are some differences between the two common international systems based on either the American or the European practice. Basically, these differences are derived from a complete reliance on symbolic signs and a greater range of blue guidance signs in multilingual Europe.

Traffic signals are primarily used to control traffic in urban street systems -particularly at conventional intersections accommodating large traffic volumes, where they allocate right-of-way to the various traffic streams. They can also meter traffic entering access lanes onto busy freeways or to indicate the lanes to use on two-way roads. Simple traffic signals work on preset timing plans that vary with the time of day. More advanced traffic-actuated signals automatically monitor the traffic streams and allocate right-of-way accordingly. Signals can also be linked to a computer so that traffic traveling along a major route can receive a continuous wave of green signals, obtaining maximum traffic output from the system.

<https://www.britannica.com/technology/road/The-modern-road> (20.04.2019)

17. Уточните значение нижеприведенных слов, сверяясь со словарем. Вставьте в текст правильные формы пропущенных слов. Переведите текст:

accident, approximate, attempt, authority, automatically, attribute, be measured, be conducted, behavioral, blow, breath, content, contribute, crash, drive, due to, engineer, excessive, experience, flow, frequency, guardrail, improve, inductance, influence, investigate, not need, ordinary, percent, public, patrol,

pier, prevention, ramp, regulation, safe, safety, scene, severity, skid marks, speed, surfaces, warning

Safety

Traffic police (or road patrols or highway police) help ... road safety and traffic ... by enforcing driving regulations. They also regulate traffic at the ... of an accident and ... accidents. Traffic enforcement has been aided by the use of technology - cameras, radar, video, and ... loops - to detect and record traffic offenders

An important aspect of traffic ... and accident ... is the control of excessive speed, which ... significantly to the number and ... of road crashes. Speed ... commonly by radar devices or by pacing with a ... car. In ... investigations, the ... of the cars is determined by the length of Another key factor in road ... accidents is the ... influence of alcohol and drugs. Tests for intoxication ... now widely; the most common is the ... test, in which the driver ... into a device that analyzes the alcohol ... of the breath and indicates the ... blood alcohol level. Many ... believe that 0.50 gram of alcohol per litre of blood is a realistic limit for ... motorists, but that zero levels should be demanded for critical operators such as drivers of ... transport vehicles.

Road ... can also be built into the road. Divided roads are many times ... than two-way roads. Crash severity can be reduced by the use of “soft” signs and light poles and by ... and impact attenuators in front of fixed roadside objects such as bridge ... and the noses at the exit ... of a freeway. Better road ..., alignments, signing, and marking improve ... conditions and increase road safety.

Nevertheless, about 90 ... of crashes are primarily ... human error. Many crashes have been ... to simple inattention or failure to see Alcohol, fatigue, inexperience, aggression, and ... risk taking are the most common crash causes involving ... changes in drivers. Lack of driving skills is rarely an issue; most drivers ... training as much as they need education and Meanwhile, road ... must design road systems that ... to reduce the ... and impact of human error.

*<https://www.britannica.com/technology/road/The-modern-road#ref71918>
(20.04.2019)*

18. Обсудите в группе вопросы безопасности дорожного движения в нашей стране.

19. Прочитайте текст и вопросы к нему. Перескажите текст на английском языке.

Потребности в дорогах тесно связаны с относительным расположением центров народонаселения, торговли, промышленности и транспорта. Движение между двумя центрами приблизительно пропорционально численности их населения и обратно пропорционально расстоянию между ними. Таким образом, оценка движения по маршруту требует прогнозирования будущего роста численности населения и экономической активности, оценки их воздействия на землепользование и потребности в поездках, а также знания потенциальных транспортных альтернатив. Ключевыми переменными, определяющими дорожные потребности, являются объемы движения, тоннажи и скорости, которые следует ожидать на протяжении всего срока службы дороги.

После оценки спроса на дорожное движение необходимо спрогнозировать масштабы дорожных работ, необходимых для регулирования этого движения. Отправной точкой в этих расчетах служат обследования источников, пунктов назначения и выбора маршрута нынешнего движения; затем для оценки будущих объемов движения по каждому предлагаемому маршруту используются компьютерные модели.

Оценки выбора маршрута основаны на понимании того, что большинство водителей выбирают наиболее быстрый, короткий или дешевый маршрут. При планировании учитывается также влияние новых транспортных потоков на существующие улицы, дороги и стоянки.

Там, где это возможно, следующим шагом в планировании дорожной системы является уточнение выбранного маршрута до узкого коридора. Различные варианты выравнивания рисуются с учетом местной местности и условий. Экономические, социальные и экологические выгоды и издержки этих вариантов обсуждаются с соответствующими официальными и общественными

группами до тех пор, пока не будет определен приемлемый конкретный маршрут.

<https://www.britannica.com/technology/road/The-modern-road#ref71918>
(20.04.2019)

1. What is closely associated with the relative location of centres of population, commerce, industry, and transportation?

2. To what is traffic between two centres approximately proportional and inversely proportional?

3. What does estimating traffic on a route require?

4. Why is it important to predict the effects of future population growth and economic activity on land use and travel needs?

5. What are the key variables defining road needs?

6. Is it necessary to predict the extent of the road works needed to handle that traffic?

7. What should be a starting point in calculations after traffic demand estimating?

8. How can computer models be used for estimating future traffic volumes on each proposed route?

9. What are estimates of route choice based?

10. What route is selected by most drivers?

11. Is consideration in planning also given to the effect of new traffic on existing streets, roads, and parking provisions?

12. What is the next step in planning a road system?

13. Are the various alignment options drawn, considering the local terrain and conditions?

14. Who are the economic, social, and environmental benefits and costs of these options discussed with?

15. Should consideration in planning be also given to the effect of new traffic on existing streets, roads, and parking provisions?

20. Прочитайте наброски проекта строительства проезжей дороги, предложенной инженером-строителем с 28-летним стажем проектирования и строительства проезжих частей населенных пунктов.

How do Civil Engineers Design Roads?

Dana M Dietz, Over 28+ years of roadway design and construction

There is so much that goes into the design of a road. We hit on many of the things that we have to consider.

First of all, I am going to assume that we are designing a brand new road. It will be connecting to existing roads.

I am assuming:

- We have a proposed horizontal alignment. For the preliminary alignment:
 - o We meet the design criteria based on the design speed selected, such as curve radius.
 - o We try to avoid as many impacts as possible, environmental and property, among other things, without sacrificing safety.
- All of the traffic studies have been done to show that this road is needed.
 - o We have determined how many lanes are needed in each direction;
 - o We have determined how much storage, or how long, the turn bays, if any, need to be, or even whether we need any turn bays;
 - o We have determined whether we will have stop signs, traffic signals, or other to control traffic movements such as turn and the intersections.
 - o We know how many passenger cars and trucks are anticipated to use the new road;
 - We know who owns the right of way, or properties, that we are either adjacent to, or taking the road through.
 - o We will be negotiating to purchase right of way, or property, if needed, as soon as we know the proposed alignment. This will take several months to purchase right of way.
 - We either know where utility facilities are located, such as water, gas, sewer, electrical, etc., or know that we need to delineate where they will go on the plan drawings;
 - o Hopefully, we even know who owns the utility facilities;
 - o We may have to pothole, or dig a hole, to find the exact location of the utility vertically and horizontally.

- Based on the traffic data, we can design a pavement section that will be appropriate for the number of vehicles anticipated.
 - o We have taken soil borings to determine what types of soils exist at the location and whether we need to modify the pavement section based on this information.
 - We know where the storm drainage needs to go:
 - o Conveyed through inlets and pipes to a river, a detention pond, retention pond, treatment facility, or infiltration system;
 - o Conveyed with sheet flow off the road into drainage swales;
 - o Among other possibilities.
 - We have done an environmental evaluation to determine what types of impacts we might have and how much. We have worked with the appropriate agencies to decide if the cost of the impacts is too much, or if we may proceed while trying to minimize the impacts as much as possible.
 - o Wetlands;
 - o Archaeological and/or historical;
 - o Species of plants and animals;
 - o and Cultural; among other things.
 - We have done a topographic survey to determine the existing topography along the proposed alignment.
 - o We create a 3 dimensional model of the existing surface near the proposed alignment with this topographic survey. This will be part of our electronic design files.
 - o From this model, we can develop contour lines and start to refine our proposed horizontal alignment to fit the topography, if that is a priority.
 - o We lay the horizontal alignment over the top of the digital terrain model. From this, we can get an idea of how the earth fits vertically with the horizontal alignment of the roadway.
 - o When you place the proposed horizontal alignment on the existing surface, the vertical surface will be as rough as the topography. Then you create a vertical alignment in profile view, as shown above, that meets the design criteria.
 - Steepness of grade;

- Grade differences for vertical curves or point of vertical inflection;
- Vertical curve lengths;
- stopping sight distance;
- sight distance (eyesight);
- Balancing cuts and fills (excavation and borrow);
- and the list goes on.
- o This topography will also help you determine if a bridge is necessary in some locations.
 - Once you have your refined horizontal and vertical alignment and profile, you generate plan and profile sheets in order to show how to build it.
 - Several types of plans will be included in a set of roadway plans:
 - o Utility plans (existing and proposed);
 - o Drainage;
 - o Roadway Details;
 - o Roadway Quantities, or Summaries;
 - o Roadway plan and profile
 - Also displays where to put guardrail if needed;
 - o Total Ownership Maps;
 - o Right of Way Plans;
 - o Stormwater Pollution Prevention Plans;
 - o Signing and Pavement Marking (striping)
 - o Traffic Signal;
 - o Sign erection plans;
 - o Sign Summaries;
 - o Temporary Traffic Control Plans;
 - o Project Clearance Summary Sheets;
 - o Bridge Plans (usually separate set);
 - o among others.

I have left quite a few steps out. There is a lot of administrative work to do with the regulatory agencies as well as within your own agency.

We would then write the contract documents, including special provisions, that would define exactly what we want built. This and the roadway plan set is a big part of the documents that go out to bid to be built by a Contractor.

<https://www.quora.com/How-do-civil-engineers-design-roads> (20.04.2019)

21. Обдумайте и обсудите в группе следующие вопросы:

1. How do civil engineers design roads?
2. What criteria should the design project be based?
3. Why is it important to avoid as many impacts as possible, environmental and property, among other things, without sacrificing safety?
4. What traffic studies should be done to show that this road is needed?
5. Why is it necessary to take soil borings?
6. How can an environmental evaluation be done to determine what types of impacts we might have and how much?
7. What types of plans will be included in a set of roadway plans?

22. Составьте собственный групповой проект строительства новой дороги в Бишкеке.

UNIT 3

BUILDINGS AND THEIR FUNCTIONS

1. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

adapt, aesthetic, antenna, apartment, architectural, artistic, barrack, block, classify, combination, comfortably, communal, condition, construction, contain, convert, cottage, debate, detail, family, formation, functions, generally, group, historically, idea, interpretation, material, mobile, natural, object, occupant, permanently, planning, physical, practice, privacy, reason, resident, result, seasonal, societal, special, specific, structure, technical, terrace, variety

2. Подберите русские эквиваленты из второго столбца к следующим английским словам:

wall	доступный, имеющийся в наличии, пригодный
treatment	вещи, принадлежности, пожитки, имущество
to store	кров, пристанище, приют, шалаш
sustainable	сравнивать, приравнивать, уподоблять
structure	строение, здание, сооружение, структура
spire	снабжать, наполнять, хранить, запасать
skilful	пещера, полость, впадина, подземелье
shelter	прочный, устойчивый, долгосрочный, экоустойчивый
roof	кровля, кров, крыша
permanently	ограда, укрепление, вал, стена
necessarily	изгородь, ограда, забор, штaketник
mast	здание, сооружение, постройка
fence	неизбежно, непременно, обязательно, безусловно
edifice	холст, парусина, полотно
dwelling	надолго, непрерывно, постоянно
duplex	обращение, обхождение, трактовка, обработка

compare	умелый, ловкий, опытный, искусный
cave	шпиц, шпиль, декоративная башенка
canvas	стойка, мачта, мачтовая опора
belongings	проживание, жилище, дом, жильё, местожительство
available	двухуровневая квартира, дом на два хозяина

3. Переведите на русский язык следующие слова и словосочетания:

able to house thousands of people; act of construction; all but two; artistic expression; as rectangular blocks; combinations of either of these; common building materials; excluding all idea of artistic treatment; ground conditions; high-rise; imposing edifice; increasing settlement density; in pairs; in technical usage; in the broadest interpretation; is more likely to be used for; land prices; list of nonbuilding structures; low-rise; multi-family residential buildings; man-made formations; manner of construction; materials available; matter of debate; more or less; others either side; piece of ground of varying sizes; physical division of the human habitat; place that at times may be harsh and harmful; similar attractors; single dwelling; single-family residential buildings; specific uses; structural height; the occupant owns rather than rents; to be substantial structures; to store belongings; sustainable planning and building practices; throughout history.

4. Прочитайте текст, обращая внимание на разные определения слова "building".

Building. Types of Buildings.

A building, or edifice, is a structure with a roof and walls standing more or less permanently in one place, such as a house or factory. Buildings come in a variety of sizes, shapes, and functions, and have been adapted throughout history for a wide number of factors, from building materials available, to weather conditions, land prices, ground conditions, specific uses, and aesthetic reasons. To better understand the term *building* compare the list of nonbuilding structures.

Buildings serve several societal needs – primarily as shelter from weather, security, living space, privacy, to store belongings, and to comfortably live and work. A building as a shelter represents a physical division of the human habitat (a place of comfort and safety) and the *outside* (a place that at times may be harsh and harmful).

Ever since the first cave paintings, buildings have also become objects or canvasses of much artistic expression. In recent years, interest in sustainable planning and building practices has also become an intentional part of the design process of many new buildings.

The word *building* is both a noun and a verb: the structure itself and the act of making it. As a noun, a building is ‘a structure that has a roof and walls and stands more or less permanently in one place’; “there was a three-storey building on the corner”; “it was an imposing edifice”. In the broadest interpretation a fence or wall is a building. However, the word *structure* is used more broadly than *building* including natural and man-made formations and does not necessarily have walls. Structure is more likely to be used for a fence. Sturgis’ Dictionary included that “building differs from architecture in excluding all idea of artistic treatment; and it differs from construction in the idea of excluding scientific or highly skilful treatment.” As a verb, building is the act of construction.

Structural height in technical usage is the height to the highest architectural detail on building from street-level. Depending on how they are classified, spires and masts may or may not be included in this height. Spires and masts used as antennas are not generally included. The definition of a *low-rise* vs. a *high-rise* building is a matter of debate, but generally three storeys or less is considered low-rise.

Single-family residential buildings are most often called houses or homes. Multi-family residential buildings containing more than one dwelling unit are called a duplex or an apartment building. A condominium is an apartment that the occupant owns rather than rents. Houses may also be built in pairs (semi-detached), in terraces where all but two of the houses have others either side; apartments may be built round courtyards or as rectangular blocks surrounded by a piece of ground of varying sizes. Houses which were built as a single

dwelling may later be divided into apartments or bedsitters; they may also be converted to another use e.g. an office or a shop.

Building types may range from huts to multimillion-dollar high-rise apartment blocks able to house thousands of people. Increasing settlement density in buildings (and smaller distances between buildings) is usually a response to high ground prices resulting from many people wanting to live close to work or similar attractors. Other common building materials are brick, concrete or combinations of either of these with stone.

Residential buildings have different names for their use depending if they are seasonal include holiday cottage (vacation home) or timeshare; size such as a cottage or great house; value such as a shack or mansion; manner of construction such as a log home or mobile home; proximity to the ground such as earth sheltered house, stilt house, or tree house. Also if the residents are in need of special care such as a nursing home, orphanage or prison; or in group housing like barracks or dormitories.

Historically many people lived in communal buildings called longhouses, smaller dwellings called pit-houses and houses combined with barns sometimes called housebarns.

Buildings are defined to be substantial, permanent structures so other dwelling forms such as houseboats, yurts, and motorhomes are dwellings but not buildings.

<https://en.wikipedia.org/wiki/Building> (20.04.2019)

5. Ответьте на следующие вопросы:

1. What is a building?
2. Can you explain the difference between building and nonbuilding structures?
3. What factors influence the variety of sizes, shapes, and functions of buildings?
4. How can we explain interest in sustainable planning and building practices in recent years?
5. How does building differ from architecture and from construction?
6. What is structural height in technical usage?

7. Are spires and masts included in structural height?
8. What is the other name for a single-family residential building?
9. May the houses which were built as a single dwelling later be converted to another use?
10. How can we explain increasing settlement density in buildings?
11. What types of buildings are mentioned in the text?
12. What building materials do you know?
13. Are the words “a building” and “a dwelling” synonyms?

6. Подберите английские эквиваленты из второго столбца к следующим русским словам:

юрта	condominium
шалаш (домик) на дереве	semi-detached
хижина	bedsitter
тюрьма	hut
совместная аренда недвижимости	apartment blocks
смежный	settlement
притягательная сила	response
примитивное жилье, яма с крышей из веток	brick
поселение, поселок	concrete
плотность	stone
плавучий дом	density
передвижной дом-фургон	attractor
ответ	holiday cottage
особняк	timeshare
однокомнатная квартира	shack
общежитие	mansion
многоэтажные дома	log home
лачуга	mobile home
кондоминиум	earth sheltered house
кирпич	stilt house
камень	tree house
заглубленное жилье, землянка	nursing home

дом-сарай	orphanage
дом престарелых	prison
дом на сваях	barrack
детский дом	dormitory
дача	pit-house
бревенчатый дом	housebarn
бетон	houseboats
барак	yurt
дом на колесах	motorhomes

7. *Озаглавьте параграфы текста*

8. *Распределите данный список слов по 4 группам:*

- Public buildings and facilities
- Residential building
- Industrial buildings and structures
- Agricultural buildings and structures

airport, bakery, barracks, brewery, bungalow, caravanserai, church, circus, club, cottage, dormitory, dovecote, factory, farms, gablefront, grain elevators, granary, hayrack, holiday cottage, hospital, hostel, hotel, housebarn, hut, hypermarket, longhouse, mansion, mosque, museum, nursery, office, orphanage, plant, railway, ranch, sanatorium, school, shack, stable, textile mill, theater, watermill, windmill

9. *Сформулируйте главную мысль текста.*

10. *Составьте план пересказа текста.*

11. *Соедините термины с их дефинициями:*

Tent ... is a building designed to be operated independently from infrastructural support services such as the electric power grid, gas grid, municipal water systems, sewage treatment systems, storm drains, communication services, and in some cases, public roads.

Steel building	... is code-compliant, non-residential structures 60% to 90% completed offsite in a factory-controlled environment then transported or shipped to a final destination where the modules are then placed on a concrete foundation to form a finished building.
Skyscraper	... is the scientific field concerned with protecting society, the natural environment, and the man-made environment from earthquakes by limiting the seismic risk to socio-economically acceptable levels.
Natural disaster	... is a sheet of glass made by floating molten glass on a bed of molten metal, typically tin, although lead and various low melting point alloys were used in the past. This method gives the sheet uniform thickness and very flat surfaces.
Natural building	... refers to both a structure and the application of processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from planning to design, construction, operation, maintenance, renovation, and demolition.
Green building	... Tornadoes, cyclones, and other storms with strong winds damage or destroy many buildings. However, with proper design and construction, the damage to buildings by these forces can be greatly reduced. A variety of methods can help a building survive strong winds and storm surge.
Hurricane-proof building	... tends to rely on human labor, more than technology. As Michael G. Smith observes, it depends on "local ecology, geology and climate; on the character of the particular building site, and on the needs and personalities of the builders and users."

Float glass	... is a major adverse event resulting from natural processes of the Earth; examples are floods, hurricanes, tornadoes, volcanic eruptions, earthquakes, tsunamis, and other geologic processes.
Earthquake engineering	... is the shaking of the surface of the Earth, resulting from the sudden release of energy in the Earth's lithosphere that creates seismic waves.
Earthquake	... is a continuously habitable high-rise building that has over 40 floors and is taller than approximately 150 m (492 ft). Historically, the term first referred to buildings with 10 to 20 floors in the 1880s.
Commercial modular building	... is a metal structure fabricated with steel for the internal support and for exterior cladding, as opposed to steel framed buildings which generally use other materials for floors, walls, and external envelope.
Autonomous building	... is a shelter consisting of sheets of fabric or other material draped over, attached to a frame of poles or attached to a supporting rope.

<https://en.wikipedia.org/wiki/Building> (20.04.2019)

12. *Переведите текст, обращая внимание на выделенные слова.*

1. The practice of designing, constructing, and operating buildings is most usually a collective effort of different groups of professionals and trades.

2. Depending on the size, complexity, and purpose of a particular building project, the project team may include: a Real estate Developer who secures funding for the project; one or more Financial institutions or other Investors that provide the funding; Local planning and code authorities; a Surveyor who performs construction surveys throughout the project; Construction Managers who coordinate the effort of different groups of project participants; licensed Architects and Engineers who provide building design and prepare construction

documents; the Principal design Engineering disciplines which would normally include the following professionals: Civil, Structural, Mechanical building services or HVAC (heating Ventilation and Air Conditioning) Electrical Building Services, Plumbing and drainage.

3. Also other possible design Engineer specialists may be involved such as Fire (prevention), Acoustic, facade engineers, building physics, Telecomms, AV (Audio Visual), BMS (Building Management Systems) Automatic controls etc.

4. These design Engineers also prepare construction documents which are issued to specialist contractors to obtain a price for the works and to follow for the installations: Landscape architect, Interior designers; Other consultants; Contractors, who provide construction services and install building systems such as climate control, electrical, plumbing, decoration, fire protection, security and telecommunications; Facility managers who are responsible for operating the building.

3. Regardless of their size or intended use, all buildings must comply with zoning ordinances, building codes and other regulations such as fire codes, life safety codes and related standards.

4. Vehicles - such as trailers, caravans, ships and passenger aircraft - are treated as “buildings” for life safety purposes.

<https://en.wikipedia.org/wiki/Building> (20.04.2019)

13. Вставьте пропущенные предлоги *in, for, to, of, with, from, on, upon, within, into, by, at. After, toward, upon*

Construction

Construction is an ancient human activity. It began ... the purely functional need ... a controlled environment ... moderate the effects of climate.

Constructed shelters were one means ... which human beings were able to adapt themselves ... a wide variety ... climates and become a global species.

Human shelters were ... first very simple and perhaps lasted only a few days or months. Over time, however, even temporary structures evolved ... such highly refined forms as the igloo. Gradually more

durable structures began ... appear, particularly ... the advent of agriculture, when people began to stay ... one place ... long periods. The first shelters were dwellings, but later other functions, such as food storage and ceremony, were housed ... separate buildings. Some structures began to have symbolic as well as functional value, marking the beginning ... the distinction between architecture and building.

The history ... building is marked ... a number ... trends. One is the increasing durability ... the materials used. Early building materials were perishable, such as leaves, branches, and animal hides. Later, more durable natural materials - such as clay, stone, and timber - and, finally, synthetic materials - such as brick, concrete, metals, and plastics - were used. Another is a quest ... buildings ... ever greater height and span; this was made possible ... the development ... stronger materials and ... knowledge ... how materials behave and how ... exploit them ... greater advantage. A third major trend involves the degree ... control exercised over the interior environment ... buildings: increasingly precise regulation ... air temperature, light and sound levels, humidity, odours, air speed, and other factors that affect human comfort has been possible. Yet another trend is the change ... energy available ... the construction process, starting ... human muscle power and developing ... the powerful machinery used today.

The present state ... construction is complex. There is a wide range ... building products and systems which are aimed primarily ... groups ... building types or markets. The design process ... buildings is highly organized and draws ... research establishments that study material properties and performance, code officials who adopt and enforce safety standards, and design professionals who determine user needs and design a building ... meet those needs. The construction process is also highly organized; it includes the manufacturers ... building products and systems, the craftsmen who assemble them ... the building site, the contractors who employ and coordinate the work ... the craftsmen, and consultants who specialize ... such aspects as construction management, quality control, and insurance.

Construction today is a significant part ... industrial culture, a manifestation ... its diversity and complexity and a measure ... its

mastery ... natural forces, which can produce a widely varied built environment ... serve the diverse needs ... society.

<https://www.britannica.com/technology/building-construction> (20.04.2019)

14. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами

In the (промышленно развитый) world, (строительство) usually involves the (перевод) of designs into (реальность). A formal (проектная группа) may be assembled to plan the (физического) proceedings, and to (интегрировать) those (производство) with the other parts. The design usually (состоять) of (чертежи) and specifications, (обычно) prepared by a design (команда) (включая) architect, (гражданский) engineers, mechanical (инженеры), electrical engineers, (инженеры-строители), fire protection engineers, (планирование) consultants, (архитектурный) consultants, and (археологический) consultants. The design team is most commonly employed by (i.e. in contract with) the property (владелец). Under this (система), once the design is completed by the (проектная группа), a (ряд строительных компаний) or construction (управление) companies may then be asked to make a (заявка) for the work, either based (непосредственно) on the design, or on the (основа) of drawings and a (спецификация) provided by a quantity surveyor. Following (оценка) of bids, the (владелец) typically (заключать) a contract to the most cost efficient (участник торгов).

(Лучший) modern (тенденция) in design is toward (интеграция) of previously separated specialties, (особенно) among large (фирмы). (В прошлом), architects, (интерьер) designers, engineers, (разработчики), construction (управляющие), and (генеральные подрядчики) were more likely to be entirely (отдельный) companies, (даже) in the larger firms. (В настоящее время), a firm that is (номинально) an «architecture» or «construction management» (фирма) may have experts from all (смежные области) as employees, or to have an (ассоциированный) company that provides each (необходимый навык). (Таким образом), each such firm may (предлагать себя) as «one-stop shopping» for a construction (проект), (от начала до конца). This (обозначаться) as a «design build» contract where

the (подрядчик) is given a performance (спецификация) and must (выполнить проект) from design to construction, (придерживаясь) to the performance (спецификация).

(Несколько) project structures can (помогать) the owner in this integration, (включая) design-build, (партнерство) and (управление строительством). (В целом), each of these (проектная структура) allows the owner to (интегрировать) the (услуги) of architects, (дизайнеров интерьера), engineers and (конструкторы) (на протяжении всего) design and construction. (В ответ), many companies (выходить за рамки) traditional (предложение) of design or construction services alone and are placing more emphasis on (установление отношений) with other necessary (участники) through the design-build (процесс).

(Возрастающая сложность) of construction projects creates the (потребность) for design (специалисты) trained in all (этапы) of the project's (жизненный цикл) and develop an (понимание) of the building as an (передовой) technological system (требующий) close (интеграция) of many sub-systems and their (отдельные компоненты), including (устойчивость). (Строительная инженерия) is an emerging discipline that (пытаться) to meet this new challenge.

<https://en.wikipedia.org/wiki/Construction> (20.04.2019)

15. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

16. Прочитайте текст, составьте таблицу всех «за» и «против» сооружения небоскреба в небольшом городке.

THE HIGHEST SKYSCRAPER IS IN THE SMALL DANISH CITY

In the tiny Danish town of Brande with a population of 7,000 inhabitants, it is planned to build the tallest building in Europe. This is not the first skyscraper in the countryside – in 1991, right in the middle of the fields in the Japanese city of Kaminoyama, the 41-story Sky Tower 41 was erected.

The idea of construction of the Danish skyscraper belongs to the fast-fashion giant Bestseller. Its owner, Anders Zach, is the richest man

in Denmark. The company, which owns such brands as Vero Moda, Jack & Jones, Only, Selected, and Vila, plans to place its headquarters in a skyscraper.

It is assumed that the height of the building will be 320 meters. This is 10.4 meters above the London Shard. Over the project of the skyscraper worked architectural studio Dorte Mandrup. The construction of the skyscraper has already been agreed with the local authorities. The skyscraper will house the hotel, offices, conference rooms, and shops. Around the tower, several more small buildings will be built.

The permission to build a skyscraper was received in March, and it is planned to complete its construction in 2023. Then the 310-meter London Tower Shard will give the leadership in the ranking of the tallest buildings in Western Europe to the new skyscraper.

The Shard is currently the tallest building in Western Europe. However, it is far from having the record of 462-meter “Lakhta Center” in St. Petersburg. The “Lakhta Center” Skyscraper was built in 2018. It is the tallest European building for now.

Pros and Cons

It is also reported that the building will be visible from at a distance of 60 kilometers. “This will be the benchmark which will put Brande on the map,” said a spokesman for Bestseller. Locals support the idea of building a skyscraper. “It’s hard to find someone against. Everyone thinks that this is a fantastic idea,” said local media.

In the meantime, some are already comparing the future skyscraper with the tower of Sauron from “The Lord of the Rings”. This is the Danish satirical publication Rokokoposten and it suggests placing a burning eye on top.

Danish architect Trine Kammer argues that the media refuse to publish her critical review of the building. According to her, people in Brande are not used to arguing with Bestseller and treat the company with reverence. Kammer is confident that the tower will destroy the chamber of the town and its pristine landscape.

*<https://blog.efestio.com/the-highest-skyscraper-is-in-the-small-danish-city/>
(20.04.2019)*

17. Обсудите в группе преимущества и недостатки строительства многоэтажных домов в сельской местности и небольших городах.

18. Уточните значение следующих слов и словосочетаний. Вставьте пропущенные слова. Переведите текст:

appears; architecture; are visited; as for; battle; became; built (3); castle (5); cave; century; chapel; check; clearly; comes back; continue; corridors; death (2); devices; distinct; dungeon (2); earthquakes; enough time; exactly; execution; fell in love with; found out; frightening; ghost (3); go beyond; Gray; habitat; halls (2); imprisoned; in fact; in White (2); is connected; killed; lair; leave; luxury; most famous; most interesting; numerous; past; place; powerful; prison (2); priest; remember; resisted; restored; role; rooms; saddest; servant; served (2); soldiers; sword; thousands; took place; touch; tower; trial; tunnels; wall (2); was built; was destroyed; was killed; was rebuilt; weakness; were called; were sentenced; were tortured; were tried; Witch Castle; witches; wonderful example; work; workers; young woman

MY HOUSE IS YOUR HOUSE.

THE MYSTICAL CASTLES WITH GHOSTS.

Warwick Castle in England

... in the eleventh century by William the Conqueror, this ... saw more ... than any other in Europe – so much violence ... in its The most mystical ... is the “ghost tower”, which ... the home of the ... of Sir Fulk Greville. He ... by his own ... in 1628, and now every evening ... from his portrait, hanging on the ... in the The dungeon is another ... for ghosts in the Many complain of nausea and ... when they ... rusty bars and ... for torture.

Prejam castle in Slovenia

... in the ... Predyamsky Castle was a ... fortress that ... numerous brutal attacks. And yet in the fourteenth and fifteenth ..., the castle ... by a series of prolonged sieges and In 1567 the castle ..., along

with ... secret ... and passages, which to this day ... by the ghosts of many ... who died in the walls of the From the ... and tunnels under the lock, ... noises and steps are ... audible.

Dragsholm Castle in Denmark

The ... of Dragsholm ... at the end of the 12th ... is now used as a ... hotel. It has ... one hundred ..., wandering through the ... every night. The ... are the three: the ... Lady, the Lady ... and Earl of Bothwell. The ... is the story of the Lady ..., who ... the peasant. Her father ... about the novel and ... his daughter in the wall of one of the ... so that he could no longer ... her. In the thirties, ... who ... the wing of the castle, ..., found the skeleton of a ... in white robes in the The Gray Lady ... in the castle. And after ..., she could not ... the place of Therefore she ... sometimes to ... things. ... Count Bothwell, he died in ... in a ..., and his ... still cannot ... the castle.

Leap Castle in Ireland

The ... in this place ... during the Iron Age, so it had ... to “get” with ghosts. The ... story of the castle ... with the ..., where in 1532 a soldier ... a priest with his And now the ghost of the ... lives in a room with the ... name of the Bloody Chapel.

Moosham Castle in Austria

Castle Moosham is a ... of Austrian ... and ghost stories. Built in the 12th century, it is also known as the ... because of its sinister This is the place of the bloodiest ... of witches in history. Between 1675 and 1687, ... of women ... witches and ... by the Inquisition to They ... and deprived of heads in the castle walls. Most of them ... to come to these ..., but already in the form of ghosts. In addition to the ... of the site for the ... of ..., Moosham Castle ... as a werewolf's Some Markham residents ... and put in ... as werewolves.

<https://blog.efestio.com/my-house-is-your-house-the-mystical-castles-with-ghosts/> 20.04.2019

19. Прочитайте текст и вопросы к нему. Перескажите текст на английском языке.

Сравниваем проживание в квартире и в доме

Достоинства и недостатки квартир

Очевидным плюсом «коробки», как в народе любят называть жилплощадь в многоэтажках, принято считать её стоимость, которая будет значительно ниже, чем загородного коттеджа. К тому же обслуживанием многоэтажек обычно занимаются специальные коммунальные службы. Чисткой снега перед подъездом, вывозом мусора или стрижкой газонов вы лично заниматься не будете. Достаточно раз в месяц оплачивать счета за газ/воду/электричество и не переживать о перечисленном выше.

Следующий, часто называемый плюс, – это проживание в черте города. Для жителей мегаполиса важно, чтобы на работу можно было добираться очень быстро, желательно её расположение в соседнем районе, например.

Выбирая недвижимость, необходимо учитывать наличие развитой инфраструктуры. Сюда относятся детсады, школы, вузы, поликлиники, банки, магазины. Это заведения, которые сделают проживание более комфортным.

Немаловажным фактором, который часто указывают владельцы квадратных метров в многоэтажках, выступает безопасность. Согласитесь, намного спокойнее жить в доме, в котором проживает ещё пару десятков семей, в подъезде находится консьерж, а дверь закрыта на кодовый замок. Да и расположение на высших этажах придаёт уверенности в том, что в ваше жильё не заберутся злоумышленники.

К минусам в первую очередь можно отнести ограниченные квадратные метры.

Минусом можно назвать и экологию. Всё же удобство проживания в городе очень зависит и от района. Люди охотнее выбирают те улицы, где достаточно зелёных участков и парков и стараются избегать промышленных зон.

Плюсы и минусы частного дома

Частные дома могут располагаться как в самом городе, так и быть на некотором удалении от него. Современные построй-

ки, такие как коттеджи, таунхаусы, авторские проекты, находятся в основном за городом.

Главный плюс собственного дома – частная жизнь. У вас есть свой двор, участок, где можно посадить овощи и зелень или разбить цветник – словом, вы не ограничены рамками «четырёх стен». К тому же если установить забор вокруг придомовой собственности, можно скрыть свою жизнь от посторонних глаз. Несомненным преимуществом дома является отсутствие соседей снизу или сверху. Так вы не рискуете быть затопленным или разбуженным ранним утром от звука перфоратора, которым орудует ремонтная бригада.

К осязаемым недостаткам можно отнести некую удалённость от города, особенно если в семье нет автомобиля и слабо развита инфраструктура района проживания. Хотя в современных загородных комплексах и посёлках присутствуют и детсады, и школы, и даже крупные супермаркеты, однако высшие учебные заведения всё же располагаются чаще всего в центре мегаполиса.

Подводя итог, отметим:

- большой или не ограниченной в финансах семье лучше оставить свой выбор на загородном доме;
- молодожёнам, холостякам или повзрослевшим детям, желающим жить отдельно от родителей, стоит рассмотреть квартиру;
- загородный дом лучше приобретать, если в вашей семье есть хотя бы один автомобиль или работа находится недалеко от места проживания.

В целом хочется заострить внимание на том, что важно не то, где жить, а как и с кем. Пусть ваш дом будет вашей крепостью!

*<https://kak-eto-sdelano.ru/sravniyam-prozhivanie-v-kvartire-i-v-dome/>
(20.04.2019)*

1. What do you prefer living in a flat or in a private house?
2. What are advantages and disadvantages of living in a flat?
3. How do people call the living space in high-rise blocks?
4. Is it cheaper to buy a flat or a country cottage?
5. What can utility service providers do for your comfortable life?
6. What is important for residents of the metropolis?
7. What does developed infrastructure include?

8. Is safety an important factor for flat owners? Why?
9. What can you say about city environment?
10. Why do people try to avoid industrial zones when they buy flats?
11. What will you choose a cottage, a townhouse or an author's project?
12. What is the main advantage of a private house?
13. Would you like to have your own yard, a vegetable garden where you can plant vegetables and herbs?
14. Do you enjoy working in a flower garden?
15. How can you make your life unfathomable?
16. Are you friendly with your neighbours?
17. What are disadvantages of living in the country?
18. Are there some kindergartens, schools, large supermarkets in modern villages?
19. Explain the English proverb "My house is my castle?"
20. *Прочитайте предложенный проект реконструкции кампуса*

DVC Presents "The Future of the Commons"

In a presentation to the community in spring 2010, architects from the Steinberg Group were invited to the campus to share their final plans for Diablo Valley College's new Commons Project.

Building on the goals and objectives of the 2007 Facilities Master Plan, this project includes many campus-wide improvements like campus way finding, maximizing land use, improving pedestrian access, honoring the character of the DVC campus, creating new synergies and learning environments, welcoming the community, and providing universal access on campus. The project also replaces two of the oldest buildings on campus built in 1955 and 1956.

The project

This project includes four primary program elements including Student Services, Food Services, Culinary Arts instructional programs, and the central campus quad. The building program elements are subdivided into two similarly sized structures. The subdivision and particular displacement of the buildings responds to two primary campus-wide objectives. First, dividing the project into two structures

allows the work to proceed without a need for temporary relocation for any campus functions during the construction process. Second, the space created between the two structures is gently sloped to connect the two main central campus levels together. This public walkway connects the upper levels of the college to a single, larger central campus space, called the “Commons.”

The design

This design approach creates a true integration of building and landscape. Both structures are nestled into the hillside dividing the current quad level and the Language Arts level. As such, a “ground floor” is created on both upper and lower campus levels providing immediate access to visitors coming from either the east or west side of campus. The southern building will house the newly centralized Student Service functions of the college under one roof. The northern building will be the new home of Culinary Arts and the main campus Food Service facility and Cafeteria. The circulation and public functions within these buildings are oriented towards the central walkway to animate the experience of walking from one end of campus to the other, and to provide clear way finding for the building users.

The function

“The Commons” will serve as the college’s major open space and heart of the campus. It connects all major east west pedestrian circulation paths, as well as the two main campus entries from parking lots 1 and 8. The Commons has been carefully designed to balance flexibility for small and large gatherings, with meeting areas, eating areas, and an informal stage that provides for a variety of functions, as well as shade and cool areas for respite from the hot sun.

The sustainability

The entire project is a showcase for sustainable development, both inside and out. Many of the green features of the project are created out of synergies between the building and landscape including captured water runoff that is treated in storm water gardens, and re-using for plumbing within the building. This project is expected to achieve LEED Gold.

The funding

The Commons Project has been made possible by Contra Costa County voters through Bond Measure A passed in 2006. No program or state funds will be used in the construction of this project. This \$52 million dollar project consists of 86,000 square feet of new buildings and approximately three and a half acres of a newly developed Commons area.

<https://www.dvc.edu/college-support/projects/commons-project.html> (20.04.19)

21. Обдумайте и обсудите в группе следующие вопросы:

1. Have you ever heard about campuses?
2. What should architects take into account while working out a campus Master plan to make living of the students' community comfortable?
3. What services should a campus include?
4. What can you say about the campus design offered by the architects?
5. What are the best students' campuses in the world?

22. Составьте проект строительства кампуса для студентов КPCY

UNIT 4

BUILDING MATERIALS

1. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

accurate, aggregate, aluminum, asbestos, asphalt, bitumens, block, categories, cement, component, composition, compressive, condition, conglomerate, criteria, decorative, effective, element, functional, fundamental, gypsum, industrialization, inorganic, install, interior, laminated, linoleum, material, mechanically, metallurgical, mixture, modify, natural, ordinary, operating, physicomachanical, pigment, plastics, polymer, production, productivity, reduction, requisite, ruberoid, selection, specific, standard, synthetic, total, uniform, vary, variations

2. Подберите русские эквиваленты из второго столбца к следующим английским словам:

aggregate	высокая прочность
compressive load	ГИПС
crushed stone	заполнитель
fine aggregate	известь
gypsum	каменная (кирпичная) кладка
high rate of strength	мелкий заполнитель
high-alumina cement	нагрузка на сжатие
lime	обрабатываемость, удобоукладываемость
masonry	прочность на
moisture content	раствор
mortar	содержание влаги
resistance to	цемент с высоким содержанием глинозема
workability	щебень

3. *Переведите на русский язык следующие слова и словосочетания:*

according to processing and functional criteria; aluminum alloys; at the construction site; baseboard; be easy to handle; binders and aggregates; built-in building equipment; by shaping, drying, and firing raw material; carpentry products; cellular concretes; door and window units; degree of preparation before use; durability; exterior facing of buildings; extracting and processing stone; general-purpose materials; finishing materials; handrail; hard protective coating; heat-insulating materials interior facings for buildings; industrial wastes, in the form of almost totally prefabricated items; introduction of advanced methods; labor productivity; natural and artificial materials and products; lightweight concretes; lumber; natural masonry materials; organic binders and waterproofing materials; overlay; precast structural components and units; prefabricated housing construction; rapid-hardening cements; reductions in the overall expenditure of materials; reinforced-concrete panels; reinforced with asbestos fiber; rigid insulation; sealing materials; semifinished products; special-purpose materials; strip products; the variety of demands placed on building materials; synthetic paint and varnish materials timber and wood products; used chiefly for transparent enclosures; veneers; with a wide range.

4. *Прочитайте текст. Найдите ответ на вопрос, что автор вкладывает в понятие «повышение эффективности строительства»?*

Building Materials

Building materials are natural and artificial materials and products used for the construction and repair of buildings and structures. The many different purposes and operating conditions of buildings and structures account for the variety of demands placed on building materials and for the great diversity of available materials. Two basic categories of building materials are recognized: general-purpose materials, such as cement, concrete, and timber, used in the construction of various types of structures, and special-purpose materials, such as acoustic, insulating, and refractory materials. Depending on the degree of preparation before use, building materials are conventionally

classified as building materials proper, such as binders and aggregates, and structural components, which are prefabricated units and elements to be installed in buildings at the construction site, such as reinforced-concrete panels, toilet stalls, and door and window units.

Industrialization and the expansion of modern construction have led to an increased share of prefabricated structural components in the total production volume of building materials. The greater output of building materials in the form of almost totally prefabricated items makes it possible to increase labor productivity, decrease costs, and accelerate construction work.

Building materials may be divided into 11 basic groups according to processing and functional criteria.

Natural masonry materials. Natural masonry materials include rocks that have been mechanically processed, such as facing slabs, stone for blocks, crushed stone, gravel, and quarry stone. The introduction of advanced methods of extracting and processing stone, such as diamond sawing and heat treatment, substantially reduces labor requirements and costs in the preparation of masonry materials and increases the application of such materials in construction.

Timber and wood products. Timber and wood products are building materials derived mainly from the mechanical processing of wood, including round timber, lumber and semifinished products, parquet, and veneers. Lumber and semifinished products are used in modern construction on a wide scale for various carpentry products, built-in building equipment, and such strip products as baseboards, handrails, and overlays. Laminated-wood products hold promise for future use.

Ceramic materials and products. Ceramic materials and products are prepared by shaping, drying, and firing raw material containing clay. Such materials are used in diverse areas of construction because of their greater variety of types, high strength, and durability. They are used for walls (brick and ceramic blocks) and sanitary fixtures and as exterior and interior facings for buildings (ceramic tiles). A porous aggregate for lightweight concretes called keramzit is also included in this category.

Inorganic binders. Inorganic binders are primarily powdered materials, such as cements of various kinds, gypsum plaster, and lime, that form a plastic paste when mixed with water and then harden. Some of the most important inorganic binders are port-land cement and its varieties.

Concretes and mortars. Concretes and mortars are artificial masonry materials with a wide range of physicommechanical and chemical properties, obtained from a mixture of a binder, water, and aggregates. The principal type of concrete is cement concrete. Modern construction also uses products made of silica concrete. Lightweight concretes are ideal for large, precast structural components and units. Reinforced concrete – a combination of concrete with steel reinforcement – is used to increase the flexural strength and tensile strength of structural elements. Concretes and mortars are used directly at building sites (cast-in-situ concrete) and also in the factory preparation of structural units (precast reinforced concrete). Asbestos cement products and structural components, obtained from a cement slurry and reinforced with asbestos fiber, are also included in this category.

Metals. Rolled steel is the principal metal used in construction. Steel is used for the reinforcement in reinforced concrete, for building frameworks, bridge spans, pipes, and heating apparatus, and as a roofing material (roofing steel). Aluminum alloys are also used as structural and finishing materials.

Heat-insulating materials. Heat-insulating materials are used for insulation in the enclosing structures of buildings, in industrial equipment, and in pipes. The materials in this group are available in a large variety of compositions and structures. They include mineral wool and mineral-wool products, cellular concretes, asbestos materials, foam glass, expanded perlite and vermiculite, fiberboard, reed board, and Fibrolit (rigid insulation made from a mixture of wood-wool in Portland cement). The use of heat-insulating building materials in enclosing structures permits substantial weight reductions in such structures and reductions in the overall expenditure of materials and in the energy required to maintain temperatures in

buildings and structures. Some heat-insulating materials are also used as acoustic materials.

Glass. Glass, used chiefly for transparent enclosures, is produced in the form of ordinary sheet glass, glass for special purposes, including reinforced, tempered, and heat-insulating glass, and glass products, such as glass bricks, rolled glass sections, and glass facing tiles. The use of glass for the exterior facing of buildings, for example, sheet glass with a pigment on one side, holds promise for the future. Cast stone, sittals, and slag sittals are also included in this category because of their engineering characteristics.

Organic binders and waterproofing materials. Organic binders and waterproofing materials include bitumens and pitches, as well as asphalt concrete, Ruberoid, tar paper, and other materials that use bitumens or pitches as a base. Polymer binders used to obtain polymer concretes are also included in this category. Sealing materials in the form of mastic and elastic packing, for example, Gernit (a porous gasket made from a foam polymer with a hard protective coating), Izol (a sealing mastic), and Po-roizol (a porous, elastic, rubber strip or gasket made from worn-out tires), and waterproof polymer films are produced to meet the needs of prefabricated housing construction.

Polymer building materials. Polymer building materials constitute a large group of materials that use synthetic polymers as a base. They are noted for excellent mechanical and decorative properties and water and chemical resistance, and they are easy to handle. They are used mainly for floor coverings (linoleum, rubber linoleum, vinyl tiles), structural and finishing materials (laminated paper plastics, glass-reinforced fiber plastics, chipboard, decorative coatings), heat-and sound-insulating materials (foam and honeycomb plastics), and strip construction products.

Varnishes and paints. Varnishes and paints are finishing materials that use organic and inorganic binders as a base and form decorative and protective coatings on the surfaces of structures. Synthetic paint and varnish materials and water-emulsion paints with polymer binders are widely used.

Standards and improvements. The quality of construction materials is characterized by the grade rating. The grade rating is

the basic performance characteristic of the materials, for example, the strength, specific weight, or frost resistance, or a combination of several characteristics. The methods of testing building materials and the technical requirements placed on such materials are established by standards and by specifications.

The cost of building materials in modern construction accounts for approximately 60 percent of the total construction costs. Thus, further improvement in the efficiency of construction depends to a considerable degree on more extensive use of new, primarily lighter building materials, such as lightweight concretes, polymer materials, and metal structures that use light alloys, on increased production of special building materials, such as rapid-hardening cements and efficient heat-insulating materials, and on the use of better-quality traditional building materials. Important potential factors in lowering construction costs are the increased use of local building materials, for example, blocks made from such lightweight rocks as tuff and coquina, and the use of industrial wastes, such as metallurgical slags, ash from steam power plants, and woodworking waste materials. An important trend in the improvement of building materials is the development of efficient finishing materials that improve the architecture and appearance of buildings and structures.

<https://encyclopedia2.thefreedictionary.com/Building+Materials> (20.04.2019)

5. *Ответьте на следующие вопросы:*

1. What are building materials?
2. What artificial materials do you know?
3. How can you explain the great diversity of available building materials?
4. What basic categories of building materials are mentioned in the text?
5. What have industrialization and the expansion of modern construction led to?
6. What is the way of increasing labor productivity, decreasing costs, and accelerating construction work?
7. What criteria lie in building materials classification?
8. List the basic groups of building materials.

9. What methods of extracting and processing stone reduces labor requirements and costs in the preparation of masonry materials?

10. What timber and wood products are derived from the mechanical processing of wood?

11. Where are lumber and semifinished products used in modern construction?

12. How are ceramic materials and products prepared?

13. Where are ceramic materials and products used?

14. What are inorganic binders?

15. What types of concrete are described in the text?

16. Where are concretes and mortars used?

17. What is the principal metal used in construction?

18. What do heat-insulating materials include?

19. Why is the use of heat-insulating building materials so widespread?

20. What types of glass products do you know?

21. List the types of organic binders and waterproofing materials.

22. What do polymer building materials use as a base?

23. What is the role of varnishes and paints in constructions?

24. What characteristics are important for construction materials grade rating?

25. What does further improvement in the efficiency of construction depend on?

6. *Подберите английские эквиваленты из второго столбца к следующим русским словам:*

бетон	artificial
встроенный	baseboard
гравий	brick
долговечность	built-in
древесина	carpentry
известь	concrete
изоляционный	demand
искусственный	drying
кирпич	durability

кладочный	exterior
наружный	facing
обжиг	firing
облицовочный	gravel
огнеупорный	handrail
панельный	insulating
пиломатериалы	lime
плинтус	lumber
полуфабрикат	masonry
пористый	plaster
порода	porous
порошкообразный	powdered
поручни	prefabricated
распиловка	refractory
ремонта	repair
столярный	rock
сушка	sawing
требование	semifinished
формование	shaping
штукатурка	timber

7. Составьте таблицу строительных материалов на основе прочитанного текста.

8. Составьте предложения, соединяя правую и левую стороны таблицы:

1. Aluminum alloys	a) are artificial masonry materials with a wide range of physicomechanical and chemical properties, obtained from a mixture of a binder, water, and aggregates.
2. Building materials	b) are finishing materials that use organic and inorganic binders as a base and form decorative and protective coatings on the surfaces of structures.

3. Concretes and mortars	c) are natural and artificial materials and products used for the construction and repair of buildings and structures.
4. Gernit	d) are primarily materials, such as cements of various kinds, gypsum, and, that form a plastic paste when mixed with water and then harden.
5. Glass	e) are used as structural and finishing materials.
6. Heat-insulating materials	f) are used for insulation in the enclosing structures of buildings, in industrial equipment, and in pipes.
7. Inorganic binders	g) constitute a large group of materials that use synthetic polymers as a base.
8. Natural masonry materials	h) include bitumens and pitches, as well as asphalt concrete, Ruberoid, tar paper, and other materials that use bitumens or pitches as a base.
9. Organic binders and waterproofing materials	i) include rocks that have been mechanically processed, such as facing slabs, stone for blocks, crushed stone, gravel, and quarry stone.
10. Polymer building materials	j) is a porous gasket made from a foam polymer with a hard protective coating.
11. Rolled steel	k) is the basic performance characteristic of the materials, for example, the strength, specific weight, or frost resistance, or a combination of several characteristics.
12. The grade rating	l) is the principal metal used in construction.
13. Varnishes and paints	m) is used chiefly for transparent enclosures.

<https://encyclopedia2.thefreedictionary.com/Building+Materials> (20.04.2019)

9. Найдите в тексте английские эквиваленты следующим словосочетаниям:

армированные асбестовым волокном; битумы или смолы; быстровозводимое жилищное строительство; быстротвердеющие цементы; в большом разнообразии составов и структур; в виде практически полностью готовых изделий; включая круглую дре-

весину, внедрение передовых методов; высокая прочность; герметизирующие материалы; декоративные и защитные покрытия; железобетонные панели; кровельный материал; лаки и краски; материалы общего назначения; материалы специального назначения, такие как акустические, изоляционные и огнеупорные материалы; металлургические шлаки; механически обработаны; напольные покрытия; необходимые для поддержания температуры в зданиях и сооружениях; паркет и шпон; отходы деревообработки; пиломатериалы и полуфабрикаты; по технологическим и функциональным критериям; при заводской подготовке строительных конструкций; повышение эффективности строительства; природные и искусственные материалы; производительность труда; разнообразие требований, предъявляемых к строительным материалам; сборные блоки; с широким спектром физико-механических и химических свойств; теплоизоляционный материал.

10. Составьте предложения из предложенных слов:

1. characterized, the grade, by construction, of, the quality, rating, materials, is.

2. hold, future, laminated-wood, for, use, promise, products.

3. its, binders, some of, the most, port-land, varieties, important, inorganic, are, cement, and,

4. concrete, also, uses, of, construction, modern, products, silica, made.

5. are, alloys, finishing, used, aluminum, and, materials, also, structural, as.

6. construction, used, the, rolled, principal, is, metal, steel, in.

7. structures, and, a large, are, variety, in, of, the materials, this group, in, compositions, available.

8. group, synthetic, a base, materials, use, constitute, a large, materials, of, that, polymers, as, building, polymer.

9. building, improvement, further, degree, primarily, use, the efficiency, of construction, depends to, on more extensive, of new, lighter, materials, in, a considerable.

10. materials, are, important, of local, potential, use, factors, construction, costs, in lowering, the increased, building,

11. Составьте план пересказа текста «Building Materials».

12. Переведите предложения, обращая внимание на выделенные слова. Найдите пассивные конструкции, объясните употребление времен.

1. **Brush structures** are built entirely from **plant parts** and were used in primitive cultures. 2. These are built mostly with **branches, twigs and leaves, and bark**, similar to a beaver's lodge. 3. An extension on the **brush building idea** is the wattle and daub process in which clay soils or dung, are used to fill in and cover a woven brush structure. 4. This gives the structure more **thermal mass and strength**. 5. **Wattle and daub** is one of the oldest building techniques. 6. Ice has also been used for **ice hotels** as a tourist attraction in northern climates. 7. **Clay based buildings** are made directly with the **mud mixture**, or by stacking **air-dried building** blocks called **mud bricks**. 8. **Wet-laid, or damp**, walls are made by using the **mud or clay mixture** directly without forming blocks and drying them first. 9. **Larger amounts of clay** are usually employed in building with **cob**, while **low-clay soil** is usually associated with **sod house** or **sod roof** construction. 10. Homes **built with earth** tend to be naturally cool in the summer heat and warm in cold weather. 11. The **formed or compressed block** is then **air dried** and can be laid dry or **with a mortar or clay slip**. 12. Sand is used with **cement**, and sometimes **lime**, to make **mortar** for **masonry work** and plaster. 13. **Snow and occasionally ice**, were used for igloos and snow is used to build a **shelter** called a quinzhee. 14. **Rock** is a very **dense material** so it gives a lot of protection too; its main **drawback** as a material is its **weight and awkwardness**. 15. **Dry-stone walls** have been built for as long as humans have put one stone on top of another. 16. Eventually, **different forms of mortar** were used to hold the stones together. 17. **Stone buildings** can be seen in most major cities; some civilizations built **entirely** with stone such as the Egyptian and Aztec **pyramids** and **the structures of the Inca civilization**.

https://en.wikipedia.org/wiki/Building_material (20.04.2019)

13. Вставьте пропущенные предлоги и союзы: after, about, above, across, as, in, for, to, of, with, from, on, upon, within, into, while

There is a wide range ... materials, including artificial and natural, you can choose The Bahrain construction sector is witness ... great growth, and there are great opportunities ... investment ... sectors like transport, energy, commercial, etc. Some ... the construction materials that are widely used are ... follows.

Glass is a key construction material, and is widely used ... the world. Glass has insulating properties and is used ... cladding. It is also widely used ... facades ... buildings. Thanks ... strides ... the construction world, glass is also being evolved ... a sustainable and green option.

Concrete or reinforced form ... concrete is one ... the most commonly used materials ... the construction sector. Steel is incorporated ... concrete, making it very strong.

Steel is untouched .. mould or termites. Also, the material is resistant ... earthquakes, or has fewer risks ... case ... fire.

The material that has been used ... centuries is wood. The construction material is eco-friendly, and can easily be shaped ... any manner. Many kinds ... wood are used ... construction, ... timber ... teak and oak. There are also birch, pine and beach, used a lot ... the construction sector. Wood has the ability to absorb echoes so it is used a lot ... studios. ... all, wood has a certain aesthetic quality which makes it much sought-after.

One material that has been used ... time immemorial is stone - it has been the material ... choice ... centuries. When we talk ... stone, it takes different forms, including marble and granite. The latter is strong, resistant ... abrasions or acids ... the former is a soft, translucent material, used a lot when aesthetics matter. Marble is sought ... its elegance and beauty.

Mud bricks are timeless construction materials, made ... being dried ... the sun slowly. These are also energy-efficient and sustainable.

Vernacular and green architectural styles are catching ... a big way, ... the world. Newer materials are constantly being evolved so as to make buildings both stronger and more aesthetic and pleasing ... the eye.

<https://medium.com/business-directory/different-type-of-building-materials-and-their-uses-35a0f408551a> (20.04.2019)

14. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами

What Are the Different Types of Environmentally-Friendly Building Materials?

(Экологически чистые) building materials are generally (возобновляемый), sustainably produced, or (переработанный). Other (общие черты) shared by many environmentally-friendly (строительные материалы) include non-toxicity and (местное производство). Many of these materials are (органические по природе), such as bamboo and other (травы), (пробка), sisal, and (древесина) from sustainably managed forests. Other types of (экологически чистые) building materials are also (природный), such as (камень), (глина), and (бетон). Many recycled and (перепрофилированный) materials can also be seen as friendly to the (окружающая среда), since the (дальнейшее использование) of these (элементы) in new construction (может привести) in a lower overall (уровень загрязнения).

Some of the (основные факторы) that are considered (при строительстве) an eco-friendly structure are the (материалы) that will be used. One (основной источник) of environmentally-friendly (строительные материалы) for these projects are (возобновляемый) or (устойчивый) resources. (Устойчивость) refers to the fact that the (запас) of the particular building material (может регулироваться) over time so that it will not (заканчиваться). Some managed forests (можно считать) sustainable because the trees (были посажены) for the (конкретная цель) of harvesting building materials, and each time one (удалять) another one takes its place.

(В других случаях), sustainable materials such as bamboo (являться предпочтительным). This (древесный материал) is actually a grass and (может расти) quite fast. It is (как правило) better suited to flooring than structural purposes. For structural purposes, many buildings can utilize (природные материалы) such as (необожженный кирпич) and rammed earth. Many adobe and (утрамбованный грунт) structures that are (сотни лет) are still standing.

Other natural products, such as (камень) and (бетон), can be (полезный) for (строительная конструкция). These materials (обычно

считаются) to be more (экологически чистый) when they are locally sourced. This is because a (кусок камня) that is quarried (далеко) can take a (много энергии) to move to a (отдаленный) job site, resulting in an (увеличенный) amount of pollution. (В большинстве случаев), the most (экологически чистые строительные материалы) are sourced locally but (обрабатываться) or manufactured offsite.

A (разнообразие) of recycled (промышленный) materials may also be used in an environmentally-friendly (способ). By (вторичная обработка) or (перепрофилирование) materials such as (формовочный песок), the products of coal (сгорание) and (мусор, лом) from demolition, a building project can help the environment. (Превращая) used materials (такие, как эти) into new building materials can have a net (положительный эффект), since they might (в противном случае) just end up in a (свалка). (Несмотря на то, что) burning coal can (выделять) various pollutants into the (окружающая среда), the resulting (зола) can be used in an (экологически чистый способ) by sequestering it into materials such as concrete instead.

<http://www.wisegeek.net/what-are-the-different-types-of-environmentally-friendly-building-materials.htm> (20.04.2019)

15. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

16. Прочитайте текст, составьте таблицу «за» и «против» использования кирпича с современным городском строительстве.

Top 5 Reasons Why Bricks Are the Most Popular Building Material

The overall construction scenario in Denver seems to be dominated by the brick construction. If we consider some statistics then brick and frame constitute of nearly 90% of the construction material in Denver. But why is brick so popular and why does stucco and concrete not used predominantly in the construction of homes.

Here are a few compelling reasons that explain why bricks rule the construction market today:

- **Made from natural ingredients:** Bricks are made of natural materials like shale and clay, which are easily available. The whole

process to create a brick allows the clay particles to fuse together nicely which makes it significantly stronger as compared to other materials like concrete brick.

- **A proven track record:** Bricks have been used extensively in the past 5000 years and many civilizations like the Egyptians, Romans and Indus Valley have used them to create magnificent structures that last. This has helped create a consistent manufacturing process to create bricks of higher quality in the present day scenario.

- **They offer better fire and wind protection:** Clay is one of the primary ingredient of the bricks and it is tough to burn out, thus making it an excellent option for restricting fires in their tracks. Along with superior fire protection, bricks also offer excellent wind protection and can handle an object impact as hard as 35mph while holding their own against high speed winds of up to 80mph or more.

- **Better performance against moisture:** Bricks show a superior performance in moist conditions and can clad well with other materials used in the exterior construction. This makes them a perfect candidate to fight rotting, moulding, weeds, corrosion and pest's infestation on the whole.

- **Energy efficient and aesthetically appealing:** Bricks are a value for money and can work even when they are not painted. They are built to last and have proven their mettle in terms of aesthetic appeal as well. Thanks to its excellent thermal mass, bricks keep the home cool during hot days and helps you stay warm during the winters by radiating the heat back into the house.

Therefore, use the finest quality bricks to make your dream home and while you are at it, customize the interior and turn your home into a smart one.

<http://www.primedb.co/top-5-reasons-bricks-popular-building-material-denver-today/> (21.04.2019)

17. Обсудите в группе преимущества и недостатки строительства жилья из кирпича в условиях крупных городов. Приведите аргументы.

18. Вставьте пропущенные слова, используя правильную форму. Переведите текст:

air, alternative, animal, ancient, amount, architect, available, bamboo, between, century, choose, come, compress, construction, daub, determine, earth, energy, erosion, farther, feet, formwork, grass, health, impact, insulation, lessen, material, mixed natural (2), permeable, patronizing, product, project, raw, require, safe, straw, surface, undeniably, without

Green Building Materials that transform the Construction Industry

Sustainable materials do not ... negatively on the ... environment and to any living organism's Since most established building ... are man-made, it has a net-negative impact on the planet, people, and What we can do is to ... eco-friendly building The materials selected for a ... during the design stage ... how sustainable a structure is in the long run.

Straw bales were first used as a building material ... ago. It is used as thatch roofing or ... with earth in cob, wattle, and ... homes.

This material ... from grass but it is ... strong. In fact, some ... bale houses rise up to three storeys high. Nowadays, ... use straw bales to fill the interiors of a frame. Framed strawbale doesn't ... much concrete, wood, gypsum, plaster, fibreglass, or stone anymore. In addition, straw bales have high-grade ... properties: the most cost-effective insulation ... until now. It's also ... and breathable, allowing ... to permeate the structure ... seeping moisture.

Grasscrete is a green ... to concrete outdoor ... such as parking lots, walkways, sidewalks, and driveways. The material is... , thus draining stormwater, avoiding As its name says, ... can grow in spaces ... the Grasscrete blocks.

What's more ... than feeling natural dirt and rocks under your ... ? Rammed earth is an ... way of building wherein builders tamped down and ... gravel, sand, silt, and a small ... of clay into a For a more stable ... , builders add a small amount of cement or use rebar or Most of the ... used in the construction of rammed ... is in quarrying the ... material and transporting it to the site. We can ... the energy consumed by ... local quarries than importing from ... locations.

*<https://www.superdraft.com.au/blogs/green-building-materials-australia>
20.04.2019*

19. Прочитайте текст и вопросы к нему. Перескажите текст на английском языке.

Обычные дома из необычных материалов

Фраза «Мой дом – моя крепость!» известна, пожалуй, абсолютно всем. Но кто сказал, что эта «крепость» непременно должна быть построена из кирпича или, к примеру, пенобетона? Среди тысяч многоэтажных муравейников по всему свету все еще можно найти уникальные дома, построенные из необычных материалов.

Если вы любите благородные вина и оригинальные идеи, непременно посетите Южную Моравию. Этот чешский винодельческий регион знаменит не только своими алкогольными напитками, но и любопытной архитектурной постройкой – домом из винных пробок.

Его создатель – житель города Мутеница Мирослав Свобода. «Стройматериалы» для своего творения он прилежно копил в течение долгих лет, однако, в конце концов, все же вынужден был обратиться за помощью к местному виноделу. В итоге на строительство дома ушло более 180 тысяч винных пробок! Здание получилось не только красивым, но и функциональным: как известно, корок, из которого изготавливают пробки, обладает отличными теплоизоляционными свойствами.

Однако большей популярностью среди поклонников нестандартных стройматериалов пользуются не пробки, а стеклянные бутылки. Так, украинец Владимир Сыс построил невероятно красивую двухэтажную дачу из бутылок от шампанского. Стеклянная тара создает воздушную подушку, благодаря которой летом в доме прохладно, а зимой, напротив, тепло.

К подбору материалов «архитектор» подходил крайне ответственно: использовались только бутылки из-под советского шампанского. У импортного и стекло тоньше, и горлышко не такое широкое.

Еще одно впечатляющее «бутылочное» строение – «Ват Лан Куад», известный в народе как «Храм миллиона бутылок». Храм, а точнее, самый настоящий храмовый комплекс из двадцати с не-

большим строений, воздвигнут стараниями буддийских монахов неподалеку от Бангкока. Он включает в себя главный храм, молитвенные комнаты, зал для проведения церемоний и даже собственный крематорий.

На строительство «Ват Лан Куад» ушло более полутора миллиона бутылок из-под пива (в основном, немецкого «Heiniken» и чешского «Chang»), однако ни монахов, ни местных жителей необычный подбор стройматериалов не смущает. Напротив, все они с восторгом говорят о красоте храма, который переливается солнце, словно драгоценность. Кроме того, в отличие от многих других материалов, с течением времени бутылочное стекло не теряет свой цвет и дает отличное естественное освещение.

Крышечки от бутылок также нашли свое место в этом храме: из них выполнены не только настенные украшения, но и мозаика, изображающая самого Будду.

Бутылки – не единственный стройматериал, который можно найти практически под ногами. «Earthbag building» - это запатентованная европейская технология строительства домов... из земли! Точнее, из мешков с землей.

Все гениальное – просто. Поэтому для строительства вам понадобятся пара соседей, мешки из негниющего материала (например, полипропилена) и, собственно, сырая земля. Вместо цемента используется обычная колючая проволока, которая скрепляет и фиксирует мешки.

В соответствии с технологией Earthbag building наиболее прочными получаются куполообразные дома, напоминающие детские песочные куличики. Подобная форма устойчива и не требует дополнительных усилий по укреплению, однако, при желании, земляной дом можно «облицевать» глиной. Так и смотреться будет посимпатичнее.

Еще один необычный дом был возведен в Ирландии – на его строительство ушло 1,4 миллиарда евро. Причем в самом прямом смысле. Купюры были измельчены в бумажную стружку, которую затем спрессовали в строительные блоки.

Не спешите хвататься за сердце. На самом деле эти купюры достались безработному художнику Фрэнку Бакли совершенно

бесплатно – они были списаны из банка за ветхость. Поэтому, как ни парадоксально, дом из денег получился одним из самых дешевых домов в мире.

*<http://www.berlogos.ru/article/obychnye-doma-iz-neobychnyh-materialov/>
(20.04.2019)*

1. What unusual materials do you know?
2. Can you explain the English proverb “My home is my castle”?
3. Why are multi-storey buildings called anthills?
4. What is South Moravia famous for?
5. Have you ever heard about a house of wine corks.
6. Why did Mutenice Svoboda had to ask for help from a local winemaker?
7. Do crusts from which the plugs are made, have excellent thermal insulation properties?
8. What did Vladimir Sys build from bottles of champagne?
9. What is the role of an air cushion in the houses built of glass bottles?
10. What was the difference between the Soviet champagne bottles and import ones?
11. What material was the “Temple of a million bottles” erected by the efforts of Buddhist monks?
12. Were all the buildings of the temple complex (the main temple, prayer rooms, a hall for ceremonies and crematorium) built only of bottles?
13. Why do monks and the locals talk with delight about the beauty of the temple?
14. Does bottle glass lose its color over time?
15. What material was used for wall decorations in the temple and a mosaic depicting the Buddha himself?
16. What do you need for “Earthbag building” construction?
17. Why is ordinary barbed wire used instead of cement in “Earthbag building”?
18. Would you like to live in a dome-shaped house resembling children’s sandpipers?
19. What material is used to revet the earthen house with?

20. How many euros the construction of another unusual house in Ireland –take?
21. Why were those bills shredded into paper chips?
22. Is dilapidation of bills a reason for their being written off from the Bank?
23. Why did the house of money turn out to be one of the cheapest houses in the world?
24. What other examples of using unusual building materials have you heard?

20. *Прочитайте эссе.*

When designing a building, the most important factor is the intended use of the building rather than its outward appearance.

When architects design buildings, a reconciliation between outside looks and functions should be a top priority. Many recommend that purposes of a building rather than its outward form. In my opinion, I strongly agree with that idea even though appearance is important in many aspects.

A usage of a building is probably the most basis function of how that building performs or it is literally a failed project, and in several circumstances, an appropriate design can be based on a building's using purposes. For example, multiple universities have been constructed supported by certain locations or measurements of other figures such as population, weather, materials and so forth. A foremost goal of building universities is to deal well with educational systems that effectively matches with a performance should be more appreciated by how gorgeous they look externally.

However, an appearance also plays an essential role of making the surroundings look exquisite in general. Architecture is considered a part of art and represent for a development of those locations in a further perspective, it has become one of factors to determine living standard and relevant criteria such as economic situation, speed of development, culture and so on. For instance, a full-glasses skyscraper with a solid square design can express how modern a city it locates in.

In short, a performance of a building and its design must be integrated altogether; specifically, the intended use of a building must be significantly prioritized. It is apparent that it would consume more efforts, finance and time for achieving the job.

<https://testbig.com/ielts-writing-task-ii-ielts-academic-essays/when-designing-building-most-important-factor-intended-1> (21.04.2019)

21. Обдумайте и обсудите в группе следующие вопросы:

1. Is it true that the most important factor when designing a building is the intended use of the building rather than its outward appearance?
2. What is the top priority for architects when they design buildings?
3. What materials are the best for building educational institutions?

22. Напишите эссе о том, какие материалы вы бы использовали при строительстве учебных корпусов КРСУ и почему.

UNIT 5

BUILDING TECHNIQUES AND CONSTRUCTION SITE SAFETY

1. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

asphalt, assembly, bituminous, bulldozer, carrier, classify, combine, compaction, construction, contain, crane, detonation, diameter, dynamite, engine, electric, elevation, erection, excavate, front, install, lift, maneuverability, mixer, mobility, motor, productivity, rotary, tractor, traditional, tunnel, stability, static, stationary, vertical, wagon

2. Подберите русские эквиваленты из второго столбца к следующим английским словам:

adjustable shank	бурильная машина, буровой станок, перфоратор, дрель
audacious	взрыв
axle	взрывчатый
backhoe	влага
blast	выравнивание площадки, земляные работы, наносить проектную линию, градуировать
brittleness	горная порода
bucket loader	гусеничная установка, гусеничный подъемный кран
clamshell	движение вверх (бурового снаряда, поршня)
crane-shovel	дробомётный, ротор, колесный
crawler mounting	замешивание, мешалка, смесеприготовительное оборудование
derrick	земляные работы
dragline	канатно-ковшовый экскаватор, шагающий экскаватор, драглайн
drill	ковшовый погрузчик

equipment	мачтово-стреловой кран, кран-деррик
excavation	кран-лопата
explosive	крепление откосов (насыпи), мощение улиц, дорожное покрытие
grading	грузоподъемный крюк
haul	лопата
hook	оборудование
jackhammer	оригинальный, новаторский, смелый
kneading	ось
loading	отбойный молоток
loose	перевозка, перемещение грунта, буксировка, натяжное устройство
moisture	платформа, люлька подвешенного конвейера, каток, тягач, тележки
paving	поворотная платформа
penetrate	погрузка, загрузка
percussion	производительность
pile driver	проходить внутрь, пробивать, проникать
productivity	разрыв
rip	регулируемый хвостовик
rock	рыхлая порода, сыпучая горная порода
scraper	сваебойное средство, копёр для забивания свай
shovel	скребок, скребковый, скребковый транспортер
truck	ударный, взрыватель ударного действия
turntable	хрупкость
upstroke	экскаватор
wheel	экскаватор с грейферным ковшом, грейферный захват

3. *Переведите на русский язык следующие слова и словосочетания:*

audacious task; all-purpose machine, appropriate type and size of construction equipments; assemblies with various combinations; basic forces used in compaction; be connected in; blade-bucket; control units; combine the precise timing and flexibility; degree of difficulty; earth moving blade; job-site productivity of a project; different characteristics of; firing electric cap circuits; fixed frame; hand-held; generally; higher density; machines equipped with; multiple-units; loosening operation, materials of different weights and moisture contents; non-revolving cab, required amount of time and effort; revolving deck; single engine two-axle or three axle scrapers; to be familiar with; to be broadly classified; to provide mobility and stability; to be specialized for; to be referred to as, to be suitable for; to bring to the desired shape and elevation; to house a person; to facilitate the loading and hauling of earthwork; twin-engine all-wheel-drive scrapers; with different operating characteristics.

4. *Прочитайте текст, обращая внимание на наименования строительного оборудования.*

Construction Equipments for Different Purposes

The selection of the appropriate type and size of construction equipments often affects the required amount of time and effort and thus the job-site productivity of a project.

It is therefore important for site managers and construction planners to be familiar with the characteristics of the major types of equipment most commonly used in construction.

Construction Equipments for Excavation and Loading

One family of construction machines used for excavation is broadly classified as a *crane-shovel*. The crane-shovel consists of three major components:

- A carrier or mounting which provides mobility and stability for the machine.
- A revolving deck or turntable which contains the power and control units.

- A front end attachment which serves the special functions in an operation.

The type of mounting for all these machines is referred to as *crawler mounting*, which is particularly suitable for crawling over relatively rugged surfaces at a job site. Other types of mounting include *truck mounting* and *wheel mounting* which provide greater mobility between job sites, but require better surfaces for their operation.

The revolving deck includes a cab to house the person operating the mounting and/or the revolving deck. The types of front end attachments might include a crane with hook, clamshell, dragline, backhoe, shovel and piledriver.

A tractor consists of a crawler mounting and a non-revolving cab. When an earth moving blade is attached to the front end of a tractor, the assembly is called a bulldozer. When a bucket is attached to its front end, the assembly is known as a loader or bucket loader. There are different types of loaders designed to handle most efficiently materials of different weights and moisture contents.

Scrapers are multiple-units of tractor-truck and blade-bucket assemblies with various combinations to facilitate the loading and hauling of earthwork. Major types of scrapers include single engine two-axle or three axle scrapers, twin-engine all-wheel-drive scrapers, elevating scrapers, and push-pull scrapers. Each type has different characteristics of rolling resistance, maneuverability stability, and speed in operation.

Construction Equipments for Compaction and Grading

The function of compaction equipment is to produce higher density in soil mechanically. The basic forces used in compaction are static weight, kneading, impact and vibration. The degree of compaction that may be achieved depends on the properties of soil, its moisture content, the thickness of the soil layer for compaction and the method of compaction.

Some major types of compaction equipment include rollers with different operating characteristics.

The function of grading equipment is to bring the earthwork to the desired shape and elevation. Major types of grading equipment

include motor graders and grade trimmers. The former is an all-purpose machine for grading and surface finishing, while the latter is used for heavy construction because of its higher operating speed.

Construction Equipments for Drilling and Blasting

Rock excavation is an audacious task requiring special equipment and methods. The degree of difficulty depends on physical characteristics of the rock type to be excavated, such as grain size, planes of weakness, weathering, brittleness and hardness.

The task of rock excavation includes loosening, loading, hauling and compacting. The loosening operation is specialized for rock excavation and is performed by drilling, blasting or ripping.

Major types of drilling equipment are percussion drills, rotary drills, and rotary-percussion drills. A percussion drill penetrates and cuts rock by impact while it rotates without cutting on the upstroke.

Common types of percussion drills include a jackhammer which is hand-held and others which are mounted on a fixed frame or on a wagon or crawl for mobility. A rotary drill cuts by turning a bit against the rock surface. A rotary-percussion drill combines the two cutting movements to provide a faster penetration in rock.

Blasting requires the use of explosives, the most common of which is dynamite. Generally, electric blasting caps are connected in a circuit with insulated wires. Power sources may be power lines or blasting machines designed for firing electric cap circuits.

Also available are non-electrical blasting systems which combine the precise timing and flexibility of electric blasting and the safety of non-electrical detonation.

Tractor-mounted rippers are capable of penetrating and prying loose most rock types. The blade or ripper is connected to an adjustable shank which controls the angle at the tip of the blade as it is raised or lowered. Automated ripper control may be installed to control ripping depth and tip angle.

In rock tunneling, special tunnel machines equipped with multiple cutter heads and capable of excavating full diameter of the tunnel are now available. Their use has increasingly replaced the traditional methods of drilling and blasting.

Construction Equipments for Lifting and Erecting

Derricks are commonly used to lift equipment of materials in industrial or building construction. A derrick consists of a vertical mast and an inclined boom sprouting from the foot of the mast. The mast is held in position by guys or stiff legs connected to a base while a topping lift links the top of the mast and the top of the inclined boom.

A hook in the road line hanging from the top of the inclined boom is used to lift loads. Guy derricks may easily be moved from one floor to the next in a building under construction while stiff leg derricks may be mounted on tracks for movement within a work area.

Tower cranes are used to lift loads to great heights and to facilitate the erection of steel building frames. Horizon boom type tower cranes are most common in high rise building construction. Inclined boom type tower cranes are also used for erecting steel structures.

Construction Equipments for Mixing and Paving

Basic types of equipment for paving include machines for dispensing concrete and bituminous materials for pavement surfaces. Concrete mixers may also be used to mix Portland cement, sand, gravel and water in batches for other types of construction other than paving.

A truck mixer refers to a concrete mixer mounted on a truck which can transport ready mixed concrete from a central batch plant to construction sites. A paving mixer is a self-propelled concrete mixer equipped with a boom and a bucket to place concrete at any desired point within a roadway. It can be used as a stationary mixer or used to supply slipform pavers that can spread, consolidating and finishing a concrete slab without the use of forms.

A bituminous distributor is a truck-mounted plant for generating liquid bituminous materials and applying them to road surfaces through a spray bar connected to the end of the truck.

Bituminous materials include both asphalt and tar which have similar properties except that tar is not soluble in petroleum products. While asphalt is most frequently used for road surfacing, tar is used when the pavement is likely to be heavily exposed to petroleum spills.

<https://theconstructor.org/construction/equipment/construction-equipments-for-different-purposes/901/> (20.04.2019)

5. *Ответьте на следующие вопросы:*

1. What does the selection of the appropriate type and size of construction equipments affect?
2. Why is it important for site managers and construction planners to be familiar with the characteristics of the major types of equipment most commonly used in construction?
3. What equipments are used for excavation and loading?
4. What components does the crane-shovel consist of?
5. What is the crawler mounting suitable for?
6. What other types of mounting provide greater mobility between job sites?
7. What does the revolving deck include?
8. What parts does a tractor consist of?
9. What are different types of loaders designed to?
10. What do major types of scrapers include?
11. What types of construction equipments for compaction and grading are mentioned in the text?
12. What is the function of compaction equipment?
13. What does the degree of compaction that may be achieved depend on?
14. What is the function of grading equipment?
15. What do major types of grading equipment include?
16. What types of construction equipments for drilling and blasting are described in the text?
17. What is the task of rock excavation?
18. What are major types of drilling equipment?
19. What do common types of percussion drills include?
20. What does blasting require?
21. What blasting systems do you know?
22. What construction equipments for lifting and erecting are mentioned in the text?
23. What are tower cranes used to?
24. What machines do basic types of equipment for paving include?
25. How can a truck mixer be used?
26. What is a paving mixer?
27. What is a bituminous distributor?

28. How many types of construction equipments are described in the text?

6. Подберите английские эквиваленты из второго столбца к следующим русским словам:

агрегат	all-wheel-drive
блок питания	assembly
бурильный (отбойный молоток)	attachment
вращающийся	blade
выемка	compaction
лезвие	excavation
обеспечивать	jackhammer
поверхность	loading
погрузка	loosening
подвижность	mobility
полноприводной	mounting
приложение	power unit
рыхление	provide
рыхлитель	resistance
сопротивление	revolving
уплотнение	ripper
установка	surface

7. Составьте таблицу строительного оборудования на основе прочитанного текста. Какие другие типы строительного оборудования, не упомянутые в тексте, вы знаете.

8. Составьте предложения, соединяя правую и левую стороны таблицы:

A paving mixer is a self-propelled concrete mixer equipped	with a boom and a bucket to place concrete at any desired point within a roadway.
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A rotary drill cuts	by turning a bit against the rock surface.
Automated ripper control may be installed	to control ripping depth and tip angle.
Horizon boom type tower cranes are most common	in high rise building construction.
Major types of grading equipment	include motor graders and grade trimmers.
Major types of scrapers include	single engine two-axle or three axle scrapers, twin-engine all-wheel-drive scrapers, elevating scrapers, and push-pull scrapers.
One family of construction machines used for excavation	is broadly classified as a crane-shovel.
Other types of mounting include truck mounting and wheel mounting	which provide greater mobility between job sites, but require better surfaces for their operation.
The basic forces used in compaction	are static weight, kneading, impact and vibration.
The loosening operation is specialized for	rock excavation and is performed by drilling, blasting or ripping.
When an earth moving blade is attached to the front end of a tractor,	the assembly is called a bulldozer.

<https://theconstructor.org/construction/equipment/construction-equipments-for-different-purposes/901/> (20.04.2019)

9. Найдите в тексте английские эквиваленты следующим словосочетаниям:

безопасность неэлектрической детонации; быть знакомыми с основными характеристиками типов оборудования; вращатель-

но-ударные сверла; для наиболее эффективной обработки материалов различного веса и влажности; из-за своей более высокой скорости обработки; зависят от физических характеристик типа породы; задача выемки горных пород; использоваться для возведения металлоконструкций источник питания; каждый тип имеет различные характеристики; обеспечивать подвижность и стабильность; который может быть достигнут; оснащенные несколькими режущими головками; применение взрывчатых веществ; произвести более высокую плотность почвы; рабочие характеристики; свойства почвы; соединены в цепи с изолированными проводами; традиционные методы бурения; транспортировать готовый смешанный бетон; универсальная машина; устанавливаться на рельсах для перемещения в пределах рабочей зоны

10. Составьте предложения из предложенных слов и словосочетаний:

appropriate type; basic forces; be frequently used; bulldozer; earthwork; flexibility; higher operating speed; hook; job-site; major types of equipment; mounting; operation; power sources; penetrate; require; revolving deck; rock tunneling; scraper; suitable; to handle; turntable.

11. Опишите принцип работы одного из видов строительного оборудования.

12. Переведите предложения, обращая внимание на выделенные слова. Найдите пассивные конструкции, объясните употребление времен.

1. Heavy construction equipments are used for various purposes in large projects. 2. Selection of different types of heavy equipment depends on the size of the work and economy of the project. 3. This plate can be lowered and raised using hydraulic pistons. 4. Graders also called as motor graders are another type of equipment used in construction especially for the construction of roads. 5. Excavators are important and widely used equipment in construction industry. 6. This whole cabin arrangement can be rotatable up to 360o which eases the operation. 7. This is well useful for excavating trenches below the

machine level and using front bucket loading, unloading and lifting of materials can be done. 8. Wheel Tractor Scrapers are earth moving equipment used to provide flatten soil surface through scrapping. 9. When the front blade is lowered onto the ground and vehicle is moved, the blade starts digging the soil above the blade level and the soil excavated is collected in hopper through conveyor belt. 10. Trenchers or Trenching machines are used to excavate trenches in soil. 11. Wheeled loaders are widely used in sites while tracked or crawled loaders are used in sites where wheeled vehicles cannot reach. 12. Tower cranes are fixed cranes which are used for hoisting purposes in construction of tall structures. 13. Telehandlers are hoisting equipment used in construction to lift heavy materials up to required height or to provide construction platform for workers at greater heights etc. 14. Dump trucks are used in construction sites to carry the material in larger quantities from one site to another site or to the dump yard. 15. Another heavy equipment used in construction site is pile driving equipment in case of pile foundation construction.

<https://theconstructor.org/construction/types-of-soil-excavation-tools-mschines/12307/> (20.04.2019)

13. Вставьте пропущенные предлоги и союзы: ***after, about, above, across, as, before, by, during, from, in, into, for, to, of, on, over, upon, while, with, within***

Famous Inventions: History ... the Bulldozer

Mary Bellis

Some historians give credit ... an American named Benjamin Holt ... inventing the first “bulldozer” in 1904, and originally calling it a “caterpillar” or a crawler tractor. However, this would be misleading. ***Benjamin Holt did not build a Bulldozer.***

Expert Deas Plant ... the Gold Coast, Queensland, Australia commented that Benjamin Holt developed an endless chain tread ... his steam traction engine ... the end ... 1904. ... around the same time, the Hornsby company ... England converted one ... its wheeled steam traction engines ... a tracklayer [crawler] format based ... a patent granted ... their chief engineer. Neither ... these developments was

a bulldozer, both were purely and simply track-laying traction engines. However, the Hornsby's version was closer ... the bulldozers we know today ... that it was steered ... controlling power ... each track instead ... having a tiller wheel out ... front ... the tracks as Holt's machines did. Hornsby sold their patents ... Benjamin Holt around 1913-14.

First Came the Bulldozer Blade

It is not certain who invented the first bulldozer, however, the bulldozer blade was ... use ... the invention ... any tractor. It consisted ... a frame ... a blade at the front into which were harnessed two mules. The mules would push the blade ... a heap ... dirt dumped ... a cart and spread the dirt or push it ... a bank to fill a hole or gully. The fun part came when you wanted the mules to back up ... the next push.

Definition... a Bulldozer

The term bulldozer technically refers only ... a **shovel-like blade**, ... the years people have come to associate the term bulldozer ... the entire vehicle both blade and crawler tractor combined.

Deas Plant added that "There is also some debate ... who first fitted a bulldozer blade ... a track-laying tractor, perhaps the La Plante-Choate company, one ... the early manufacturers ... bulldozer blades."

Again, there are various claimants ... the title ... first to fit a power control ... one ... these bulldozer blades ... Robert Gilmour Le Tourneau probably being the leading contender.

The Caterpillar Tractor Company

The name caterpillar was coined ... a photographer working ... Benjamin Holt who was taking photos ... one ... Holt's track-laying or crawler tractors. Looking ... the machine's upside-down image through his camera lens, he commented that the top ... the track undulating ... its carrier rollers looked like a caterpillar. Benjamin Holt liked the comparison and adopted it ... the name ... his track-laying system. He was using it ... some years ... the formation ... the Caterpillar Tractor Company.

The Caterpillar Tractor Company was formed ... the merger ... the Holt company and their major competitor, the C. L. Best Gas Tractor Co., ... August 1925.

What Do Bulldozers and Bulls Have ... Common?

It appears that the word bulldozer came ... the habit of stronger bulls pushing their lesser rivals backward ... not-so-serious contests ... strength outside ... the mating season. These contests take ... a more serious note ... the mating season.

According to “Bulldozers” written ... Sam Sargent and Michael Alves: “Around 1880, the common usage of ‘bull-dose’ ... the United States meant administering a large and efficient dose ... any sort ... medicine or punishment. If you ‘bull-dosed’ someone, you gave him a severe whipping or coerced or intimidated him ... some other way, such as ... holding a gun ... his head. ... 1886, ... a slight variation ... spelling, a ‘bulldozer’ had come to mean both a large-caliber pistol and the person who wielded it. ... the late 1800s, ‘bulldozing’ came to mean using brawny force to push ..., or through, any obstacle.”

<https://www.thoughtco.com/history-of-the-bulldozer-1991353> (20.04.2019)

14. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами, сверяясь со словарем:

Construction Tools and Other Equipments

(Воздушный) compressors and (насосы) are widely used as the power (источники) for construction (инструменты) and (оборудование). Common (пневматический) construction tools include (дрель), (перфораторы), grinders, (пилы), wrenches, staple (пистолеты), sandblasting guns, and concrete (вибраторы). (Насосы) are used to supply (вода) or to dewater at construction sites and to provide (вода) jets for some (типы) of construction.

(Автоматизация) of Construction (оборудование)

The (внедрение) of (новое) mechanized (оборудование) in construction has had a profound (влияние) on the (стоимость) and (производительность) of construction (а также) the methods used for (строительство) itself. An exciting (пример) of innovation in this regard is the (внедрение) of computer microprocessors on (инструменты) and equipment.

(В результате), the performance and activity of (оборудование) can be (постоянно) monitored and adjusted for (улучшение). In

many (случаи), (автоматизация) of at least part of the construction (процесс) is possible and (желательный).

(Например), wrenches that (автоматически) monitor the elongation of (болты) and the applied torque can be (запрограммированный) to achieve the (наилучший) bolt tightness. On grading projects, (лазер) controlled scrapers can (произвести) desired cuts (быстрее) and more (точно) than wholly (ручной) methods.

In the mid-1980's, (некоторый) Japanese (фирмы) were successful in (получение) construction (контракт) for tunneling in the United States (используя) new equipment and methods.

(Например), the Japanese (фирма) of Ohbayashi (выиграть) the (канализация) contract in San Francisco because of its (передовой) tunneling (технология). When a (туннель) is (прорыт) through (мягкий) earth, as in San Francisco, it (должен быть) maintained at a few atmospheres of (давление) to keep it from caving in.

(Рабочие) must spend (несколько) hours in a (барокамера) before (вход) the tunnel and (еще несколько) in decompression afterwards. They can (оставаться внутри) for only three or four hours, (всегда) at considerable risk from (обвалы) and (удушье). Ohbayashi (использовать) the new Japanese "earth-pressure-balance" method, which (устранять) these problems. Whirling (лезвия) advance slowly, (прорезая) the tunnel.

The (рыхлый) earth temporarily (оставаться позади) to balance the (давление) of the compact earth (со всех сторон). (Между тем), prefabricated (бетон) segments are inserted and (соединены) with (водоустойчивый) seals to (выровнять) the tunnel. Then the (рыхлая земля) is conveyed (прочь).

This (новый) tunneling (метод) (позволить) Ohbayashi to bid \$5 million (ниже) the engineer's (оценка) for a San Francisco (канализация). The firm (завершить) the tunnel three months (раньше срока). In effect, an innovation (вовлекающий) new technology and method (привести) to considerable cost and time (экономии).

<https://theconstructor.org/construction/equipment/construction-equipments-for-different-purposes/901/> (21.04.2019)

15. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

16. Уточните по словарям значение следующих названий строительных инструментов: **hoe, Jack plane, ladder, Mason's square, measuring box, measuring wheel, pick axe, plumb bob, plumb rule, polisher, putty knife**. Соедините в таблице названия инструментов с их описанием.

Hoe	consists a thread whose ends are connected with two solid metal rods with pin points. It is used to level the alignment of brick course while brick laying.
Jack Plane	is also required in construction works. To check slab work, to transport material to the higher floors, to paint the walls etc.
Ladder	is used in the wood work to smoothen the surface of doors and windows etc.
Line and Pins	is used to achieve perfect right angle at the corner of masonry wall. It is "L" shape.
Mason's Square	is used to check the vertical line of wall whether it is perfect vertical or not. It contains a straight wood board with uniform edges. On its center a groove is provided in which plumb bob is situated. When the rule is placed vertically with the wall the plumb bob should be in the groove line otherwise the wall will not be vertical.
Measuring Box	is used to check the verticality of structures. It contains a solid metal bob connected to the end of a thread. It is also used inn surveying to level the instrument position.
Measuring Wheel	is used to excavate the soil but in this case the metal plate is provided with acute angle to the wooden handle.

Pick Axe	is used to excavate the soil. It is more suitable for hard soil which is quite difficult to dig with spade or hoe.
Plumb Bob	is used to level the putty finishing and also used to reduce the thickness of finish when it is more thick.
Plumb Rule	is used to measure the distances or lengths. It contains a wheel of known diameter, which record the number of complete revolutions from which the distance can be measured. It makes the work easier.
Polisher	is used to measure the quantity of sand and aggregate used for making concrete. It is of fixed dimensions so, aggregate need not to be weighted for every time.
Putty Knife	is used to smoothen the surface of tiles, wood works etc. The smoothening makes them shine and the process is called polishing.

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<https://theconstructor.org/construction/construction-tools-list-images-building/20238/> (21.04.2019)

17. Вставьте пропущенные слова. Переведите текст:

allow, also, another, anyone, access, accounting, actual, areas, barrier, basics, benefit, building, certified, clothing, common, comply, component, construction (2), course, cranes, dangers, design, earth, effectively, electrical, employees, end, equipment (2), equipping, façade, factors, falling, fence, fencing, form, gates, general, gloves, goal, hazardous, important, individuals (2), injury, intruders, issues, job, jurisdictions, lead, maintenance, meet, minimum, monitoring, necessary, operate, order, parts, pass, place, personnel, potential, process, project, protect, protection (2), provide, purpose, quickly, remain, resources, safety (3), shock, scaffolding, site (2), specific, standards (3), strategic, supply, system, switches, tasks, temporary, training, transport, ultimate, use (2), vary, weight, without.

What Is Construction Site Safety

Construction site ... is a form of occupational ... that relates directly to ... conditions and procedures put in ... at a construction The ... of these safety regulations and initiatives is to ... a measure of ... to the general public who may be in the ... vicinity of the construction while also protecting those who are involved in the ... building effort. There are several ... of consideration that go into a comprehensive ... site safety program, ranging from the ... of protective gear to making use of ... that meets industry ... for safety in design.

One of the ... of construction site safety is to contain the site so that ... who are not involved in the actual construction ... do not have easy ... to the area. One of the more ... ways to accomplish this ... is to put up ... fencing around the construction site. When properly installed, the ... is situated so that the potential for ... passing by to be injured by ... objects or flying debris is kept to a The fence also has the ... of protecting ... materials from theft during off-hours, since the ... is usually equipped with ... that can be locked and attached to ... systems to discourage

Along with keeping untrained ... off the site, construction ... safety also calls for ... workers with the ... necessary to avoid This is often in the ... of mandatory ... of safety goggles, ..., hard hats and other types of protective In addition to the clothing, equipment such as ... that is used to ... workers and supplies to ... areas along the ... of the building under construction must meet safety ... in terms of design, ... load, and other Roof edge ... is another ... of construction site safety, ... creating a ... what helps to minimize the ... for workers to fall during the ... of working on various ... along the roofline.

Construction site ... also has to do with the ... and general condition of the ... used at the site. ... equipment is usually inspected for ... such as missing guards that ... workers from moving ..., frayed cords, and other potential ... that could ... to severe electrical Kill ... for the power ... at the site must be installed in ... locations in ... to allow the power ... to be shut down ... in an emergency. Ladders must ... specific standards in terms of ... and use at the site. Most ...

set specific ... for the equipment used at a ... site, making it ... for contractors to ... with those standards in order to ... licensed.

Employee ... is also an ... component of construction site safety. Individuals who ... heavy equipment such as ... movers or ... must be properly trained and ... for the tasks. Teaching ... how to store and handle any ... materials used at the site is also very important to the Guidelines for ... for tools and equipment at the ... of the day are ... common at many building sites. While construction site standards may ... somewhat from one jurisdiction to ..., the ... goal is to protect ... working at the site and those who may ... nearby the site, and to ... the project to be completed ... injury to anyone.

<https://www.wisegeek.com/what-is-construction-site-safety.htm> (21.04.2019)

18. Обсудите вопросы, связанные с соблюдением техникой безопасности на строительных площадках на основе прочитанного текста.

19. Прочитайте текст и вопросы к нему. Перескажите текст на английском языке.

Техника безопасности на строительной площадке

Взаимоотношения между предприятием и рабочим-строителем, касающиеся техники безопасности, регулируются законодательством. Основным нормативно-правовым актом по данной сфере является закон, изданный правительством какой-либо страны.

Нарушение правил техники безопасности на строительной площадке может привести к тяжелым последствиям: от телесных повреждений до инвалидности и летального исхода. Поэтому соблюдению правил безопасности на стройплощадках отводится отдельное место. Во-первых, при поступлении на работу в строительную фирму или компанию каждый проходит первичный инструктаж, отметку о котором работодатель должен поставить в специальном журнале и других документах. Перед началом работ на стройплощадке каждый строитель проходит вводный инструктаж, в котором описываются условия работы, основные опасные факторы, правила. Кроме того, абсолютно все работники

строительной от разнорабочего до директора проходят периодический инструктаж с обязательной проверкой знаний в конце. По закону работник фирмы не имеет права приступать к работе без успешного прохождения этой проверки.

При работе должны использоваться качественные строительные материалы и металлоконструкции. Качество этих материалов должно соответствовать действующей инструкции по ТБ. Все используемые при строительстве, отделке или ремонте машины, механизмы и инструменты должны быть исправными. На стройплощадке должна быть установлена надежная звуковая или световая сигнализация, оповещающая об аварийной ситуации на производстве. Также значение имеет спецодежда строителя. Комбинезоны или другая строительная униформа в отличие от персональной одежды рабочего окрашена в яркие цвета, что позволяет вовремя и на большом расстоянии заметить человека, если ему грозит опасность.

Работы по распилу и сверлению материалов без защитных очков, использование токсичных лакокрасочных изделий без специальных масок, работа в запыленном помещении без респираторов недопустимы.

Кроме вышеперечисленных средств защиты строитель должен носить на голове защитную каску, одет в специальную нескользкую обувь, в случае работы на высоте он должен быть снабжен страховочными тросами, крепкими ремнями и карабинами. При работе с электроинструментами или проводкой под напряжением строитель должен носить диэлектрические перчатки.

Предприятие обязано оборудовать специальное помещение для обогрева сотрудников, которые в холодное время года работают на открытом пространстве или в неотапливаемом помещении.

Выполнение техники безопасности на стройплощадке является залогом не только успешной работы, но и здоровья и сохранения жизни всех сотрудников, которые принимают участие в строительстве.

<http://stroim.club/page/2015> (21.04.2019)

1. What are the relations between the enterprise and the construction worker concerning safety measures regulated by?
2. What is the main legal act in this area?
3. What can violation of safety regulations on the construction site lead to?
4. Why is compliance with safety rules on construction sites given a separate place?
5. What does everyone do when applying for a job in a construction company or a company?
6. When does each builder pass an introductory briefing?
7. What main hazards can take place at the building sites?
8. Who must be periodically instructed with a mandatory test of knowledge according to the law?
9. What must the quality of building materials and metal structures comply with?
10. All mechanisms and tools must be serviceable, must not they?
11. What should be installed on the construction site to notify an emergency at work?
12. Why are the overalls or other construction uniforms important?
13. What colours are overalls painted?
14. Is work on cutting and drilling materials without goggles, the use of toxic paint products without special masks, work in a dusty room without respirators unacceptable?
15. How must a builder be equipped when working with power tools?
16. Why is the enterprise obliged to equip the special room for employees?
17. Why is implementation of safety at the construction site so important?

<http://stroim.club/page/2015> (21.04.2019)

20. Прочитайте статью об обязанностях сотрудника по безопасности строительства.

Responsibilities of a Construction Safety Officer

by Juan Rodriguez

A construction safety officer ensures that construction workers are following established policies and safety regulations. A construction safety officer may take on additional roles and responsibilities, but their primary job is to help create safer construction sites. Construction safety officers work closely with the Occupational Safety and Health Administration (OSHA).

Safety Trends in Construction

The future of construction is shifting towards augmented reality, 3D models, building information modeling (BIM) and other technologies that could change the way a safety officer interacts at the workplace.

All the technology used in construction is helping safety officers detect and be aware of potential hazards earlier in the planning process, thus creating response plans that reduce the likelihood of accidents.

Some companies are using drones or unmanned aerial vehicles (UAV) to conduct safety audits and inspections instantaneously, allowing the safety officer to be as if they were next to the individual performing the task.

Policy and Regulation Maintenance

Safety officers develop, implement and enforce policies that reduce the risk of accidents. The safety officer determines what policies are needed and how to enforce them.

The safety officer is also responsible for keeping policies up-to-date, meeting the latest standards and establishing new ones from time to time as more and newer risks are discovered.

Having a safety officer working for your company or on a project can reduce the worker's compensation experience modification rate (EMR), which is used to assess the past cost and future risk of injuries, by 37% and bring the employee turnover rate down by almost 79%.

Site Safety Inspection

The safety officer is in charge of inspecting site conditions to determine if hazards are present and to establish procedures and policies to overcome those hazardous situations.

The safety officer looks for broken equipment, defective tools, and other potential hazards. The safety officer determines what type of personal protective equipment (PPE) is needed and makes sure that workers know how to operate and use tools and equipment.

Accident Investigation

The safety officer's main responsibility is to diminish or eliminate work-related accidents. But if an accident occurs, the safety officer will conduct a safety investigation to determine root causes, what procedures may have gone wrong, and to gather the evidence necessary to identify the cause of the accident.

Based on the investigation results, the safety officer will document findings and recommendations that should be followed to prevent the accident from happening again.

Some of the most common situations covered by safety officers are related to using faulty equipment and electrical-cord extensions, trenching and excavating, using formwork, and working on roofs and elevated surfaces.

Construction Safety Officer Training

A construction safety officer needs to be proactive, staying a step ahead of the group on safety and environmental hazards. In doing so, the officer trains all employees and identifies special requirements for employees.

The safety officer provides training to employees on safety topics required by OSHA. These include fire prevention plans, machine guarding, and hazardous materials handling.

Record Keeping

The safety officer is also responsible for reviewing and meeting all state and federal safety standard requirements for record-keeping. The safety officer also submits the OSHA form 300, which is a summary of all injuries that resulted in lost work time, restricted duties or job transfers.

They also ensure that the poster entitled "Job Safety and Health: It's the Law" and other documents are displayed in readily visible and accessible locations in the workplace, as required by OSHA.

Miscellaneous Responsibilities

A construction safety officer must also take care of the following duties:

- Verify that injury reports are submitted to related government agencies
- Perform emergency response drills
- Coordinate registration and removal of hazardous waste
- Receive reports from and responds to orders by Department of Labor inspectors
- Arrange for OSHA-mandated testing and/or evaluations

*<https://www.thebalancesmb.com/what-is-a-construction-safety-officer-844595>
(05.06.2019)*

21. Обдумайте и обсудите в группе следующие вопросы:

1. Are there any differences in safety trends in construction in our country and those described in the article?
2. What is policy and regulation maintenance in the Kyrgyz Republic?
3. What are the main principles of site safety inspection in our country?
4. How can accident investigation help prevent the accident from happening again?

22. Напишите краткое аргументированное сочинение о преимуществах и недостатках должности специалиста по безопасности в строительстве.

UNIT 6

SANITARY ENGINEERING IN THE MODERN TOWN

1. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

activated, agricultural, bacteria, carbohydrates, collection, commercial, degradation, ecosystems, engineering, form, generation, global, hygiene, inadequate, industrialized, initiatives, install, lipids, metals, microorganisms, minimize, modern, modified, municipal, natural, organic, pathogenic, population, practice, prevailed, proteins, quality, resources, resulting, scheme, standards, technologies, toilets, urbanized,

2. Подберите русские эквиваленты из второго столбца к следующим английским словам: \

achieve	влиять
affect	вместимость, емкость, подача, количество, нагрузка
capacity	вредный
compound	выброс вещества, удаление (отходов), спуск, слив
consume	достаточный
consumption	достигать
contaminate	загрязнение
density	загрязнять
discharge	изобретение
environment	исследовать
estuaries	качество
flushing	количество
harmful	лечение

invention	обладать
investigate	окружающая среда
pollution	осадок
possess	отработанная вода
purpose	плотность
quality	поглощать
quantity	поддерживать
regard	поставка
sewer	потребление
sludge	промывка, смывание, спускающий воду, промывающий
sufficient	рассматривать
supply	соединение
sustain	сточная труба
treatment	устье реки, дельта реки, эстуарии
wastewater	цель

3. *Переведите на русский язык следующие слова и словосочетания:*

after the original activated sludge process; appropriately dispose of; assimilative capacity; be accumulated; became a very significant and serious issue; be wasted; collection and treatment of wastewaters; contaminate the natural environment; define the type of integrated solid waste management system; degradation of water quality; direct discharge of domestic wastewater; does not necessarily mean; flushing toilets; global warming; greenhouse gases; high oxygen consumption of organic loading; high population density; highly depend on; industrialized and urbanized cities; large-scale sewer systems; modern sewerage systems; municipal areas; prevail all over the world; recycle generated wastes; regarding solid wastes management; sludge treatment technologies; sustain natural waters; wastewater management; water pollution;

4. Прочитайте текст.

Wastewater management engineering

Water pollution has been an issue ever since people began to live in cities or areas of high population density. The first signs of water pollution took the form of hygiene problems resulting from the pollution of drinking water in industrialized and urbanized cities like London in England in the early 1830's. Although the knowledge about pathogenic bacteria was inadequate at that time, people began to build large-scale sewer systems and install flushing toilets in order to remove human waste from the living environment as quickly as possible.

The direct discharge of domestic wastewater through the sewer systems into rivers caused water pollution in rivers and estuaries. Since water pollution at that time was firstly caused by high oxygen consumption of organic loading from domestic and industrial wastewater, treatment facilities for removing the so called BOD materials were investigated and introduced in practice. After the original activated sludge process was invented and applied in Manchester, England in 1914, the activated sludge processes with a lot of modified processes prevailed all over the world.

Most of the activities of modern societies highly depend on the supply of sufficient amount of clean water. A lot of water is consumed not only for daily life of the people but also for commercial, industrial and agricultural activities. Consumption of water, however, does not necessarily mean disappearance of water itself. In many cases, consumption of water means degradation of water quality. When water is once used for some specific purpose, the water contains such compounds as carbohydrates, proteins, lipids, metals, nutrients, or microorganisms and so on. Then the water is called wastewater since such water is not clean enough for use and has to be wasted. Since the quantity and quality of wastewaters from municipal areas usually exceed the assimilative capacity of receiving natural waters, collection and treatment of wastewaters is required to keep the water resources clean enough. Water quality standards of natural waters are established for this purpose and wastewater management is carried out to achieve the water quality standards, or to sustain natural waters as sound as possible.

After the invention of modern sewerage systems in the late 19th century, various treatment methods were developed to purify wastewaters. Since sludge is produced during the course of wastewater treatment, various sludge treatment technologies were also developed. In the section of wastewater management engineering, municipal wastewater treatment and sludge treatment technologies are introduced. Regarding solid wastes management, when materials possessed by persons for human activities are no longer useful and have lost their value for the owner, they are regarded as wastes. Such wastes may be so dirty or harmful that they contaminate the natural environment if discarded carelessly. Since the generation of wastes is unavoidable as long as human activity continues, it is important for sustainable development of society to minimize the generation of wastes and to appropriately dispose of or recycle generated wastes.

In addition to this new concern about the safety of drinking water, global warming has also emerged as a serious problem for future generations. The relationship between water pollution and global warming is rather complex, since some wastewater treatment processes may produce greenhouse gases, such as methane and nitrous oxide, while complex ecosystems in treatment systems and natural water environments could be affected by global warming.

*CIVIL ENGINEERING – Vol. I - Wastewater Management Engineering -
Tomonori Matsuo, Eiichi Nakamura, Masahiro Osako ©Encyclopedia of Life
Support Systems (EOLSS). - <http://www.eolss.net/sample-chapters/c05/E6-37-01-03.pdf> (21.04.2019)*

5. Ответьте на следующие вопросы:

1. When did water pollution become an issue for people?
2. Why did people begin to build large-scale sewer systems and install flushing toilets?
3. What caused water pollution in rivers and estuaries?
4. What was investigated and introduced in practice for removing the so called BOD materials?
5. When and where was the original activated sludge process invented?

6. What do most of the activities of modern societies highly depend on?
7. What is a lot of water consumed for?
8. What does consumption of water mean in many cases?
9. What compounds does water contain when it is once used for some specific purpose?
10. How is the water called after being used for some specific purpose?
11. Why is collection and treatment of wastewaters required?
12. What purpose are water quality standards of natural waters established?
13. When was modern sewerage system invented?
14. What is produced during the course of wastewater treatment?
15. What is regarded as wastes?
16. What is it important for sustainable development of society?
17. Has global warming emerged as a serious problem for future generations?
18. Is there any relationship between water pollution and global warming?

6. Подберите английские эквиваленты из второго столбца к следующим русским словам и словосочетаниям:

биохимическое потребление кислорода	wastewater
бытовой	waste
внедрять, вводить	treatment
выработка, формирование	sufficient
достаточный	sound
загрязнение	solid
заражать, загрязнять	sludge
исследовать	sewer
канализационный	quantity
количество	pollution
крупномасштабный	necessarily
лиман, устье реки	living environment

негативно сказываться, наносить ущерб	large-scale
неполноценный, недостаточный, не соответствующий требованиям	investigate
обработка, очистка	introduce
обязательно	install
осадок сточной жидкости	industrialized
отходы	inadequate
применять, распространять, употреблять	greenhouse
промышленно развитый	generation
прочный, крепкий, исправный, неповрежденный	flushing
прямой	estuary
сброс	domestic
смывной	discharge
среда обитания	direct
сточные воды	contaminate
твердый, крепкий	BOD
теплица, парник	apply
устанавливать	affect

7. *Озаглавьте параграфы текста*

8. *Составьте предложения из следующих слов и словосочетаний:*

- wastewater, technologies, municipal, are, of management, in the section engineering, introduced, wastewater treatment, and sludge treatment.
- as a problem, also, drinking water, generations, this, for future, new concern, about, serious, the safety of, global warming, has emerged, in addition to.
- to keep, treatment, clean, wastewaters, and, of, is, the water, collection, required, resources, enough.
- however, disappearance, itself, necessarily, water mean, of water, does not, of, consumption.
- amount, depend on, water, of, of modern, highly, the supply, of sufficient, the activities, of, societies, clean, most.

6. areas, of high, an issue, or, began, population, ever water, people, in cities, since, density, to live, pollution, has been.

7. and, into rivers, caused, of domestic, in rivers, estuaries, systems, discharge, water, the sewer, pollution, the direct, through, wastewater.

8. inadequate, was, that, about, knowledge, bacteria, time, the, pathogenic, at.

9. processes, the, prevailed, with, processes, modified, world, activated, a lot of, all, the sludge, over.

10. treatment, technologies. of, during, sludge treatment, wastewater, various also, the course, produced, developed, were, since, sludge, is.

9. Подберите английские эквиваленты выделенных слов в данных сочетаниях и переведите их.

высокое потребление кислорода; города или районы с высокой плотностью населения; проблемы гигиены, возникающие в результате загрязнения питьевой воды; крупномасштабные канализационные системы; были исследованы и внедрены в практику очистные сооружения; смывные туалеты; удалить человеческие отходы; сброс бытовых сточных вод; через канализационные системы; для удаления так называемых материалов БПК; превалировать во всем мире; снабжение достаточным количеством чистой воды; коммерческая, промышленная и сельскохозяйственная деятельность; ухудшение качества воды; превышать ассимиляционную способность природных вод; сбор и обработка сточных вод; стандарты качества природных вод; различные технологии обработки осадка; обращение с твердыми отходами; они загрязняют окружающую среду; образование отходов неизбежно; надлежащим образом утилизировать или перерабатывать образующиеся отходы; безопасность питьевой воды; взаимосвязь между загрязнением воды и глобальным потеплением; сложные экосистемы.

10. Сформулируйте главную мысль текста.

11. Составьте план пересказа текста.

12. Переведите предложения, обращая внимание на выделенные слова. Расставьте предложения в логическом порядке.

1. Skills within this field are usually employed for the primary goal of disease prevention within human beings by assuring a supply of healthy drinking water, treatment of waste water, and removal of garbage from inhabited areas. 2. Traditionally a branch of civil engineering and now a subset of environmental engineering, in the mid-19th century, the discipline concentrated on the reduction of disease, then thought to be caused by miasma. 3. Although sanitary engineering may be most associated with the design of sewers, sewage treatment, and wastewater treatment facilities, recycling centers, public landfills and other things which are constructed, the term applies equally to a plan of action to reverse the effects of water pollution or soil contamination in a specific area. 4. It is not concerned with environmental factors that do not have an immediate and clearly understood effect on public health. 5. Areas outside the purview of sanitary engineering include traffic management, concerns about noise pollution or light pollution, aesthetic concerns such as landscaping, and environmental conservation as it pertains to plants and animals. 6. This was accomplished mainly by the collection and segregation of sewerage flow in London specifically, and Great Britain generally. 7. Sanitary engineering, also known as public health engineering or wastewater engineering, is the application of engineering methods to improve sanitation of human communities, primarily by providing the removal and disposal of human waste, and in addition to the supply of safe potable water. 8. In some cases, considerations that fall within the field of social sciences and urban planning must be factored in as well. 9. Compared to (for example) electrical engineering or mechanical engineering which are concerned primarily with closed systems, sanitary engineering is a very interdisciplinary field which may involve such elements as hydraulics, constructive modelling, information technology, project design, microbiology, pathology and the many divisions within environmental science and environmental technology. 10. These and later regulatory improvements were reported in the United States as early as 1865.

https://en.wikipedia.org/wiki/Sanitary_engineering (22.04.2019)

13. Вставьте пропущенные предлоги

after, about, above, across, as, before, by, during, from, in, into, for, to, of, on, over, through, upon, while, with, within

What is a Sewage System?

A sewage system moves waste water and materials away ... their origin point so they may be disposed ... or treated. There are three main varieties ... modern sewer systems. Cities often have two types ... systems, the storm sewer, which moves clean water and refuse, and the effluent sewer which moves dirty water and human waste. ... areas where buildings aren't connected ... a city system there is the third type ... sewage system, the septic tank. This moves sewage away ... the home where it breaks down overtime.

Sewage systems rose ... the invention ... cities. ... a result, there are records ... sewage systems going back almost 5,000 years. While most ... these early systems were rudimentary ... modern standards, some ... these systems are still ... operation. The oldest sewage system still ... use is nearly 3,000 years old. This case is an exception rather than the norm, and most sewer systems are no more than 200 years old.

Most cities use two unconnected sewer systems, the storm sewer and the effluent sewer. Storm sewers collect rainwater and other clean waters. These sewers have the drainage grates commonly seen ... city streets. This system typically contains street refuse and dirt, but no actual sewage. ... many case, cities simply filter this water ... remove any garbage or refuse and allow it to drain, untreated, ... a local water source. Since the water is clean, this will typically have no environmental impact.

The other type ... sewer system is ... effluent. This is the actual municipal sewage system. This system collects human waste and wastewater ... homes and business and pumps it ... a treatment facility. This facility filters the water, removing solid substances such ... human waste and garbage. The water and solids go ... various processes where the harmful microorganisms ... the substances are removed, killed or consumed. Once the water's level ... harmful

bacteria is back ... natural levels, the water is allowed back ... the local system.

The third common sewage system is a septic tank. This type ... system is found ... location where there isn't an available hookup ... a city system. ... a septic tank, sewage is moved a short distance ... the building and held ... a tank. The solids float ... the bottom and are digested ... specialized organisms ... the tank. The remaining liquid, now much cleaner, drains out ... the surrounding land. Once there, natural processes remove the rest ... the waste ... the water returns ... the local system.

<https://www.wisegeek.com/what-is-a-sewage-system.htm> (22/04/2019)

14. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами:

Panel Heating

Panel Heating is a type of (отопление) in which (тепло) is transferred to a room from the (горячий), flat (поверхности) of heating (панели) placed in (стены), in partitions, and sometimes in the (пол). Heating (панели) are usually made of (бетон) and contain (встроенный) heating (элементы) consisting of (стальные трубы), through which a heat-carrying agent, such as (горячая вода) or, more rarely, (пар), is circulated. Electrically heated (панели) are also used. Such (панели) contain (провода) of high resistivity or are (облицованы) with a current-conducting (обои) or with (резина). The most (эффективное размещение) of (нагревательный) panels is in the (внешний) walls, (особенно) under (окна), where the (влияние) of descending (холодный воздух) currents is neutralized and the (температура) within the (ограждающий) structure is raised. (Теплопотери) from the (панели) is reduced by (использование) an intermediate (слой) of heat-insulating (материал), such as (пеностекло) or (пенобетон).

(Панельное отопление) is especially (подходящее) for (зданий) constructed from (сборный) wall panels. To keep (затраты труда) down, the (нагревающий) elements, (вместе с) the insulating (слой), are embedded in each (внешний) panel (во время) fabrication.

Compared to other (системы отопления), for example, those that use (радиаторы), panel heating is (чище), detracts less from the (внешний вид) of the room, uses less metal, and reduces (затраты на установку).

The first (системы отопления), with heaters made of (трубы) embedded in (бетон) were built in Saratov in 1905 by the Russian (инженер) Iakhimovich. V.A. (Спустя 10 лет) there were (уже) more than 100 such (системы) in Russian cities. (Тем не менее), there were no (дальнейший) developments in (панельное отопление), until the 1950's (I. F. Livchak and M. I. Kissin). (Панельное отопление) is used in modern (строительство) for (общественный) buildings and (предприятия) with high (санитарный) and aesthetic (стандарты).

<https://encyclopedia2.thefreedictionary.com/Panel+Heating> (22.04.2019)

15. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

16. Прочитайте текст, составьте таблицу «за» и «против» использования упомянутых в тексте типов вентиляционных систем.

Types of Ventilation Systems

Natural ventilation used to be the most common method of allowing fresh outdoor air to replace indoor air in a home. Today, it's usually not the best ventilation strategy, especially for homes that are properly air sealed for energy efficiency. Natural ventilation also usually doesn't provide adequate moisture control.

Natural ventilation occurs when there is uncontrolled air movement or infiltration through cracks and small holes in a home - the same ones you want to seal to make your home more energy efficient. Opening windows and doors also provides natural ventilation. Because of central heating and cooling systems, however, most people don't open windows and doors as often. Therefore, air infiltration has become the principal mode of natural ventilation in homes.

A home's natural ventilation rate is unpredictable and uncontrollable, so you can't rely on it to ventilate a house uniformly. Natural ventilation

depends on a home's air tightness, outdoor temperatures, wind, and other factors. Therefore, during mild weather, some homes may lack sufficient natural ventilation for pollutant removal. On the other hand, tightly sealed homes may have insufficient natural ventilation most of the time, while homes with high air infiltration rates may experience high energy costs.

Spot ventilation can be used to improve the effectiveness of natural ventilation. However, if both spot and natural ventilation together don't meet your home's ventilation needs, then you should consider a whole-house ventilation strategy. Spot ventilation improves the effectiveness of other ventilation strategies - natural and whole house - by removing indoor air pollutants and/or moisture at their source. Spot ventilation includes the use of localized exhaust fans such as those used above kitchen ranges and in bathrooms.

All of the fans, vents, and ventilation equipment in a home work together as a "ventilation system" to exchange indoor and outdoor air without wasting energy. Ventilation systems can be categorized as one of four types: exhaust, supply, balanced, and heat-recovery. The right ventilation system for a particular house depends upon the climate and the needs of the structure.

Exhaust ventilation systems are preferred in cold climates where they are less likely to draw moist air into the building. Oppositely, supply ventilation systems control moisture better in warm climates. Balanced ventilation systems work in both cold and warm climates, but they're more expensive to install. Heat-recovery systems exchange indoor air with outdoor air

Exhaust Ventilation Systems

Exhaust ventilation systems work by depressurizing the building. By reducing the inside air pressure below the outdoor air pressure, they extract indoor air from a house while make-up air infiltrates through leaks in the building shell and through intentional, passive vents.

Exhaust ventilation systems are most applicable in cold climates. In climates with warm, humid summers, depressurization can draw moist air into building wall cavities, where it may condense and cause moisture damage.

Exhaust ventilation systems are relatively simple and inexpensive to install. Typically, an exhaust ventilation system is composed of a single fan connected to a centrally located, single exhaust point in the house.

A preferable option is to connect the fan to ducts from several rooms (especially rooms where pollutants tend to be generated, such as bathrooms). Adjustable, passive vents through windows or walls can be installed to introduce fresh air rather than rely on leaks in the building envelope. However, passive vents may be ineffective because larger pressure differences than those induced by the ventilation fan may be needed for them to work properly.

Spot ventilation exhaust fans installed in the bathroom but operated continuously represent an exhaust ventilation system in its simplest form.

One concern with exhaust ventilation systems is that they may draw pollutants, along with fresh air, into the house. For example, in addition to drawing in fresh outdoor air, they may draw in the following:

- Radon and molds from a crawlspace
- Dust from an attic
- Fumes from an attached garage
- Flue gases from a fireplace or fossil fuel-fired water heater and furnace.

This can especially be of concern when bath fans, range fans, and clothes dryers (which also depressurize the home while they operate) are run when an exhaust ventilation system is also operating.

Exhaust ventilation systems can also contribute to higher heating and cooling costs compared with energy recovery ventilation systems because exhaust systems do not temper or remove moisture from the make-up air before it enters the house.

Supply Ventilation Systems

Supply ventilation systems work by pressurizing the building. They use a fan to force outside air into the building while air leaks out of the building through holes in the shell, bath- and range-fan ducts, and intentional vents.

As with exhaust ventilation systems, supply ventilation systems are relatively simple and inexpensive to install. A typical system has a fan and duct system that introduces fresh air into usually one - but preferably several - rooms that residents occupy most (for example, bedrooms, living room, kitchen). This system may include adjustable window or wall vents in other rooms.

Supply ventilation systems allow better control of the air that enters the house than do exhaust ventilation systems. By pressurizing the house, these systems discourage the entry of pollutants from outside and prevent back drafting of combustion gases from fireplaces and appliances. They also allow air introduced into the house to be filtered to remove pollen and dust or to be dehumidified.

Supply ventilation systems work best in hot or mixed climates. Because they pressurize the house, they have the potential to cause moisture problems in cold climates.

In winter, the supply ventilation system causes warm interior air to leak through random openings in the exterior wall and ceiling. If the interior air is humid enough, some moisture may condense in the attic or parts of the exterior wall, where it can promote mold, mildew, and decay.

Like exhaust ventilation systems, supply ventilation systems do not temper or remove moisture from the air before it enters the house. Thus, they may contribute to higher heating and cooling costs compared with energy recovery ventilation systems. Because air is introduced in the house at discrete locations, outdoor air may need to be mixed with indoor air before delivery to avoid cold air drafts in winter. An in-line duct heater is another option, but it will increase operating costs.

Balanced Ventilation Systems

Balanced ventilation systems, if properly designed and installed, neither pressurize nor depressurize a house. Rather, they introduce and exhaust approximately equal quantities of fresh outside air and polluted inside air, respectively. A balanced ventilation system usually has two fans and two duct systems. It facilitates good distribution of fresh air by placing supply and exhaust vents in appropriate places.

A typical balanced ventilation system is designed to supply fresh air to bedrooms and common rooms where people spend the most time. It also exhausts air from rooms where moisture and pollutants are most often generated, such as the kitchen, bathrooms, and the laundry room.

Like both supply and exhaust systems, balanced ventilation systems do not temper or remove moisture from the air before it enters the house. They do, however, use filters to remove dust and pollen from outside air before introducing it into the house. Also, like supply ventilation systems, outdoor air may need to be mixed with indoor air before delivery to avoid cold air drafts in the winter. This may contribute to higher heating and cooling costs.

Balanced ventilation systems are appropriate for all climates; however, because they require two duct and fan systems, they are usually more expensive to install and operate than supply or exhaust systems.

Energy Recovery Systems

Energy recovery ventilation systems usually cost more to install than other ventilation systems. In general, simplicity is key to a cost-effective installation. To save on installation costs, many systems share existing ductwork.

Complex systems are not only more expensive to install, but often they are also more maintenance intensive and consume more electric power. For most houses, attempting to recover all of the energy in the exhaust air will probably not be worth the additional cost. Also, these types of ventilation systems are still not very common.

In general, you want to have a supply and return duct for each bedroom and for each common living area. Duct runs should be as short and straight as possible. The correct size duct is necessary to minimize pressure drops in the system and thus improve performance. Insulate ducts located in unheated spaces, and seal all joints with duct mastic.

Also, energy recovery ventilation systems operated in cold climates must have devices to help prevent freezing and frost formation. Very cold supply air can cause frost formation in the heat exchanger, which can damage it. Frost buildup also reduces ventilation effectiveness.

In addition, energy recovery ventilation systems need to be cleaned regularly to prevent deterioration of ventilation rates and heat recovery, and to prevent mold and bacteria from forming on heat exchanger surfaces.

<https://www.hometips.com/how-it-works/ventilation-systems-exhaust.html>
(24.04.2019)

17. Обсудите в группе преимущества и недостатки различных типов вентиляционных систем, используемых в КР

18. Вставьте пропущенные слова в текст, предварительно уточнив их по словарям. Переведите текст.

appliances, artificial, boiler, building, centralized, chemical, cleaner, commonly, complete, conditions, consumers, consumption, control, conversion, cooking, cylinders, delivery, dependable, device, difficult, dirty, discovery, distances, distribution, economy, efficiency, enterprise, equipped, establishments, expansion, facilities, fuel, fuels, gas, gases, generally, generators, high, industrial, installations, large, liquefied (2), local, locations, low-rise, materials, metal, motor, multistory, municipal, municipal-utility, natural, natural-gasoline, nonferrous, outside, permitted, petroleum, pipelines (2), piping systems, placed, populated, pressure, proportion, railroad, reduces, refineries, regulator, relieves, residential, resources, rural, sanitary-hygienic, settlements, small, special, steam, storage, supplied, systems, tank, thermal, transporting, underground, users, usually, utilization, valuable, ventilating, vessels.

Gas Supply

Gas Supply is the organized ... and ... of gas fuel to serve the needs of the national... . The following ... are supplied: natural gas ... , manufactured gases produced during the ... reprocessing of solid and liquid fuels in gas ... and heat-treatment furnaces, and liquefied gases produced at natural-gasoline and oil ... during the refining of ... and by-product gases.

Natural gas is a very ... and economical type of fuel and is a ... raw material for the ... industry. The importance of manufactured gases,

which are less economical and more ... to process, has been declining since the ... of large natural gas ... in the former USSR.

The largest ... of natural gas are ... power plants and enterprises of various ... sectors (such as machine ..., ferrous and ... metallurgy, and the building ... industry). In the ... economy, gas is used for ... food (in residential buildings and public catering ...), for the technical needs of municipal-utility service enterprises, for the heating of water to be used for municipal-utility and ... purposes, and for the heating, ..., and air conditioning of ... and public buildings.

Cities and industrial enterprises are ... with natural and ... gases by main gas ..., which transport the gas from the ... of its extraction or production to the The delivery of gas to a ... area or an industrial location takes place at a distribution ... point, where the gas ... is reduced to a level ... by the appropriate standards, and the ... is then fed into the municipal gas distribution system or to an industrial Gas supply systems may be either ... or decentralized. In centralized ..., gas is distributed to consumers by a municipal gas distribution system; in decentralized systems, it is distributed from ... gas-generating plants or through the use of ... (tanks or ...) filled with ... gas. Local systems are ... used to supply gas to residential buildings and ... enterprises in small towns and ..., especially those located at considerable distances from main gas pipelines.

Liquefied gases are transported from ... refineries to consumers by means of ... , railroad ... cars, tank trucks, and cylinders; ... ships, called gas tankers, have been developed for ... liquefied gases by sea. ... gas is delivered over long ... mainly by ... tank cars. Liquefied-gas cylinders are ... transported in specially ... vehicles.

Underground gas ... reservoirs are created near ... cities for ... operation of the gas supply system.

... residential buildings and ... municipal enterprises are ... supplied with gas from gas cylinder ... consisting of one or two liquefied-gas cylinders, a pressure ..., and gas units and ... (stove or water heater). Installations with one cylinder are ... in the same location as the gas ... or appliance they serve; two-cylinder units are installed in a ... cabinet located on a wall on the ... of the building. ... buildings are supplied with gas from grouped gas-cylinder installations

and installations consisting of ... tanks. Gas is delivered to the gas appliances in buildings by gas ... similar to those used for supplying ... gas.

The supply of gas to cities, ... populated areas, and industrial enterprises and the further ... of natural gas ... in other areas raise the level of industrial ... and improve the living ... of the population. At the same time, the ... efficiency of gas devices and appliances ... fuel ... for technological and municipal-utility needs, lowers the ... of other types of ... in the fuel balance, and ... railroad and water transportation The ... of heat and electric power plants and ... rooms from ... ash bearing fuels to gas and the use of liquefied gas as a fuel for ... transport help to provide ... air in cities.

The Great Soviet Encyclopedia, 3rd Edition (1970-1979). © 2010 The Gale Group, Inc. All rights reserved. <https://encyclopedia2.thefreedictionary.com/Gas+Supply><a href=»<https://encyclopedia2.thefreedictionary.com/Gas+Supply>>>Gas Supply (24.04.2019)

19. Прочитайте текст и вопросы к нему. Перескажите текст на английском языке.

Обработка осадка сточных вод

Осадок сточных вод или твердые вещества биологического происхождения, представляет собой жидкую смесь из воды и твердых отходов, созданных в качестве побочного продукта в процессе очистки сточных вод. Сточные воды образуются, когда дома, промышленные предприятия и фермы сбрасывают воду, загрязненную отходами из туалетов, побочных продуктов производственных процессов, душевых кабин, раковин и помещений забоя скота. Во избежание ухудшения качества воды или водных организмов, проводится очистка воды для ее восстановления, удаления запаха и удаления загрязняющих веществ из сточных вод, прежде чем они могут быть безопасно выпущены в окружающую среду. Как правило, осадок очистки сточных вод образуется во время первичной и вторичной стадий этого процесса.

Первичный этап работы со сточными водами включает сбор сточных вод в отстойнике, после того, как сточные воды поступа-

ют по трубам в септик или очистное сооружение. В баке тяжелым твердым телам дают опускаться на дно, а плавучие твердые тела поднимаются к верхней части, создавая как лежащий на поверхности, так и основной слой твердых материалов с прослоенной между ними водой. Верхний слой осадка обычно состоит из жиров, масел и других жиров, в то время как нижний слой содержит тяжелые твердые вещества, такие как фекалии человека или животных. Сырой, первичный осадок затем сгущается и удаляется из резервуара, прежде чем его переварят бактерии.

Вода после первичной стадии обработки движется дальше ко внешней окружающей среде или ко вторичной биологической стадии обработки точных вод. Поскольку основная часть твердых веществ была удалена на первом этапе, отходы, растворенные в оставшейся воде трудно удалить с помощью фильтра. Биологические системы сточных вод включают введение простых бактерий в сточные воды, позволяющие организмам питаться растворимыми органическими отходами. По мере усвоения и извлечения отходов из воды, бактерии производят твердый субпродукт, который можно извлечь с помощью фильтра. После дальнейшей обработки, эти твердые вещества биологического происхождения иногда можно использовать в качестве удобрения.

Поскольку сточные воды часто содержат токсичные химические вещества и патогены, важное значение приобретает безопасное удаление осадка очистки сточных вод методом анаэробного сбраживания. Анаэробное сбраживание происходит в герметичном резервуаре, где бактерии питаются органическим веществом в осадке в бескислородной среде. Газы, образующиеся в результате этого процесса, иногда могут быть использованы для создания биогаза, возобновляемого источника энергии, используемого в отоплении или двигателе транспортного средства.

На небольших площадках для обработки осадка может также использоваться компостирование. Метод компостирования состоит в перемешивании отходов с органическими материалами с высоким содержанием углерода, такими как древесина или солома, что позволяет аэробным бактериям переваривать их. В результате процесса образуется тепло и биологические жидкости,

которые иногда могут быть использованы в качестве удобрения, в зависимости от содержания отходов и местных правил.

1. How important is wastewater treatment sludge?
2. What is a byproduct of sewage treatment processes?
3. When is sewage produced?
4. What is performed in order to prevent damage to the outside water quality or aquatic life?
5. Can water be safely released into the environment without restoring its clarity, removing odor, and removing contaminants from wastewater?
6. What are the primary and secondary steps of the wastewater treatment sludge process?
7. Through what is wastewater conducted into a septic tank or a treatment facility?
8. How is a sedimentation tank used?
9. What happens with the heavy solids and the floatable solids in the tank?
10. What layers with water sandwiched between are created in a sedimentation tank?
11. What is the top layer of sludge composed of?
12. What does the bottom layer contain?
13. Why is the raw, primary sludge thickened and removed from the tank?
14. Where does the water from the primary stage move?
15. Why is biological wastewater treatment used?
16. Is it easy to remove the dissolved waste in the leftover water with a filter?
17. Do simple bacteria introduced to the wastewater feed on the soluble, organic waste?
18. How can a solid by-product produced by the bacteria be removed?
19. When can biosolids be sometimes used as fertilizer?
20. What does sewage often contain?
21. Where does anaerobic digestion occur?
22. What environment do bacteria feed on the organic matter in the sludge?

23. Where is renewable energy source used?
24. Can composting be used to treat sludge?
25. What does composting mix waste with?

*<https://www.wisegeek.com/what-is-wastewater-treatment-sludge.htm>
(24.04.2019)*

20. *Прочитайте описание работы инженера-технолога по очистке воды .*

Wastewater engineers

Wastewater engineers use a variety of skills and must have knowledge of mechanical and environmental engineering. They are required to perform tasks and demonstrate knowledge in design, mathematics, English, construction, physics, chemistry, biology, management, and personnel. Wastewater engineers must have skills in complex problem solving, critical thinking, mathematics, active listening, judgement, reading comprehension, speaking, writing, science, and system analysis. Typical work activities include problem solving, communication with management and staff, gathering information, analyzing data, evaluating standards and complying with them, and communicating with others in the field.

Wastewater engineers perform these activities by combining their knowledge and skills to perform tasks. These tasks are to understand computer-aided design programs, and to conduct studies for the construction of facilities, water supply systems and collection systems. They may design systems for wastewater collection machinery, as well as system components. They may perform water flow analysis, and then select designs and equipment based on government and industry standards. Some are involved with a specific area of concern such as waste collection or the maintenance of waste water facilities and stormwater drainage systems within an area. Others cover a broader scope of activities that might include maintenance of the public water supply, collection of residential yard waste program, disposal of hazardous waste, recycling strategies and even community programs where individuals or businesses «adopt» an area and either maintain it themselves or donate funds for doing so.

Wastewater engineers may also map out topographical and geographical features of Earth to determine the best means of collection, design pipe and pumped collection systems, and design treatment processes for collected wastewater.

wastewater.https://en.wikipedia.org/wiki/Sanitary_engineering (24.04.2019)

21. *Обдумайте и обсудите в группе следующие вопросы:*

1. What knowledge must a wastewater engineer demonstrate?
2. What skills must a wastewater engineer have?
3. What do typical work activities of a wastewater engineer include?
4. How do wastewater engineers perform these activities?
5. Define and critically analyze, assess, and evaluate various urban drainage and sewerage schemes, and wastewater, sludge and solid waste treatment process technologies
6. Contribute to the development of innovative approaches to the provision of adequate and sustainable sanitation services in developing countries and countries in transition.

<https://www.un-ihe.org/msc-programmes/specialization/sanitary-engineering-1> (24.04.2019)

22. *Напишите мини-эссе о «Почему я стал (не стал) инженером-технологом по очистке воды».*

UNIT 7

POWER PLANT ENGINEERING

1. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

alternating, aspect, atmosphere, barrier, base, business, calculation, category, central, civil, collect, community, construction, control, demonstrate, design, directly, distance, diversion, division, dynamic, effectively, electric, electron, elevation, energy, engineering, focused, function, generation, generator, hydroelectric, ideal, individual, industry, mechanical, manner, mile, operation, panel, peak, phase, potential, production, progressively, public, reactor, rotational, scale, specification, station, technically, technology, thermal, theoretical, transmission, turbine, utilized

2. Подберите русские эквиваленты из второго столбца к следующим английским словам:

accessible	быть направленным
apply	введение
assess	водохранилище
be focused	возобновляемый
complicate	выделять, развиваться, превращаться
create	генерировать
current	деление
demand	домашнее хозяйство
dependent	доступный
distribution	зависимый
diversion	завод
division	исследование
efficiently	источник
enlist	место хранения
evolve	мощность, сила, применить силу, фактор

existing	насос
facility	объект, помещение, установка, технические средства
force	объемный, пространственный
generate	ответственный, отвечающий, дежурный
household	отклонение, отвод, отвлечение
impoundment	оценивать
improvement	передавать
in charge	подходящий
introduction	подъем, вверх, тяжелый
nuclear	потомство
plant	прародители
power	привлекать, зачислять, включать в список
progenitors	применять
progeny	промежуток, интервал, отрезок времени
pump	распределение
renewable	создавать
require	солнечный
research	существующий
solar	ток, текущий
source	требовать
span	требовать
storage	улучшение
suitable	усложнять
sustainable	устойчивый
transmit	энергия, производительность, мощность, сила
uphill	эффективно
volumetric	ядерный

3. Переведите на русский язык следующие слова и словосочетания:

become progressively more complicated; be effectively applied; being built; by burning fuel; calm hours; coal powered steam engine; consumption of fuel; create electricity via prime mover; creating a barrier, direct current; division of power engineering; engineers are in charge of calculating flow rates; enlist the help of several fields; engineering aspect of power plant management; facets of engineering; fan blades; fluid dynamics; generation of power; household power production; hydroelectric plant; interdisciplinary field, introduction of more renewable/sustainable forms of energy; it wasn't until the introduction; nuclear power plant; nuclear reactor's heat; physical pollutants; power distribution; power grid; power plant engineering; power plants were up and coming; planning and construction of power plants; power station engineering; previously possible; provide electrical power; photovoltaic cells; pressure differentials; public body; release electrons; rotational motion; semiconductor materials; solar plant, steam turbine, "the engineering and technology required for the production of central station electric power"; the field is focused; to be transmitted over distances; three-phase power; uneven heating; using the force of water to turn generators; water is pumped uphill; with the same goal.

4. Прочитайте текст.

Power plant engineering. Types of power plants.

Power plant engineering or power station engineering is a division of power engineering, and is defined as "the engineering and technology required for the production of central station electric power." The field is focused on the generation of power for industries and communities, not for household power production. The field is an interdisciplinary field, using the theoretical base of both mechanical and electrical engineering. The engineering aspect of power plant management has evolved with technology and has become progressively more complicated. The introduction of nuclear technology and the progression of other existing technologies have allowed power to

be created in more ways and on a larger scale than was previously possible. The assignment of different types of engineers to the design, construction, and operation of a new power plant is dependent on the type of system being built such as whether it is a nuclear power plant, hydroelectric plant, or solar plant.

Power plant engineering got its start in the 1800s when small systems were used by individual factories to provide electrical power. Originally the only source of power came from DC, or direct current, systems. While this was suitable for business, electricity was not accessible for most of the public body. During these times, the coal powered steam engine was costly to run and there was no way for the power to be transmitted over distances. Hydroelectricity was one of the most utilized forms of power generation as water mills could be used to create power to transmit to small towns.

It wasn't until the introduction of AC, or alternating current, power systems that allowed for the creation of power plants as we know them today. AC systems allowed power to be transmitted over larger distances than DC systems allowed and thus, large power stations were able to be created. One of the progenitors of long-distance power-transmission was the Lauffen to Frankfurt power plant which spanned 109 miles. The Lauffen-Frankfurt demonstrated how three-phase power could be effectively applied to transmit power over long distances. Three-phase power had been the progeny of years of research in power distribution and the Lauffen-Frankfurt was the first exhibition to show its real potential for future use.

The engineering knowledge needed to perform these tasks enlists the help of several fields of engineering including mechanical, electrical, nuclear and civil engineers. When power plants were up and coming, engineering tasks needed to create these facilities mainly consisted of mechanical, civil, and electrical engineers. These disciplines allowed for the planning and construction of power plants. But when nuclear power plants were created it introduced nuclear engineers to perform the calculations necessary to maintain safety standards.

All power plants are created with the same goal: to produce electric power as efficiently as possible. However, as technology has evolved, the sources of energy used in power plants have evolved as well.

The introduction of more renewable/sustainable forms of energy has caused an increase in the improvement and creation of certain power plants.

Hydroelectric power plants generate power using the force of water to turn generators. They can be categorized into three different types; impoundment, diversion and pumped storage. Impoundment and diversion hydroelectric power plants operate similarly in that each involves creating a barrier to keep water from flowing at an uncontrollable rate, and then controlling the flow rate of water to pass through turbines to create electricity at an ideal level. Mechanical engineers are in charge of calculating flow rates and other volumetric calculations necessary to turn the generators at the electrical engineers specifications. Pumped storage hydroelectric power plants operate in a similar manner but only function at peak hours of power demand. At calm hours the water is pumped uphill, and then is released at peak hours to flow from a high to low elevation to turn turbines. The engineering knowledge required to assess the performance of pumped storage hydroelectric power plants is very similar to that of the impoundment and diversion power plants.

Thermal power plants are split into two different categories; those that create electricity by burning fuel and those that create electricity via prime mover. A common example of a thermal power plant that produces electricity by the consumption of fuel is the nuclear power plant. Nuclear power plants use a nuclear reactor's heat to turn water into steam. This steam is sent through a turbine which is connected to an electric generator to generate electricity. Another example of a fuel burning power plant is coal power plant. Coal power plants operate in a manner similar to nuclear power plants in that the heat from the burning coal powers a steam turbine and electric generator. There are several types of engineers that work in a Thermal Power Plant. Mechanical engineers maintain performance of the thermal power plants while keeping the plants in operation. Nuclear Engineer generally handles fuel efficiency and disposal of nuclear waste; however, in Nuclear Power Plants they work directly with nuclear equipment. Electrical Engineers deal with the power generating equipment as well as the calculations.

Solar power plants derive their energy from sunlight, which is made accessible via photovoltaics (PV's). Photovoltaic panels, or solar panels, are constructed using photovoltaic cells which are made of semiconductor materials that release electrons when they are warmed by the thermal energy of the sun. The new flow of electrons generates electricity within the cell. While PV's are an efficient method of producing electricity, they do burn out after a decade and thus, must be replaced; however, their efficiency, cost of operation, and lack of noise/physical pollutants make them one of the cleanest and least expensive forms of energy. Solar power plants require the work of many facets of engineering; electrical engineers are especially crucial in constructing the solar panels and connecting them into a grid, computer engineers code the cells themselves so that electricity can be effectively and efficiently produced, and civil engineers play the very important role of identifying areas where solar plants are able to collect the most energy.

Wind power plants, also known as wind turbines, derive their energy from the wind by connecting a generator to the fan blades and using the rotational motion caused by wind to power the generator. Then the generated power is fed back into the power grid. Wind power plants can be implemented on large, open expanses of land or on large bodies of water such as the oceans; they simply rely on being in areas that experience significant amounts of wind. Technically, wind turbines are a form of solar power in that they rely on pressure differentials caused by uneven heating of the earth's atmosphere. Wind turbines solicit the knowledge from mechanical, electrical, and civil engineers. Knowledge of fluid dynamics from the help of mechanical engineers is crucial in determining the viability of locations for wind turbines. Electrical engineers ensure that power generation and transmission is possible. Civil engineers are important in the construction and utilization of wind turbines.

https://en.wikipedia.org/wiki/Power_plant_engineering (25.04.2019)

5. Ответьте на следующие вопросы:

1. How is power plant engineering defined?
2. What is power station engineering focused on?

3. What theoretical base is used by engineering?
4. What does the assignment of different types of power plant engineers depend on?
5. When did power plant engineering get its start?
6. Where did the source of power come from originally?
7. Why was this source of power unsuitable for most of the population?
8. Why was hydroelectricity one of the most utilized forms of power generation?
9. What did AC systems allow to do?
10. What did the Lauffen-Frankfurt demonstrate?
11. What academic disciplines allow for the planning and construction of power plants?
12. Why is it necessary to perform the calculations to maintain safety standards?
13. What types of power plants are described in the text?
14. What goals are power plants created with?
15. What caused an increase in the improvement and creation of certain power plants?
16. What do hydroelectric power plants use for generating power?
17. What are the principles of impoundment, diversion and pumped storages work?
18. How do thermal power plants create electricity?
19. What do nuclear power plants use to turn water into steam?
20. What types of engineers work in a Thermal Power Plant?
21. Where do solar power plants derive their energy from?
22. What is the cleanest and least expensive form of energy?
23. Where can wind power plants be implemented?
24. What do wind turbines rely on?
25. What knowledge do wind turbines solicit?

б. Подберите английские эквиваленты из второго столбца к следующим русским словам и словосочетаниям:

быть дорогостоящим	alternating current
внедрение более возобновляемых / неиссякаемых форм энергии	are split into two different categories

внедрение ядерной технологии	at an uncontrollable rate
во многом схожи	be costly to run
водохранилище с насосным питанием	coal power plants
водяные мельницы	coal powered steam engine
гидроаккумулирующие и водоотводные электростанций	common example
делятся на две категории	controlling the flow rate of water
единственный источник энергии	direct current
знания, необходимые для выполнения этих задач	electricity was not accessible
инженерный аспект	engineering and technology
искусственный водоем, резервуар	engineering aspect
использовались отдельными заводами	fuel burning power plant
используя вращательное движение	household power production
необходимые для поддержания стандартов безопасности	impoundment
неравномерный нагрев	impoundment and diversion power plants
одна из наиболее используемых форм	introduction of more renewable/sustainable forms of energy
одним из предшественников	introduction of nuclear technology
они могут быть разделены на	is very similar
паровой двигатель, работающий на угле	knowledge needed to perform these tasks
переменный ток	necessary to maintain safety standards
перепады давления	one of the most utilized forms
полупроводниковые материалы	one of the progenitors
постоянный ток	only source of power

проектирование электрических станций, энергетика	operate in a similar manner
производить электроэнергию максимально эффективно	photovoltaics
производства электроэнергии для домашних хозяйств	power distribution
работают аналогично	power grid
развитие других существующих технологий	power plant engineering
распределение энергии	pressure differentials
регулирование расхода воды	produce electric power as efficiently as possible
с неконтролируемой скоростью	progression of other existing technologies
техника и технология	pumped storage
типичный пример	semiconductor materials
трехфазная мощность	than was previously possible
угольная электростанция	they can be categorized into
устройства для преобразования световой или солнечной энергии в электроэнергию, фотовольтаика	three-phase power
чем это было возможно ранее	uneven heating
электрическую сеть	using the rotational motion
электричество было недоступно	water mills
электростанция, работающая на топливе	were used by individual factories

7. Озаглавьте параграфы текста

8. Составьте предложения из следующих слов и словосочетаний:

1. created, the same, are, all, possible, power, efficiently with, goal, electric power, as... as, plants, to produce.

2. the force, to turn, power, generate, water plants, power, of, generators, hydroelectric, using.

3. and pumped, into, storage, three, be categorized, types, impoundment, can, they, diversion, different.
4. into, to turn, power, use, plants, reactor's, a nuclear, water, heat, steam, nuclear.
5. supply, United, 50%, plants, power, of the States' , electricity, coal, generate.
6. Plant, several, of, Thermal, work, types, there, engineers, in a, Power, are, that.
7. and disposal, handles, generally, waste, efficiency, of nuclear, engineer, fuel.
8. within, electricity, the new, generates, the cell, of electrons, flow.
9. power, the work, plants, of many, require, of engineering, solar, facets.
10. back, is, grid, power, fed, the generated, the power, then, into.

9. *Подберите английские эквиваленты выделенных слов в данных сочетаниях и переведите их.*

атомная электростанция; быть нацеленным на производство электроэнергии для промышленности; ветряные турбины; внедрение систем переменного тока; внедрение ядерной технологии; возобновляемые/неиссякаемые источники энергии; гидроаккумулирующие и водоотводные электростанции; изготовлены из полупроводниковых материалов; один из прародителей дальней передачи энергии; используя силу воды для поворота генераторов; паровой двигатель; передача энергии на расстоянии; поддержание стандартов безопасности; перепады давления, вызванные неравномерным нагревом атмосферы Земли; подключать генератор к лопастям вентилятора; позволять планировать и строить электростанции; показать свой реальный потенциал для будущего применения; построены с использованием фотоэлементов; по техническим требованиям инженеров-электриков; превращение воды в пар; привлечь инженеров-ядерщиков для выполнения расчетов; производить электроэнергию максимально эффективно; развиваться вместе с технологией; регулирование расхода воды; системы постоянного тока; сохранять в рабочем состоянии; становиться все более сложным; тип строящейся системы; сто-

имость эксплуатации; трехфазная мощность может быть эффективно применена; удалением ядерных отходов; электростанции, работающие на топливе; энергетика получила свое начало; энергогенерирующее оборудование.

10. Сформулируйте главную мысль текста.

11. Составьте план пересказа текста.

12. Переведите предложения, обращая внимание на выделенные слова. Расставьте предложения в логическом порядке.

1. However, transmission and distribution are harder problems since returns on investment are not as easy to find.

2. By the middle of the 20th century, electricity was seen as a “natural monopoly”, only efficient if a restricted number of organizations participated in the market; in some areas, vertically-integrated companies provide all stages from generation to retail, and only governmental supervision regulated the rate of return and cost structure.

3. The commercial distribution of electric power started in 1882 when electricity was produced for electric lighting.

4. Since the 1990s, many regions have broken up the generation and distribution of electric power to provide a more competitive electricity market.

5. The electric power industry covers the generation, transmission, distribution and sale of electric power to the general public and industry.

6. In the 1880s and 1890s, growing economic and safety concerns lead to the regulation of the industry.

7. What was once an expensive novelty limited to the most densely populated areas, reliable and economical electric power has become an essential aspect for normal operation of all elements of developed economies.

8. While such markets can be abusively manipulated with consequent adverse price and reliability impact to consumers, generally competitive production of electrical energy leads to worthwhile improvements in efficiency.

https://en.wikipedia.org/wiki/Electric_power_industry (25.04.2019)

13. Вставьте пропущенные предлоги

after, about, as, before, between, by, during, from, in, for, to, of, on, throughout, under, upon, with

The proposal to site a large power station ... the south bank ... the River Thames ... Battersea ... 1927 caused a storm ... protest that raged ... years. Questions were raised ... Parliament ... pollution which might harm the paintings ... the nearby Tate Gallery and the parks and “noble buildings of London”.

Now Battersea Power Station is one ... the best loved landmarks ... serving London ... electricity for 50 years.

... the UK ... the 1920s electricity was supplied ... numerous private companies who built small power stations ... individual industries ... some ... the surplus power generated going ... the public supply. There was a bewildering variety ... incompatible systems, high cost and jealous competition ... the numerous companies. This chaotic situation caused Parliament to decree that electricity generation should be a single unified system ... public ownership. It was to be another 30 years ... the electricity supply was nationalised.

... the interim the formation ... the London Power Company was a response ... private owners to delay the imposition ... public ownership. Set up ... 1925 it took up Parliaments recommendation that electricity generation should be ... fewer, larger power stations. This led directly ... the building ... the first super station, to produce 400,000 kilowatts, ... Battersea.

Sir Giles Gilbert Scott was commissioned to design the building. His other buildings include Liverpool Cathedral, Bankside Power Station, Waterloo Bridge and the classic red telephone box.

The building is ... fact a steel girder frame and Sir Giles designed the exterior brick cladding and the tower-like bases ... the four chimneys. It is the largest brick building ... Europe.

... effect Battersea is two power stations and the familiar silhouette ... four chimneys did not appear ... 1953 and ... the first 20 years the building had a long rather than four-square appearance, ... a chimney ... each end. But even this appearance caused positive comments, described ... a temple ... power and to rank ... a London landmark

equal ... St. Paul's Cathedral. ... 1939 a survey ... celebrities voted it their 2nd favourite building when canvassed ... the Architects Journal.

The construction of "B" Station was begun a few months ... World War 2 to bring Battersea ... a total capacity ... 509 megawatts and the 3rd largest power station in the U.K.

This huge project, begun ... the London Power company 30 years ..., was to be completed ... the British Electric Authority when the electricity supply was nationalised ... 1948. Battersea "B" station began operating ... 1953 and had the highest thermal efficiency ... all power stations and provided one fifth ... London's total electricity supplies, (28 other stations generated the rest).

... the whole ... its life Battersea has been a symbol ... the electricity industry ... the media and the general public alike.

<http://www.batterseapowerstation.org.uk/hist1.html> (25.04.2019)

14. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами:

Presidents of Uzbekistan and Russia launched nuclear power station construction project

A (торжественное) event dedicated to (запуск) the construction (проект) of the First (атомная электростанция) in Uzbekistan was held at Uzexprocentre.

The (президент) of the Republic of Uzbekistan Shavkat Mirziyoyev and the President of the (Российская Федерация) Vladimir Putin pressed a symbolic (кнопка) to launch the (проект).

Specialists of Uzatom (агентство) and Rosatom State (корпорация) announced the start of engineering (изыскания) to select (площадки) for (строительство) of the first NPS in Uzbekistan, (в режиме видеоконференции).

“(Сегодня) we are opening a new (стратегическое направление) of cooperation with the Russian Federation – (развитие) of nuclear (энергетики). This project (формирует) a new cluster, its (реализация) will serve to (дальнейшее) development of (промышленный) potential and creation of (новые рабочие места) in different sectors of the country's (экономика)”, – said the President of Uzbekistan.

(В соответствии) with the (указ) of the President of the Republic of Uzbekistan, the Atomic Energy (развитие) Agency under the (Кабинет Министров) has been established for (мирное использование) of nuclear energy.

Ан (договоренность) on construction of (атомная электростанция) in Uzbekistan has been reached with Rosatom Corporation, which (занимает первое место) in the world in terms of (количество) and (масштаб) of foreign projects – construction of 34 power units in 12 countries. NPS will consist of two WWER-1200 (энергоблоки) “3+” units with a (мощность) of 1,200 MW each, which are the most (современные и безопасные).

(Атомная) power is (экологически) friendly. Nuclear power stations do not form (вредные) carbon monoxide. (В результате) of launching (атомная электростанция), the economy of (значительный) volumes of (природный) gas will be achieved. Carbon dioxide (выбросы) will be reduced to 14 million tonnes and (азот) oxides by 36,000 tonnes.

Uzbekistan, (в соответствии с) its international (обязательства) as a member state of the IAEA, focuses on (ядерная безопасность).

All international (требования) for construction of the (атомная электростанция) will be (строго) enforced in (реализация) the project.

IAEA experts (поддержали) Uzbekistan’s (инициатива) on implementation of the (Национальная программа) on (использование) nuclear energy for (мирные цели) and expressed (готовность) to provide all possible (содействие) in its (реализация).

In accordance with the (договоренности) reached earlier, it (было принято решение) to open a (филиал) of the National (Исследовательский) Nuclear University “Moscow (инженерно-физический) Institute” in Tashkent. In the next (учебный год), the (филиал) of MEPHI will (принимать) first students.

Rosatom (корпорация) has already organized (обучение) 30 Uzbekistan’s students in this (всемирно-известный) University this (учебный год), in Moscow.

(Студенты Узбекистана), having studied at MEPHI, will become (высококвалифицированный) specialists, will become able to (обес-

печить) safe operation of (атомная электростанция). The (атом) will indeed be (мирный) in their (надежный) hands.

http://www.gratanet.com/en/news/details/power_station_construction_project
(25.04.2019)

15. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

16. Составьте таблицу «за» и «против» заключения соглашения между КР и РФ о сооружении атомной электростанции в Бишкеке.

17. Обсудите в группе преимущества и недостатки различных типов электрических станций, используемых в КР

18. Вставьте пропущенные слова в текст, предварительно уточнив их по словарям. Переведите текст.

accidents, achievable, actions, adequate, adopted, amendments, appropriate, authorities, benchmarks, collaboration, consequences, considerable, consultations, contracting, cooperation, countries, definition, design, diplomats, dynamic, document, emergency, extraordinary, force, frequent, Fukushima, fulfillment, future, government, implementation, in-depth, individual, industry, influence, instrument, interest, international, knowledge, levels, lifetime, long-term, maintain, measures, mechanism, meetings, Ministers, missions, Nuclear, obligations (2), obliges, organizational, performance, periodically, preparedness, principles, power, protection, push, regular, resources, respects, responsibility, responses, robust, safety, sanction, Secretariat, series, signatories, States, strengthening, suggestions, systematic, teams, timely, transparency, unanimously, verification, worldwide

IAEA Convention on Nuclear Safety

The IAEA Convention on ... Safety (CNS) was drawn up during a ... of expert level ... from 1992 to 1994 and was the result of ... work by Governments, national nuclear safety ... and the IAEA ... Its aim is to legally commit participating ... operating land-based nuclear

power plants to ... a high level of ... by setting international ... to which States would subscribe.

The ... of the Parties are based to a large extent on the ... contained in the IAEA Safety Fundamentals ... The Safety of Nuclear Installations. These obligations cover for instance, siting, ..., construction, operation, the availability of ... financial and human ..., the assessment and ... of safety, quality assurance and emergency

The Convention is an incentive It is not designed to ensure ... of obligations by Parties through control and ..., but is based on their common ... to achieve higher ... of safety. These levels are defined by ... benchmarks developed and promoted through ... meetings of the Parties. The Convention ... Parties to report on the ... of their ... for international peer review. This ... is the main innovative and ... element of the Convention. Under the Operational Safety Review Team (OSART) program dating from 1982 international ... of experts conduct ... reviews of operational safety ... at a nuclear power plant. They review ... planning, safety culture, radiation ..., and other areas. OSART ... are on request from the ..., and involve staff from regulators, in these ... differing from WANO peer reviews.

The Convention entered into ... in October 1996. As of September 2009, there were 79 ... to the Convention, 66 of which are ... parties, including all ... with operating nuclear ... plants.

The IAEA General Conference in September 2011 ... endorsed the Action Plan on Nuclear Safety that ... requested in June. The plan arose from intensive ... with Member States but not with ..., and was described as both a rallying point and a blueprint for ... nuclear safety It contains ... to make nuclear safety more ... and effective than before, without removing the ... from national bodies and governments. It aims to ensure “adequate ... based on scientific ... and full ...”. Apart from strengthened and more ... IAEA peer reviews (including those of regulatory systems), most of the 12 recommended ... are to be undertaken by ... countries and are likely to be well in hand already.

Following this, an ... general meeting of 64 of the CNS parties in September 2012 gave a strong ... to international ... in improving safety. National reports at ... three-yearly CNS review meetings will

cover a list of specific design, operational and ... issues stemming from ... lessons. They include further design features to avoid ... offsite contamination and enhancement of emergency preparedness and response measures, including better ... of national responsibilities and improved international Parties should also report on ... to “ensure the effective independence of the regulatory body from undue ...”

In February 2015 ... from 72 countries unanimously ... the Vienna Declaration of Nuclear Safety, setting out “principles to guide them, as ..., in the implementation of the objective of the CNS to prevent ... with radiological consequences and mitigate such ... should they occur” but rejected Swiss ... to the CNS as impractical. However, in line with Swiss and EU intentions, “comprehensive and ... safety assessments are to be carried out ... and regularly for existing installations throughout their ... in order to identify safety improvements... Reasonably practicable or ... safety improvements are to be implemented in a ... manner.”

<https://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/safety-of-nuclear-power-reactors.aspx> (25.04.2019)

19. Прочитайте текст и вопросы к нему. Перескажите текст на английском языке.

Малые ГЭС как альтернатива для Кыргызстана

Нынешние реалии современного государства и ее полноценное развитие трудно представить без наличия энергоресурсов. В этом плане, Кыргызстан находится в самом центре Евразийского континента и имеет выгодное географическое положение, что позволяет ей создать доступ на рынки соседних стран. Страна занимает стратегическое расположение между СНГ и Азиатско-Тихоокеанским экономическим сообществом, представляя собой один из главных маршрутов транзита через Центральноазиатский коридор. За период обретения независимости Кыргызстан сумел выстроить взаимные отношения не только со странами региона, но и со государствами дальнего зарубежья. Товары из Кыргызстана получили потенциальный доступ на рынки с населением,

общей численностью до 2 млрд. человек. В аспекте региональных новообразований, то республика вступила в 2015 году в Таможенный Союз России, Казахстана и Беларуси, тем самым открыв выход своим товарам и услугам на рынок с численностью 180 млн. человек.

Необходимо отметить, что безусловным фактором для промышленного производства и создания товаров и услуг в любой экономике мировых стран является стабильный доступ и необходимость снабжения электроэнергией. В этом ключе, Кыргызстан активно использует возможности выработки электроэнергии гидроэлектростанциями (ГЭС) и тепловыми электростанциями (ТЭС). Обладание богатыми водными ресурсами создала все предпосылки для того, что гидроэнергетика стала стратегической отраслью Кыргызстана. По объему формируемых на ее территории водных ресурсов республика занимает третье место среди государств СНГ. Если обратиться к общим статистическим данным, то в стране насчитывается 252 крупных и средних реки, потенциал которых оценивается в 18,5 млн. кВт мощности и более 140-160 млрд. кВт.ч электроэнергии. Как подсчитали мировые и местные эксперты, потенциал Кыргызстана в области гидроэнергетики используется всего на 9 %. Большими запасами гидроэнергоресурсов обладают реки Нарын, Сары-Джаз, Кокомерен, Чаткал, Тар, Чу, Кара-Дарья и Чон-Нарын, у которых средние уклоны изменяются от 5 до 20 м на 1 км длины, а средняя удельная мощность составляет от 2227 до 5322 кВт/км. Таким образом, гидроэнергетический потенциал страны позволяет обеспечивать не только внутренние потребности, но и делится ею с другими странами. В Кыргызстане из имеющихся возможностей используется лишь 53 % гидроресурсов. Кроме того, на долю гидроэнергетического сектора приходится 2 % ВВП страны, которая в суммарном количестве отчисляет всего 10 % доходов в республиканский бюджет. Из всей доли электроэнергии в стране возможностями ГЭС вырабатывается 94 %, а тепловыми станциями 6 %.

В этой связи, в настоящее время на фоне реализуемых в Кыргызстане крупных проектов строительства мощных плотинных электростанций, также возрастают положительные условия и для

развития малых и средних ГЭС на небольших реках. Примечательно, что ресурсы малых рек Кыргызстана освоены всего лишь на 3 %, и представляют собой привлекательную нишу для реализации инвестиционных возможностей, преобразующихся ныне в более время в высокоперспективное направление гидроэнергетики.

Изначально, идея ускорения процесса устойчивой выработки электроэнергии малыми ГЭС в Кыргызстане имела свои трудности в создании всех требуемых условий со стороны государства. Правительством Кыргызской Республики были разработаны и утверждены дополнения и изменения в Земельный и Водный кодексы, в ряд некоторых законов КР, в частности о возобновляемых источниках энергетики и других. Совместно с неправительственным сектором и международными организациями дополнительно была разработана и утверждена «Концепция развития малых ГЭС», разработана WEB - карта перспективных створов для строительства малых ГЭС. В 2012 году в Кыргызстане были внесены дополнения и изменения в закон о возобновляемых источниках энергетики (ВИЭ), где был определен льготный период срока окупаемости для ВИЭ со сроком 8 лет. В результате, как только после появления правовых и иных возможностей, в первое время через реализацию проектов по малым ГЭС были созданы условия для привлечения первых инвестиций в размере \$20 млн. из частного сектора, которая цепной реакцией обусловила внедрение конкурентного частного энергосектора в электрические сети.

Сегодня в КР функционирует 12 малых ГЭС, тогда как в стране возможно строительство порядка 100 малых ГЭС мощностью 180 МВт. По законодательству Кыргызской Республики гидроэлектростанции мощностью до 30 МВт могут строиться и находиться в частной собственности.

Независимый эксперт Эркин Матеев

<https://knews.kg/2018/12/11/mnenie-malye-ges-kak-alternativa-dlya-kyrgyzstana/> (25.04.2019)

1. What is the role of energy resources availability for Kyrgyzstan?
2. Where is Kyrgyzstan located?

3. Does the favorable geographical location allow Kyrgyzstan to create access to the markets of neighboring countries?
4. Why does Kyrgyzstan represent one of the main transit routes through the Central Asian corridor?
5. What neighboring countries has Kyrgyzstan managed to build mutual relations following independence?
6. What markets have goods from Kyrgyzstan gained potential access to?
7. Why did Kyrgyzstan's joining the Customs Union of Russia, Kazakhstan and Belarus in 2015 become a mutually beneficial for the contracting parties?
8. What is the absolute factor for industrial production and the creation of goods and services in any economy of the world?
9. How does Kyrgyzstan use the opportunities of power generation by hydroelectric power plants (HPP) and thermal power plants (TPP)?
10. Can we say that hydropower has become a strategic sector of Kyrgyzstan?
11. What is the rank of the Republic among the CIS countries in terms of water resources volume formed on its territory?
12. How many large and medium-sized rivers are there in the country according to the General statistics?
13. What is the potential of the country in the field of hydropower?
14. How is this potential used according to world and local experts?
15. What rivers in Kyrgyzstan have large reserves of hydropower resources?
16. How do average slopes of the rivers vary per 1 km of length?
17. What is the average specific capacitance of the rivers?
18. Does this hydropower potential of the country allow sharing it with other countries?
19. What is the share of the hydropower sector in the country's GDP?
20. What is the total share of electricity in the country, the capacity of hydroelectric power, and thermal power plants?
21. What large-scale projects for the construction of powerful dam power plants in Kyrgyzstan do you know?

22. What positive conditions for the development of small and medium-sized hydropower plants on small rivers are also increasing in Kyrgyzstan?
 23. Do the resources of the small rivers of Kyrgyzstan represent an attractive niche for the implementation of investment opportunities that are being transformed into a highly promising direction of hydropower?
 24. What difficulties did the idea of accelerating the process of sustainable electricity generation by small hydropower plants in Kyrgyzstan have in the past?
 25. What additions and amendments to the Land and Water codes has the government of the Kyrgyz Republic developed and approved?
 26. What have you heard about the “Concept for the development of small hydroelectric power plants”?
 27. When was a WEB map of promising sites for the construction of small hydroelectric power plants developed?
 28. What is the tax concession period of payback time for renewable energy sources RES?
 29. What conditions were created to attract the first investment from the private sector after the emergence of legal and other opportunities?
 30. What caused a chain reaction for the introduction of a competitive private energy sector in electric power system?
 31. How many small hydropower plants are there in Kyrgyzstan?
20. *Прочитайте описание самых известных аварий на атомных электростанциях мира.*

A Brief History of Nuclear Accidents Worldwide

Serious nuclear accidents have been few and far between – but their stories will help prevent future catastrophes.

Fukushima, Japan, March 2011

The earthquake and tsunami that struck eastern Japan on March 11, 2011, caused a serious accident at the Fukushima Dai-ichi nuclear power plant on the northeastern coast of Japan.

How did it happen?

The earthquake cut off external power to the reactors. Tsunami, which reached levels more than twice as high as the plant was designed to withstand, disabled backup diesel generators, crippling the reactor cooling systems. Battery power was quickly exhausted, and overheating fuel in the plant's operating reactor cores led to hydrogen explosions that severely damaged three of the reactor buildings. Fuel in three of the reactor cores melted, and radiation releases from the damaged reactors contaminated a wide area surrounding the plant and forced the evacuation of nearly half a million residents.

Chernobyl, Ukraine (former Soviet Union), April 26, 1986

Chernobyl is considered the world's worst nuclear disaster to date. It occurred on April 26, 1986, when a sudden surge in power during a reactor systems test resulted in an explosion and fire that destroyed Unit 4. Massive amounts of radiation escaped and spread across the western Soviet Union and Europe. As a result of the disaster, approximately 220,000 people had to be relocated from their homes.

How did it happen?

Unit 4 was to be shut down for routine maintenance. A test was conducted to determine the plant equipment's ability to provide sufficient electrical power to operate the reactor core cooling system and emergency equipment during the transition period between a loss of main station electrical power supply and the start-up of the emergency power supply. Workers did not implement adequate safety precautions or alert operators to the electrical test's risks. This lack of awareness led the operators to engage in actions that diverged from safety procedures. Consequently, a sudden power surge resulted in explosions and nearly complete destruction of the reactor. The fires that broke out in the building contributed to the extensive radioactive releases.

Three Mile Island

Middletown, Pennsylvania, USA, March 28, 1978

The partial meltdown at Three Mile Island Unit 2 is considered the most serious nuclear accident in U.S. history, although it resulted in only small radioactive releases.

How did it happen?

The accident began with failures in the non-nuclear secondary system, followed by a human-operated relief valve in the primary system that stuck open, which allowed large amounts of nuclear reactor coolant to escape. Plant operators' initial failure to correctly identify the problem compounded it. In particular, a hidden indicator light led to an operator manually overriding the automatic emergency cooling system because he mistakenly believed that too much coolant water in the reactor had caused the steam pressure release. Eventually the reactor was brought under control, although the full extent of the accident was not understood until later.

Enrico Fermi Unit 1

Frenchtown Charter Township, Michigan, USA, October 5, 1966

Coolant flow blockage in two fuel channels led to the partial meltdown of two fuel assemblies at Fermi Unit 1.

How did it happen?

Fermi Unit 1 was the nation's first and only commercially operating liquid metal fast breeder reactor. Vibrations caused a component within the reactor vessel to loosen, which blocked coolant flow when hydrodynamic forces carried it up the fuel subassemblies' inlet nozzle. Workers did not notice what had occurred until core temperature alarms sounded. Several fuel rod subassemblies reached temperatures of up to 700 degrees Fahrenheit, causing them to melt. After the reactor was shut down for repairs, it was returned to partial operation periodically until 1972, but it was never again fully operational. It was officially decommissioned in 1975.

SL-1

Idaho Falls, Idaho, USA, January 3, 1961

The withdrawal of a single control rod caused a catastrophic power surge and steam explosion at the SL-1 boiling water reactor that killed all the workers on duty at the time.

How did it happen?

On January 3, 1961, workers were in the process of reattaching to their drive mechanisms control rods they had disconnected earlier that day to enable test equipment to be inserted in the reactor core. They

lifted the central control rod 20 inches, instead of the four inches that was required. This error caused the reactor to go critical and its power to surge 6,000 times higher than its normal level in less than a second. As a result, nuclear fuel vaporized and a steam bubble was created. The steam bubble expanded so quickly that it pushed water above it against the reactor vessel, which caused it to jump out of its support structure. It hit an overhead crane and then returned to the reactor vessel. In the process, all of the water and some of the fuel were released from the reactor vessel. All three workers on duty received lethal doses of radiation, in addition to trauma from the explosion.

Sodium Reactor Experiment

Los Angeles, California, USA, July 1959

A partial meltdown occurred at the Sodium Reactor Experiment (SRE) due to cooling flow blockage that caused the reactor core to overheat.

How did it happen?

The Sodium Reactor Experiment experienced extensive fuel damage during a power run. Thirteen of forty-three fuel elements overheated when the cooling flow provided by the liquid sodium was blocked by tetralin, an oil-like fluid which had leaked into the primary sodium loop during prior power runs. This overheating caused the reactor core to fail. Fission products were released from the damaged fuel into the primary sodium loop. Some of the fission products leaked from the primary sodium loop into the high bay area, a region inside the building housing the reactor. Other fission products flowed with the helium cover gas over the liquid sodium in the reactor pool to gaseous storage tanks. Fission products from the high bay area and from the gaseous storage tanks were processed through the filters of a ventilation system and discharged to the atmosphere.

Windscale

Cumberland (now Cumbria), UK, October 10, 1957

Windscale Unit 1's core caught fire and melted, which led large amounts of radioactivity to be released to the surrounding area.

How did it happen?

Before the accident, Unit 1 was activated to release built-up energy in the graphite of the core. The fuel was cooler than the normal operating temperature and was warming more slowly than expected. A second release led to a higher temperature than workers expected. Eventually the temperature was more than 750 degrees Fahrenheit, so air was vented to cool it. The reactor caught fire, igniting an estimated 11 tons of uranium. Workers first used carbon dioxide to try to put out the fire, but that strategy failed. Next they used water, which eventually succeeded. It took workers a total of three days to put out the fire. In the meantime, radiation escaped through the chimney and contaminated much of the surrounding area and reached as far as mainland Europe. More than 200 cancer deaths are attributed to the disaster, which is considered to have been the worst to occur in the West.

<https://www.ucsusa.org/nuclear-power/nuclear-power-accidents/history-nuclear-accidents> (25.04.2019)

21. Обдумайте и обсудите в группе следующие вопросы:

1. Can a nuclear and radiation accident be defined as “an event that has led to significant consequences to people, the environment or the facility?”
2. When were the first nuclear reactors constructed?
3. What technical measures have been adopted to reduce the risk of accidents or to minimize the amount of radioactivity released to the environment?
4. Can technical innovation eliminate the risk of human-induced errors associated with the operation of nuclear power plants?

22. Напишите мини-эссе «Основные проблемы эксплуатации и технического перевооружения ТЭЦ и АЭС».

UNIT 8

COMMUNITY ARCHITECTURE

1. Подберите русские эквиваленты к указанным словам, имеющим те же корни, что и следующие английские слова:

advocacy, activist, activity, analyze, architecture, assistance, base, collection, community, contract, contrast, conventional, corporation, design, difference, discrimination, dissertation, economic, examine, fund, initiate, management, mechanism, momentum, myth, pioneer, political, popular, practitioner, presentation, priority, private, process, product, psychological, public, racial, reason, result, service, spiritual, symbolic, theorist, typically, urban

2. Подберите русские эквиваленты из второго столбца к следующим английским словам:

chapter	вовлекать
consideration	выжить, уцелеть
creative	высокой сложности, на уровне современных требований
design	движение
environment	добровольный
gain	местная организация, центр
implement	намерение
implication	несправедливость
injustice	обыкновение, привычка, иметь привычку
instance	окружающая среда
intention	по существу, в сущности
involve	получать, добиться, приобретать
movement	последствия, применение, вовлечение
neighborhood	провести в жизнь
shaping	проектирование

sophisticated	рассмотрение, обсуждение, внимание
suffice	случай, пример, образец
survive	соседство
virtually	творческий
voluntary	удовлетворять, быть достаточным
wont	формирование

3. *Переведите на русский язык следующие слова и словосочетания:*

socially conscientious entrepreneurs and activists; lower-income user-clients; shortly thereafter; gross political injustices; involving community technical aid; for this reason; end users; in the mid to late 1960s; shaping the environment; go beyond the tradition; an attitude of mind; commonly accepted definition; a very thorough study; at the core of the movement; to be primarily mythological; to practice in a short-term; it does not suffice to analyze; community architecture, the process rather than the product; conventional architecture; it represents a tendency or trend toward a theory of architecture; the action of making architecture; near-voluntary organizations; to be virtually unknown.

4. *Прочитайте текст. Найдите определение термина «социальная архитектура»*

COMMUNITY ARCHITECTURE: MYTH AND REALITY

Architecture has to do with the shaping of the physical environment around us, and thus it is also involved in the shaping of the economic, political, spiritual, and psychological environment. Because architecture is a creative process as well as a resulting product, it does not suffice to analyze only the finished product as many researchers are wont to do. The traditional architectural virtues of commodity, firmness, and delight must be present not only in what is built, but also in the way it came into existence and the way it is used. Architecture is a public art, a public good, and a public service, as opposed to pure

art, which is often a mechanism intended only to communicate an artist's private intentions. For this reason, architects and architectural theorists must analyze the process of environmental design in a way that goes beyond the tradition of mere aesthetic and symbolic considerations. The process must be understood as a community process. The community architecture movement, which has recently gained considerable momentum in the United Kingdom, is exploring this view of architecture. In the last 20 or so years, there have been many theorists who argued for greater community involvement in the creation and management of the built environment. There have also been many attempts to implement this idea. In the United States for example, in the mid to late 1960s at least eighty community design centers were opened in major cities. In many instances the community design centers were voluntary or near-voluntary organizations, initiated and based in schools of architecture. Local chapters of the American Institute of Architects organized some centers as well. Their charter was to provide architectural and planning assistance to individuals and communities who were unable to pay for these badly needed services. During these same years, federally funded urban renewal projects rallied angry citizens to organize and protest against the gross political injustices, racial discrimination, and architectural and planning errors of the schemes. Community action agencies and community development corporations (CDCs) sprang up to channel dissent into positive action. Most of the community design centers had disappeared by the early 1970s due to lack of funds, lack of commitment and lack of real neighborhood support. In contrast, the more entrepreneurial community development corporations survived, and today they have a sophisticated network of support from local, state, and federal government, as well as private foundations and the local community. Community development corporations typically provide management, financial packaging, and advocacy services to their community, but they do not usually provide the kind of architecture services that community architects provide. Instead, community development corporations often contract with private architectural firms for design and construction management services. This is a key difference between the community development corporations

in the United States and the community architecture movement that has developed in the United Kingdom since the 1960s. In addition, community architecture has been practiced in a short-term, site specific way, whereas CDCs have been set up as neighborhood institutions to provide long-term development services for their area. Since the early 1980s, popular support for the community architecture movement has grown, although community architecture remains virtually unknown in the United States at this time.

Practitioners, advocates and critics have aptly called community architecture a movement because it represents a tendency or trend toward a theory of architecture. It is a movement concerned primarily with the action of making architecture--the process rather than the product. Nonetheless, most proponents claim that the built product of community architecture is often better than the product of conventional architecture. The definitions of community architecture found in the popular literature of the movement are often nebulous and variously inclusive. Many critics suspect community architecture to be primarily mythological because of this lack of a clear definition. Advocates maintain that there is a powerful, if hard to describe, reality at the core of the movement. Many have attempted to set forth definitions. A pamphlet published by the Royal Institute of British Architects (RIBA) in 1986, described community architecture as follows: "The aim of community architecture is to improve the quality of the environment by involving people in the design and management of the buildings and spaces they inhabit." Tom Woolley recently completed a very thorough study at Oxford Polytechnic University examining the key issues of community architecture. In his dissertation, he acknowledges the unusual problem of trying to define the movement. "Examination of the literature about community architecture suggests that while there is no commonly accepted definition, the term signifies the recognition, among some sections of the architectural profession, of a demand from the public to play a larger part in shaping the environment. Central to this is a belief that user participation in architectural design will lead to buildings that will be more satisfactory for their occupants." Architectural journalists Charles Knevitt and Nick Wates, co-authors of the recent

(1987) book, *Community Architecture: How People Are Creating Their Own Environment*, define it as follows: “Architecture carried out with the active participation of the end users. Term also used to describe a movement embracing community planning, community landscape, and other activities involving community technical aid.” Another architectural journalist, Peter Buchanan, describes it as such: “Community architecture means that the people who inhabit it are involved in and may even be instigators of, its creation and its management as well. The inhabitants are the clients; and the architect works for, or at least with them--in contrast to the typical situation where architect and user never meet.” One of the earliest pioneers of the community architecture movement and probably its most skilled politician and proponent is Rod Hackney. Hackney was elected to the position of president of the RIBA in 1986 and was elected president of the International Union of Architects (UIA) shortly thereafter. Hackney’s election is seen by many as a kind of coup d’etat for the community architecture movement. Hackney also achieved another coup by becoming an unofficial architectural advisor to Prince Charles, the Prince of Wales, who has aligned his royal patronage behind the community architecture movement. Hackney defines community architecture in very broad and inclusive terms. “Community architecture is the architecture of the community.” By which he means that it involves every facet of creating and managing the environment in which people live. Hackney has also insisted that there are no rules to community architecture. He claims it is really more “an attitude of mind” that inspires architects to take on work directly with their lower-income user-clients. Much of what is called community architecture in England is more commonly known in the United States as community development. Wates/Knevitt, Woolley, and others from the U.K. have claimed that C. Richard Hatch’s term social architecture is the American equivalent to community architecture. Hatch edited a book in 1984 called *The Scope of Social Architecture* that is the best collection and presentation of community architecture projects thus far assembled. However, the term social architecture is not commonly used in the United States. Yet it is interesting that the community architecture movement gives significantly more emphasis

to the architect's role in the community building process than the CDCs have done in the United States. Traditionally CDCs have been directed by socially conscientious entrepreneurs and activists, but the issue of participation in design has not been a priority as it is in most community architecture projects.

Neal J. Mongold. *Community Architecture: Myth and Reality*. - Massachusetts Institute of Technology. - 1988 p.4-8.

5. Ответьте на следующие вопросы:

1. What is community architecture?
2. Is community architecture a myth or reality?
3. What are the traditional architectural virtues?
4. How must architects and architectural theorists analyze the process of environmental design?
5. What view of architecture does community architecture movement explore?
6. Is there a necessity for greater community involvement in the creation and management of the built environment?
7. Why had most of the community design centers disappeared by the early 1970s?
8. What do community development corporations typically provide to their community?
9. What is a key difference between the community development corporations in the United States and the community architecture movement that has developed in the United Kingdom since the 1960s?
10. Compare different definitions of community architecture. What definition do you prefer and why?

6. Озаглавьте параграфы текста

7. Составьте предложения из следующих слов и словосочетаний:

a theory of architecture; in a short-term; to provide architectural and planning assistance; lack of commitment; to be unable to pay for; the kind of architecture services; environmental design; to remain virtually unknown; voluntary organization; private intention; architecture has to do with; to represent a tendency or trend toward;

at the core of the movement; a creative process; commodity, firmness, and delight; come into existence; conventional architecture; a public good; attempt to implement the idea; a demand from the public; to involve every facet; to be equivalent; to be a priority.

8. *Сформулируйте главную мысль текста.*

9. *Составьте план пересказа текста.*

10. *Переведите предложения на английский язык, обращая внимание на выделенные слова.*

1. **Социальная архитектура** является движением, которое утверждает важность **участия пользователей** в проектировании, строительстве и управлении окружающей средой.

2. Многие теоретики рассматривают движение **социальной архитектуры** как реакцию на **катастрофические провалы** современной архитектуры и планировочных схем.

3. Важным уроком, который архитекторы извлекли из этих неудач, стало **вовлечение общества** в обсуждение вопросов планирования архитектурных жилых комплексов.

4. Участие пользователей приводит к их **большей удовлетворенности** результатами строительства.

5. Участие пользователей приносит **психологические и социологические выгоды**.

6. Социальная архитектура требует дополнительных **первоначальных затрат**.

7. Следует изучить, какие элементы социальной архитектуры **применимы** в разных странах.

11. *Вставьте пропущенные предлоги, союзы и наречия:*

after, about, as, before, between, by, during, from, in, for, to, of, on, or, out, so, throughout, under, upon, while, with, without

THE FAILURES OF THE PAST (1)

It is obviously not a newly invented notion that user participation ... the environment is important. One merely needs to retrace the steps ... civilization to find innumerable examples. In most developed

nations we must turn back the hands ... time a few generations or look ... the rural areas. ... many rapidly developing nations a large proportion ... the population already (or still) does participate ... the shaping ... their environment since they must ... order to survive. It might be said that the squatter settlements ... Bombay, New Delhi, Mexico City, Bangkok, and many other cities “offer” their residents the freedom to build - or the necessity to build to survive - that most North American and European city dwellers do not have. So when and where did community architecture become a distinct movement if ... fact the same activities have been going ... since the beginning ... human history? The need ... participation gradually grew more pressing ... the common citizen realized that there was progressively less of it. ... the industrial revolution gained momentum ... the early nineteenth century ... Europe and the United States, it became clear to many that urban environments were growing chaotically and the living conditions were deteriorating for all but the upper classes. Families crowded into tenements ... proper sanitary facilities, light, and air, suffered ... miserable health and faced early death. They had little choice ... where they could live because ... increasing levels ... congestion and the need to be near the new industries. However, one of the radical changes that rural newcomers found ... they poured ... the industrial cities was that whereas ... they had built and designed their own homes, now large landowners, industry bosses, and private capitalists hired architects and made all the decisions ... the creation and management ... the environment. Frederick Engels’ book *The Condition ... the Working Class* ... England offered a graphic description ... the wretched conditions ... the burgeoning British cities ... the 1840s. Engels pointed ... that Manchester was a particularly clear example ... the careless way ... which industry led ... growth and prosperity ... a few, ... the living conditions ... the masses were ignored. “When the middle classes zealously proclaim that all is well ... the working classes, I cannot help feeling that the politically “progressive” industrialists, the Manchester big wigs, are not quite ... innocent ... this shameful piece ... town planning ... they pretend.” ... the mid-nineteenth century, many reformers were criticizing the problems ... urban environments. ... England, several

cholera epidemics broke ... between 1831 and 1866 ... the major cities. The reformers ... this period were generally ... the aristocracy ... the newly emerging middle (merchant) class who tried to simultaneously raise the physical and moral standards ... the working classes. But it was the fear ... disease that most strongly compelled legislators to adopt fundamental sanitation laws such ... the London Metropolitan Building Act of 1844, the Public Health Act ... 1848 and the Lodging House Act of 1851. Since the workers generally lacked economic power and trade unions were unevenly effective, the philanthropy and legislation ... the upper class reformers was the best, ... meager, hope ... improved working-class conditions, short ... revolution. Local government boards were set ... to monitor the sanitary conditions ... rented dwellings, although it was not ... the middle 1860s that enforcement began to achieve real progress ... the health statistics ... the poor. New, more stringent sanitary laws were again passed ... 1875 and 1890 ... London. ... 1900 ... London it had become evident that legislation and philanthropic capitalism were still ineffective ... improving housing conditions ... the working classes, ... the London County Council began to build new housing ... working families. The housing was badly needed, but once the local and national government became involved ... public housing, the possibility ... individual users to control matters ... their environment became even more remote.

Neal J. Mongold. Community Architecture: Myth and Reality. - Massachusetts Institute of Technology. - 1988 p.9-11.

12. Прочитайте текст, заменяя данные в скобках русские слова английскими эквивалентами:

THE FAILURES OF THE PAST (2)

Meanwhile, in the United States, (реформаторская деятельность) paralleled the English (опыт). In 1867, the New York City (Закон о многоквартирных домах) was the first (попытка) in the United States to (предписать) minimum (стандарты) for fire (безопасность), (вентиляция), and weather (герметичность). In 1879 New York State instituted new (освещение) and (воздух) regulations requiring airshafts and other standards for (здоровая окружаю-

щая среда). In 1901 the New York (многоквартирный) Law was authorized, imposing (более строгие) residential (стандарты), and resulting in what is known as newlaw (многоквартирные дома).

(Другой) American (города) followed suit (вскоре). (К сожалению) these (законы) did more to appease the (совесть) of the (реформаторы) than to help the (бедный). The (законы) were generally unenforced or unenforceable in (существующие здания), and served to worsen the (нехватка жилья) because new (застройщики) preferred to (использовать) other, more (выгодные) development (возможности).

(На рубеже) of the twentieth century, a (смесь) of (эгоистичный) and selfless (опасения, озабоченность) motivated most (реформаторы). Fears were still (широкораспространенный) of cholera (эпидемия) and imminent (социальная революция) which seemed to be stewing over the (огонь) of working-class (нищета). There were many (воинственные реформаторы) who sought to bring about (радикальные изменения) in the system (чтобы) to alleviate the (страдание) brought on by (интенсивная индустриализация). The (лидеры) of the modern (движение) were dazzled by the (логика) and respectability of (наука и техника). They saw it (как) their (миссия) to use this (технорационализм), infused with the (эстетическая догма) of anti-ornamentalism, to (решить мировые проблемы). The (модернисты), like the (реформаторы) that had preceded them by many (десятилетия), were not (часть) of the (рабочий класс) and preferred to see themselves as an (элита) and (привилегированная профессия). (Через) their radical (новая архитектура), they would mold the (массы) so that (жизнь) would be better. With the (дрязнящий мираж) of mass production and (стандартизация) on the (горизонт), the arrogance of the (современное движение) proposed (огромный) sterile (жилые кварталы). The (монументальные плиты) bore no (отношение) to the (масштаб) of the individual (семья) or user; they bore a (более близкое) relation to the (размер) of the egos of the (проектировщики). While (современная архитектура) was supposed to be a clear (проявление) of the (функция) happening inside, there were few, if any, (честный) efforts made to try (понять) the functions of the dwelling (окружающая среда).

As suggested (ранее), the (начало) of the participatory design (движение) came about as (критики) and (дизайнеры) began to realize the (недостатки существующих систем) of architecture and (градостроительство). (К началу) 1960s it was becoming (очевидный) that the massive (общественный) housing (программы) of the (Соединенное Королевство) and the (Соединенные Штаты) were not the (панацея) that was hoped for.

(Архитектурный) historian Gwendolyn Wright denounced the (антисептические) high-rise towers of modern apartment (здания) and public housing (проекты) - branding the (тип) of architecture as antithetical to (гордкая жизнь). The housing (катастрофы) experienced in the U.K. and in the U.S. by the 1960s galvanized (общественное мнение) against (современное планирование) and design (практики).

Neal J. Mongold. Community Architecture: Myth and Reality. - Massachusetts Institute of Technology. - 1988 p.11-14.

13. Составьте разные типы вопросов (фактологические, концептуальные), покрывающие содержание текста

14. Ознакомьтесь с таблицей, сопоставляющей традиционную архитектуру с социальной архитектурой. Обсудите приведенные автором отличия двух типов архитектуры. Какой тип архитектуры превалирует в нашей стране? Ответы аргументируйте.

What Makes Community Architecture Different

	Conventional architecture	Community architecture
Status of user	Users are passive recipients of an environment conceived, executed, managed and evaluated by others: corporate, public or private sector landowners	Users are - or are treated as - the clients. They are offered (or take) control of commissioning, designing, developing, managing and evaluating their environment and

	and developers with professional 'experts'.	may sometimes be physically involved in construction..
User/expert relationship	Remote, arm's length. Little if any direct contact. Experts - commissioned by landowners developers - occasionally make superficial attempts to define and consult end-users, but their attitudes are mostly paternalistic and patronizing.	Creative alliance and working partnership. Experts and are commissioned by and are accountable to users, or behave as if they are.
Expert's role	Provider, neutral bureaucrat, elitist, 'one of them', manipulator of people to fit the system, a professional in the institutional sense. Remote and inaccessible.	Enabler, facilitator and 'social entrepreneur', educator, 'one of us', manipulator of the system, to fit the people and challenger of the status quo: a professional as a competent and efficient adviser. Locally based and accessible.
Scale of project	Generally large and often cumbersome. Determined by pattern of land ownership and the need for efficient mass production and simple management.	Generally small, responsive and determined by the nature of the project, the local building industry and the participants. Large sites generally broken down into manageable packages.
Location of project	Fashionable and wealthy existing residential, commercial and industrial areas preferred. Otherwise a green-field site with infrastructure (roads, power,	Anywhere, but most likely to be urban, or periphery of urban areas: area of single or multiple deprivation: derelict or decaying environment.

	water supply and drainage, etc.); i.e. no constraints.	
Use of project	Likely to be a single function or two or three complementary activities (e.g. commercial, or housing, or industrial).	Likely to be multi-functional.
Design style	Self-conscious about style: most likely 'international' or 'modern movement'. Increasingly one of the other fashionable and identifiable styles: Post-Modern. Hi-tech. Neo-vernacular or Classical Revival. Restrained and sometimes frigid: utilitarian.	Unselfconscious about style. Any 'style' adopted as appropriate. Most likely to be may be contextual, 'regional' (place-specific) with concern for identity. Loose and sometimes exuberant: often highly decorative, using local artists.
Technology/ resources	Tendency towards: mass production, prefabrication, repetition, global supply of materials, machine-friendly technology, 'clean sweep' and new build, machine intensive, capital intensive.	Tendency towards: small-scale production, on-site construction, individuality, local supply of materials, user-friendly (convivial) technology, re-use, recycling and conservation. labour and time intensive.
End product	Static, slowly deteriorates, hard to manage and maintain, high-energy consumption.	Flexible. slowly improving, easy to manage and maintain. low-energy consumption.
Primary motivation	Private sector: return on investment (usually short- term) and narrow self-interest. Public sector: social welfare and party political opportunism.	

Experts: esteem from professional peers. Response to general national or regional gap in market, or social needs and opportuni- ties.	Improvement of quality of life for individuals and communities. Better use of local resources. Social investment. Response to specific localized needs and opportunities.	
Method of operation	Top-down, emphasis on product rather than process, bureaucratic, centralized with specialisms compartmentalized, stop- go, impersonal anonymous, paper management, avoid setting a precedent, secretive.	Bottom-up, emphasis on process rather than product. flexible, localized, holistic and multi-disciplinary, evolutionary, continuous, personal, familiar, people management, setting precedents, open.
Ideology	Totalitarian, technocratic and doctrinaire (Left or Right) big is beautiful, competition, survival of the fittest.	Pragmatic, humanitarian, responsive and flexible, small is beautiful, collaboration, mutual aid.

*Neal J. Mongold. Community Architecture: Myth and Reality. - Massachusetts
Institute of Technology. - 1988 p.19.*

15. Обсудите в группе преимущества и недостатки различных типов архитектуры.

16. Напишите мини-эссе на одну из предложенных тем: «Нужна ли нашей стране социальная архитектура?»; «Каким образом общественное мнение влияет на градостроительство в нашей стране?»

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