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ENGLISH FOR AGRICULTURAL ENGINEERING STUDENTS

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Учебное пособие нацелено на развитие, совершенствование и закрепление навыков чтения профессионально ориентированной литературы, а также на формирование у обучающихся определенного уровня коммуникативной компетенции, который позволит им пользоваться английским языком в профессиональной деятельности.

Предназначено для студентов, обучающихся по направлениям подготовки «Агроинженерия (Электрооборудование и электротехнологии, Автоматизация и роботизация технологических процессов, Цифровые технические системы в агробизнесе, Технический сервис в АПК, Испытания и контроль качества машин и оборудования)» и «Эксплуатация транспортно-технологических машин и комплексов», слушателей дополнительного профессионального образования, преподавателей, а также всех, кто изучает английский язык.

The study manual is aimed at developing and consolidating language skills necessary for reading professional literature, as well as at developing communicative competence of students, which will allow them to use English in their professional activities.

The textbook is intended for Bachelor degree students in Agricultural Engineering, for students of further professional training, teachers, and everyone who is interested in studying English.

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СОДЕРЖАНИЕ

ПРЕДИСЛОВИЕ	4
Unit 1. Getting Acquainted	5
Unit 2. Language Learning	17
Unit 3. University / Studies	25
Unit 4. Future Job	35
Unit 5. Agricultural Engineering	55
Unit 6. Electrical Engineering	73
Appendix 1. How to Write a Summary	98
Appendix 2. Test Your Vocabulary	100
KEYS	101
REFERENCES	104
СВЕДЕНИЯ ОБ АВТОРАХ	105

ПРЕДИСЛОВИЕ

Учебное пособие предназначено для студентов-бакалавров неязыковых вузов, обучающихся по направлениям подготовки «Агроинженерия (Электрооборудование и электротехнологии, Автоматизация и роботизация технологических процессов; Цифровые технические системы в агробизнесе, Технический сервис в АПК, Испытания и контроль качества машин и оборудования)» и «Эксплуатация транспортно-технологических машин и комплексов», слушателям дополнительного профессионального образования. Учебное пособие подготовлено в соответствии с требованиями типовой программы по иностранным языкам для высших учебных заведений.

Пособие нацелено на развитие, совершенствование и закрепление навыков чтения, перевода и реферирования профессионально-ориентированных текстов, пополнение словарного запаса по предлагаемой тематике, а также на формирование у обучающихся определенного уровня коммуникативной компетенции, который позволит им пользоваться английским языком в профессиональной деятельности.

Пособие построено на аутентичных материалах, опубликованных в открытых интернет-источниках. Аутентичные материалы позволяют приблизить процесс обучения языку к процессу реальной коммуникации, а также способствуют формированию социокультурной составляющей коммуникативной компетенции. Часть материалов была незначительно адаптирована в целях создания условий поэтапного формирования языковых механизмов.

Пособие состоит из нескольких разделов, объединенных по тематическому принципу. Каждый раздел включает в себя тексты и задания, направленные на пополнение словарного запаса, развитие навыков чтения и аудирования профессионально-ориентированных текстов, развитие навыков устной и письменной речи.

Пособие можно использовать для аудиторной работы со студентами с различным уровнем владения английским языком, как для групповой, так и для индивидуальной работы. Пособие содержит ключи к наиболее сложным упражнениям, что позволяет использовать данные материалы для самостоятельной работы студентов. В приложении также предлагаются ссылки на словарные тесты по каждому разделу в гугл-формах. Учебное пособие не является исчерпывающим и содержит лишь основные тематические блоки учебной программы студентов указанных направлений подготовки.

UNIT 1

GETTING ACQUAINTED

1. Can you answer the following questions?

- Where are you from?
- Do you have any brothers or sisters?
- Where are you studying now?
- What year are you in?
- What do you like doing in your free time?
- Do you do any sport?
- What is your major?

What other questions can you ask a person when you meet them for the first time?

2. Match the personality adjectives and the definitions.

friendly **hard-working** **quiet** **serious** **generous**
honest **tidy** **confident**

- a) A person who doesn't talk very much _____ quiet
- b) A person who shares their time and things with others _____
- c) A person who is nice to other people _____
- d) A person who works hard _____
- e) A person who doesn't cheat or steal _____
- f) A person who is thoughtful in character or manner _____
- g) A person who is neat and well-organised _____
- h) A person who feels sure about their own abilities, qualities, or ideas _____

Find the opposite to each adjective above.

Funny, untidy, talkative, unfriendly, dishonest, shy, lazy, mean.

3. What makes a good engineer?

a) Which of the following would refer to those who can make a good engineer?

- 1) They are curious.
- 2) They like solving problems in a creative way.
- 3) They are detail-oriented.
- 4) They like working on your own.
- 5) They try to achieve results and get the job done.
- 6) They always try to understand how things work.
- 7) They are open-minded.
- 8) They have good math skills.

b) Watch the video What Kind of Person is Drawn to Engineering Technology? at <https://www.youtube.com/watch?v=RgLdqDJv3kI> and say which of the things above are mentioned in it.

Would you add any other characteristics to the list above?

4. Reading THE BRILLIANT AND TORTURED WORLD OF NIKOLA TESLA (by Susan Borowski): Read the text and do the tasks.

a) What inventions is Nikola Tesla famous for?

b) Check the meaning of the phrases, can you translate them into Russian?

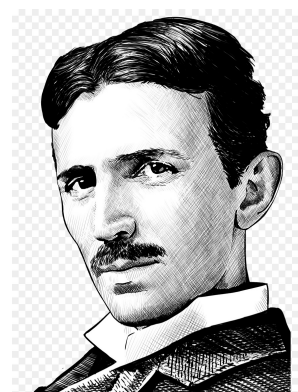
alternating current electricity

high frequency transformer

internal combustion engines

wireless transmission

obsessive compulsive disorder



c) Read the text and find the answers to the question in a).

THE BRILLIANT AND TORTURED WORLD OF NIKOLA TESLA

Imagine blinding flashes of light that fill your brain, but in those blinding flashes there is a vision that solves a problem racking your brain, or the idea for an invention. Such was the inspiration for Nikola Tesla. He got inspiration from those visions, creating a lot of things.

Tesla was born in 1856 to Serbian parents in what is now Croatia. He finished high school early, in three years instead of four. He studied electrical engineering at the Austrian Polytechnic in Graz, where he first studied alternating currents, but left in his third year and did not receive a degree.

Tesla later moved to the United States to work with Thomas Edison, but they became rivals: Edison defending direct current as opposed to Tesla's alternating current. Tesla had left Edison to work for George Westinghouse, who saw the value in Tesla's inventions. The "war" culminated in the Columbian Exposition (the Chicago World's Fair) in 1893, when it was decided that Tesla's alternating current via Westinghouse would power the fair, as opposed to Edison's more pricey and bulky direct current through General Electric Company.

Tesla's accomplishments are still underrated today. While Edison is known for being the inventor of the light bulb, it is Tesla's alternating current that powers much of the world. Tesla used his Tesla coil, a high frequency transformer, as the basis for experiments in electrical lighting, x-rays, electrotherapy, and the wireless transmission of electric energy. He invented the fluorescent bulb and neon light, as well as the spark plug for internal combustion engines. He provided the basis for radar, the electron microscope, and microwave ovens. He even was interested in robotics, far ahead of his time.

Tesla read a lot and had a very good memory. He could create mental images and envision his invention in every detail. Sometimes he worked only from memory, not even drawing anything. He spoke seven languages. Like many great scientific minds, he required little sleep, and once he worked 84 hours without stopping to eat or rest. He said it was the quality, not the length, of sleep which was important.

Tesla was a modest man, with a good sense of humour. He could easily hold the listener's attention and often used poems as illustrations for his stories. He was always very neat and preferred conservative clothes. He was a vegetarian. He drank milk regularly and avoided coffee, tea, and tobacco.

With brilliance often comes eccentricity. Tesla had obsessive compulsive disorder, which made him do things in threes, including only staying at a hotel room that was divisible by the number three. He had an obsession with pigeons and hated women wearing earrings. He suffered a nervous breakdown when he was young, and he probably had dementia before he died. He never married.

After his death at the age of 86 alone in New York, the U.S. government confiscated much of his work and declared it “top secret”, because Tesla had worked on a “death ray”, a “superweapon” to end all wars. Years later, much of his work was released, and it can be seen in the Nikola Tesla Museum in Belgrade, which holds more than 160,000 original documents and over 1,000 plans and drawings of his work.

Source: <https://www.aaas.org/brilliant-and-tortured-world-nikola-tesla>
(accessed 12.08.2022)

d) Match the underlined words to the definition.

- 1) Something or someone that you think about all the time
- 2) A device in an engine that lights the fuel and makes the engine start
- 3) Expensive
- 4) A medical condition that affects especially old people, causing the memory and other mental abilities to gradually become worse
- 5) To be better or more important than most people believe
- 6) A machine, device, or system that has never been made before
- 7) Unusual behaviour that other people consider strange
- 8) The qualification given to students after they have completed their studies
- 9) A school that typically includes grades 9 through 12, attended after primary school or middle school

e) Agree or disagree with the following statements. Correct the false ones.

1. New ideas and inventions came to Tesla as flashes of light.
2. Tesla got a degree earlier than his peers.
3. Tesla was very friendly with Tomas Edison.
4. Tesla drew everything that came to mind.
5. Tesla was very untidy.

6. He was quite an eccentric man.
7. We cannot see his work now as it was confiscated by the US government.

5. Read the email, answer the questions and correct the mistakes that a computer has found.

Hi Mark,

My name is Kurt. It's a german name, because my grandfather was born in Germany. But when he married, he moved to Portugal. So I can say I'm Portuguese and I live in Lisbon. It's the capital of the contry and one of the most beautiful cities in Europe.

I live with my parents and my two younger brothers. I'm 19 years old and I'm a university student. I'm studing agricultural engineering. It is a very promising area as it integrate technology and farming. I'm a first-year student and I really like it.

I'm going to tell you a few words about myself. I'm quiet tall and slim. I have short fair hair and blue eyes. Sometimes I wear glasses but I don't like wearing them so I'm going to get contact lenses.

I think I'm a positive person. I'm extrovert and friendly. I'm very talkative and I like meeting my friends and having fun with them. We like going to the cinema or clubbing together. Unfortunately, now we don't have much free time.

I can say that I'm quite a sporty person. I go to the swimming pool twice a week, and at the weekend I exercise in the gym that is located next to my house. I don't smoke; I don't think it's haelthy.

In my free time I also study English. I think it's important nowadays, especially if you want to make a successful career. I have classes once or twice a week and I also try to watch films and read the news in English. And I'm trying to practise my English communicating with native speakers, that's why I'm writing this email.

Please write back and tell me about yourself.

Best wishes,

Kurt

a) Answer the questions.

- 1) Where is Kurt from?
- 2) Why does he have a German name?
- 3) Where does he live?
- 4) Who does he live with?
- 5) What does he do?
- 6) What does he look like?
- 7) What is he like?
- 8) What does he do in his free time?
- 9) Why does he study English?

b) Write a similar e-mail about yourself.

The plan:

Paragraph 1: name, nationality, age, family, work/study

Paragraph 2: appearance

Paragraph 3: personality

Paragraph 4: hobbies/interests

6. Describing where you live

a) Language focus: Describing places.

Study the words and phrases. Which ones can be used to describe the place where you live?

I live in a *city / town / village*.

It's a *capital city / huge city / small town / tiny village*.

It is located *in the ____ part of ____ / in the lake district / in the mountains / by the sea / in the north / on the bank of the ____ river*.

It is a *tourist / industrial / mountainous spot*.

It has a population of (*1 mln*) inhabitants.

There are some tourist attractions in my town, such as ...

It is *known / famous for its music festival / architecture / rich history / food / developed industry*.

It is an important centre of ____ industry.

I live there in a *house / flat* with ____ .

It is located *in the city centre / in the suburbs / out of town / in the countryside*.

b) Do you know the following adjectives? Match the opposites.

Which of them can you use to describe the place where you live?

1. boring	a) near
2. crowded	b) noisy
3. safe	c) clean
4. far	d) empty
5. quiet	e) polite
6. rude	f) ancient
7. bustling	g) exciting
8. modern	h) stressful
9. polluted	i) sleepy
10. peaceful	j) dangerous

c) Make opposites, using an appropriate prefix.

comfortable, healthy, polite, possible, patient, friendly, pleasant, common

<i>un-</i>	<i>im-</i>
unhealthy,	

d) What is there to see?

castle, cathedral, museum, palace, shopping centre, restaurant, church, statue, department store, temple, mosque, town hall, factory, museum, hotel, water park, stadium, farmer's market, fitness centre, library, concert hall, bookstore, café, community centre, monument, entertainment park

Religious buildings	Historic buildings	Places where you can buy something	Places where you can have a meal	Places for entertainment and leisure
cathedral				

7. Reading+Writing THE PLACE WHERE I LIVE

a) Scan the text and match the questions with the paragraphs that contain answers to a particular question.

- a) What is it famous for?
- b) What's the weather like?
- c) What's the best thing about it? Do you enjoy living there?
- d) What is your home town like?
- e) Where do you live? Where is it? How big is it?

b) Read the text and fill in the gaps with these words.

coast parties industrial attraction mild museums
hospitable mountains history climate

THE PLACE WHERE I LIVE



1. _____

I live in Porto, which is a city on the *a.* _____ in the north of Portugal. It is the second biggest city in Portugal and is an important commercial and *b.* _____ centre.

2. _____

It's a beautiful city, and it's great for walking around.

There're lots of narrow streets. And it's full of ancient churches, amazing *c.* _____, and markets. One of the most beautiful areas in Porto is an area called Foz where there're a lot of outdoor bars and restaurants – people go there at the weekend to take a promenade or to sit in the sun, drink coffee, and watch the Atlantic.

3. _____

The *d.* _____ here is very different from the south of Portugal. However, it's *e.* _____ and generally quite warm. The winter can be very wet, and it sometimes rains for days. The summer is wonderful – it's sunny, but not usually hot, and it's great for going to the *f.* _____ or the beach.

4. _____

Porto is rich in history, culture and architecture, and especially famous for port wine. This strong and sweet wine has been part of the city's commerce and heritage

since the 17th century. Another popular tourist *g.* _____ is the Douro River. There are some beautiful bridges, one of which was designed by Eiffel, and lots of tourists go on boat trips. There's a festival in June called São João to celebrate the city's patron Saint John, with a lot of fireworks and street *h.* _____, and everybody spends most of the evening hitting each other with plastic hammers.

5. _____

But I think the best things about Porto are its *i.* _____ people and the atmosphere. It's small, but safe and friendly. It's a working city and it has a real sense of *j.* _____, and that's the main reason why I like living here.

c) Find the following words and phrases in the text.

1. на побережье
2. узкие улицы
3. уличное кафе
4. сырая зима
5. производить вино
6. туристическая достопримечательность
7. красивые мосты
8. основная причина

d) Answer the questions.

1. Where is Porto located?
2. What is the population of Porto?
3. What is Porto especially famous for?
4. What can tourists enjoy in Porto?
5. Why does the author like this city?
6. Do you know anything else about this city? Surf the Internet to find some other facts about the city.

e) Write a description of the place where you live.

Write five paragraphs. You can use the text above as a model.

The plan

1. Where do you live? Where is it? How big is it?
2. Describe your home city/town.
3. What is the weather like where you live?
4. What is it famous for?
5. What is the best thing about it? Do you like living there?

8. Watching + Reading URBAN AGRICULTURE

a) Discuss the question: Do you need agriculture in a city?

b) Watch the video *Growing Food in the City–Urban Rooftop Farm in Downtown Toronto* at <https://www.youtube.com/watch?v=0SzTSepQuMU> and answer the questions.

- 1) Where is the rooftop farm situated?
- 2) Where do the grown plants go?
- 3) What can they grow in this farm?
- 4) What do they grow?
- 5) How often do they water the plants?
- 6) How did this project begin?
- 7) Can engineering students learn about how to grow food with the help of this project?
- 8) Why are older industrial buildings better for rooftop farms?
- 9) What must all Toronto new buildings over a certain size include?

c) Read the following Noun+Noun combinations used in the text *URBAN AGRICULTURE* and translate them into Russian.

Roof gardens, community gardens, population density, road infrastructure, food security, government initiative, allotment gardens, city property, school gardens, vegetable beds.

d) Read the text and agree or disagree with the statements.

- 1) Agriculture develops differently in different countries.
- 2) Urban agriculture will be absolutely necessary where road infrastructure is not good enough.
- 3) The government does not support urban farming in Singapore.
- 4) Urban farming can hardly develop in New York because of high cost of land and lack of space.

URBAN AGRICULTURE

Agriculture is considered to be urban when it is in a city or the surrounding areas. Urban agriculture is diverse: roof gardens, suburban farms, micro farms, community gardens, etc.

There are differences from one city to another. In some countries, for example, **agriculture** has totally disappeared from cities as population density has increased. However, it has returned to certain cities and their surrounding areas. Moroccan cities, for example, are using rooftops to **produce** crops and attempting to save **suburban** agricultural areas. The same phenomenon can be observed in Algiers. The city is now creating agri-parks to protect agricultural land around the city and promoting agriculture in the city. In other countries (Madagascar, Senegal), urban agriculture has grown with the population. In Dakar, the production of lettuce has transformed from 20 years of non-professional agriculture (on rooftops, courtyards of buildings) to **commercial** production. In these cases, agriculture has grown with urbanization, which has generated greater demand for local food.

It is still hard to say if all tomorrow's cities will be agricultural, but this kind of agriculture will be vital for the supply of fresh produce (eggs, milk, vegetables) in countries where the state of road infrastructure limits transport and especially refrigerated transport. It will also be important in the management of organic urban waste and in ensuring the food security in periods of crisis and shortage.

More Urban Agriculture examples:

Singapore

Urban farming in Singapore is a central focus of the government and local organizations, trying to find innovative ways to increase urban agriculture. The



government initiative has already enabled the construction of 1,500 community gardens, while an entire national park, HortPark, has been converted to allotment gardens, themed gardens, and educational workshops for urban farmers. These urban farms were particularly beneficial for the Singaporean community during Covid-19.

New York City, USA

NYC is known for high cost of land and lack of space, so one might think the city has few farms. In fact, NYC has over 550 community gardens on city property, over 745 school gardens, and over 700 gardens at public housing developments. The city is focused on education and repurposing abandoned spaces. The GrowNYC Teaching Garden, for example, is a 21,000-square-foot urban garden filled with vegetable beds made from recycled materials, which holds workshops and events for agricultural education.

Image sourced from the Community in Bloom initiative
<https://ideas4development.org/en/urban-agriculture-cities/>

e) Language focus: Match the highlighted words with their synonyms.

- 1) to manufacture
- 2) profit-making
- 3) building
- 4) helpful
- 5) teaching
- 6) farming
- 7) countryside

d) If you have to answer the question in a), what would you say now after watching the video and reading the text. Has your opinion changed?

UNIT 2

LANGUAGE LEARNING

1. Discuss the questions.

- Why do we need to know a foreign language?
- Why do we learn English as a second language in most cases? Is it right?
- How do you study English?

2. Read the text and do the tasks.

TOP REASONS FOR LEARNING LANGUAGES

We live in a hyper-connected, fast-paced world. As our world becomes more and more connected through technological advances, it's becoming obvious that learning another language is beneficial for many reasons. Below are just a few of the many positive side effects of becoming bilingual (or multilingual).

a) Title each paragraph.

- a) Making more connections
- b) Becoming smarter
- c) Enhancing Employment Opportunities
- d) Connecting to Other Cultures
- e) Boosting Confidence
- 1) _____

One of the most obvious benefits of learning a new language is doors are opened to you around the world. An ability to communicate with someone in their language is a real gift. Bilinguals have the unique opportunity to communicate with a wider range of people in their personal and professional lives. Knowing the language makes you a local no matter where you are, opening up your world literally and figuratively.

2) _____

Potential employers consider foreign language skills a valuable asset. Many companies worldwide break into new markets every day to expand their business. Hence, organizations are always looking for qualified people who can speak one or more foreign languages. Thus language skills are an important competitive advantage that sets you apart from your monolingual peers. They are among the top eight skills required – no matter your sector or skill level, and the demand for bilingual professionals is constantly rising.

In many instances, language skills also lead to hiring bonuses and increased salaries. Whatever your career is, with language skills added, you're ahead of the crowd!

3) _____

Learning a language means moving out of your comfort zone as you have to stand before people and communicate with other people in their native language.

Confidence increases when a new skill is mastered, and learning a foreign language is no different. It increases your self-confidence. And let's face it: confident people are more interesting than those who are unsure of themselves.

4) _____

The process of becoming bilingual improves your memory, exercises your brain, and boosts your problem solving skills. Bilingual students score higher on standardized tests than monolingual students. As you learn to switch from one language to another, you improve your multitasking abilities. Bilingual individuals also have better decision-making skills and monitor changes in the environment more easily. They are more creative. Learning a second language also improves native language skills, as it teaches one the mechanics and structure behind any language.

Recent research has shown that bilingualism can delay the effects of Alzheimer's and dementia by years. Study results of the American Academy of Neurology show that speaking more than one language increases the amount of neural pathways in the brain, allowing information to be processed through a greater variety of channels. Multilingualism improves development in the brain's areas of attention, no matter what age the language learner is.

5) _____

Language is the most direct connection to other cultures. Being able to communicate in another language fosters respect for the traditions, religions, arts, and history of the

people associated with that language. Greater understanding, in turn, promotes greater tolerance, empathy, and acceptance of others. Studies show that children who have studied another language are more open toward and express more positive attitudes toward the culture associated with that language.

Learning about another culture sheds light on aspects of our own culture – both positive and negative. You may start appreciate more what you have, or you may decide to change something.

b) Why are the following words/expressions mentioned in the text? Give as much information as you can.

1. salary
2. comfort zone
3. confidence
4. Alzheimer's
5. respect

3. Reading TIPS FOR IMPROVING YOUR ENGLISH

a) Read the article giving tips for improving your English language skills. Which of them do you find really useful?

TIPS FOR IMPROVING YOUR ENGLISH

Learning English doesn't always mean sitting in the classroom. It's a well-known fact that different people respond to different learning techniques. That's why it is always beneficial to do some additional work. There are lots of ways to improve your understanding of the language, many of which can actually be a lot of fun. So if you're keen to improve your English (or any other second language), consider some of these handy tips. Not everything will work for you but, if you add a few of these ideas to your day-to-day language learning, you'll certainly see improvement.

1. Watch television and films in English

We know that Britain and the USA produce some really good TV shows and films, but you can learn English while watching them. If you're still getting to grips with the language at any level (from beginner to upper intermediate) then it's worth putting the English subtitles on so that you can read along and listen at the same time.

You can also listen to English radio stations and find plenty of listening sources on the internet.

2. Read English books/newspapers

Reading is a great way of practising English. You can do it at your own pace, without your teacher controlling you. If you're studying at a beginner to intermediate level, read graded readers. These books are specially written for a specific level.

Newspapers are also worth reading. Not only can you improve your English but you'll learn about local and national news, which can be handy when communicating with native speakers.

3. Label things in your house

This is a quick and cheap way of improving your knowledge of the vocabulary of everyday items. All you need to do is buy a pack of post-it notes and then write the name of items in your home on them, such as phone, window, mirror etc. Every time *you use the objects you'll read the word and it helps embed it in your memory.*

4. Practise every day

Make a study plan. Decide how much time a week you want to spend studying and try to stick to it. Establish a routine. Keep a notebook of new words. You could even do this on your phone so you needn't carry around a notebook with you. Use new words in sentences and try to say them at least 3 times when you speak. Don't forget to review things you have studied in the past regularly.

5. Listen to British and American music

Listening to music is a fun way of improving your language. Learning songs and singing along with them improve fluency and intonation. There's an endless amount of music to choose from, with lyrics easily available online. You could listen to a song a day and read the lyrics along to it. If you come across any language you don't understand, then research it. You could start with slower music, which often has lyrics that are slower and easier to understand. Once you're feeling more confident, go for rap music, which is generally quicker and harder to understand.

6. Tell your teacher what you want to learn

If you're learning English at university, you might not always learn what you want. However, it can be difficult for your teacher to know exactly what you want to learn unless you tell them. So if you think that they're giving you too much writing and not enough pronunciation, for example, then you should tell them. They'll be thankful for the feedback.

7. *Get any opportunity to communicate*

The most natural way to learn a language is through speaking. Order food at a restaurant, speak to someone at a tourist information centre or just start chatting to a native speaker in a bar. If you can't speak to someone in English, use chat-rooms, forums and community sites. Follow an English speaking influencer on social media. You can communicate, read posts from friends, watch videos, comment on them, and do it all in English. Don't be afraid to make mistakes. Getting something wrong is actually a great way of understanding why it works a certain way.

b) What else can you advise to those who want to improve their language skills?

c) Word building

One more tip: when you learn a new word, think of its other forms, e.g. *beauty* (noun) – *beautiful* (adjective), *beautifully* (adverb).

If you learn prefixes (dis-, un-, re-) and suffixes (-ly, -ment, -ful), they will help you guess the meaning of words and build your vocabulary, e.g. *mini* = small: *minivan*, *minibus*, *miniseries*

-ent and **-al** are common suffixes to make adjectives. Use these suffixes to make up adjectives:

difference –	confidence –
benefit –	nation –
addition –	practice –

-ment and **-tion** are often used to form nouns. Use these suffixes to make up nouns:

improve –	pronounce –
produce –	inform –
communicate –	develop –
establish –	connect –

Use the right form of some of the words above in the sentences.

a) Singing songs is a good way to practise _____.

b) Learning a language makes you feel more _____ and happier as a result.

c) It is absolutely necessary for modern engineers to _____ their foreign language skills.

d) You can find a lot of _____ information in your field if you know English.

e) There are many _____ Internet sites to help you practise speaking.

Can you make up your own sentences, using some of the words above?

4. These Internet resources can help you develop your English skills.

With so much authentic English online these days, from videos to articles, podcasts to blogs, there's no excuse not to use the internet to help you improve.

Here are 10 great websites for learning English that we hope you'll enjoy.

BRITISH COUNCIL LEARN ENGLISH

The BBC website for learning English has lots of free resources, including courses at different levels, an online drama to follow, vocabulary, grammar and listening practice, words in the news and graded articles on all sorts of interesting topics. There are sections for kids, teens and adults.

BRITISH COUNCIL LEARN ENGLISH

Here you can find free video and audio resources for learners of all ages and at all levels, including games, English skills through football, a mini soap opera, podcasts, articles and a discussion forum to ask questions, find advice and make friends from all over the world.

LIVE MOCHA

This website helps you find someone trying to learn your language so that you can have an online exchange with a real native speaker and become part of a global community. Everyone helps out with comments, corrections, tips and encouragement. You also have access to English lessons and various resources for listening and reading practice.

LYRICS TRAINING

Songs are a great way to practice both listening and pronunciation. This fun website lets you test your skills by typing in missing words as the song of your choice plays section by section. You can challenge yourself from easy to hard.

ESL LOUNGE (READING)

This website has about 25 reading comprehension exercises per level where you read a short text and then answer some comprehension questions. You can give yourself a time limit when doing these exercises to increase reading speed. After you've answered the questions, take some time to look up any new words.

WRITE AND IMPROVE (WRITING)

This is a website for students who are looking to improve their writing, especially in terms of grammar and spelling. There are a variety of prompts according to level that you respond to and are given immediate feedback. It's not perfect, of course, and may miss some mistakes, but in general it's a great tool for improving your writing.

TED ED (LISTENING)

TED talks are quite popular, and with this website, students can find any number of videos related to a topic they are interested in. Each video is accompanied by a lesson that includes comprehension questions to check for understanding as well as open-ended questions and links to explore more about the topic. Most of the videos are pretty short, so you can watch twice if you need, and you can usually find the transcript as well.

THE EF ENGLISH GRAMMAR GUIDE (GRAMMAR)

The EF English Grammar Guide is an easy-to-use resource with tips about usage, explained simply with examples (and counter-examples!) to illustrate. Perfect English Grammar is another website to use. You can search it by grammar topic, read an explanation, and then do an exercise with 10-20 sentences. It doesn't help very much with using the grammar in context, but it provides great practice for mastering the grammatical structure.

FREE RICE (VOCABULARY)

If you're looking for a fun way to improve your vocabulary, check out this website. It's just a multiple choice vocabulary quiz, but the questions are endless, and as you master new words, you can move up levels. In addition, the organization that runs the website donates ten grains of rice for each question answered correctly!

COLLINS DICTIONARY

When learning English online, it's important to have a reliable English language dictionary. Collins Dictionary is one of the most well-known English dictionaries. It has an online dictionary, thesaurus and translation sections, you'll also find the latest news and other great articles about the English language.

Simply click on the "Definitions" for dictionary entries for any English word. You'll see such important information as its meaning, origins, pronunciation and grammatical information. The thesaurus is great for finding synonyms (words that mean the same thing), and the translation section allows you to find out the meaning of the English word in another language, e.g. Russian.

Collins also has an English grammar section with articles on grammar topics like nouns, verbs and prepositions. You can also find and try some language learning game.

Just keep these websites handy when you're studying English to make the learning efficient and entertaining.

a) Have you ever used any of the resources mentioned in the article?

b) What are you favourite online resources to learn English? Why?

UNIT 3

UNIVERSITY / STUDIES

1. Discuss the following questions.

The words below (Useful vocabulary) can help you answer the questions and express your opinion.

- Where are you studying now?
- Why did you decide to study at this university?
- What do you like about it?
- Is higher education really necessary?

Useful vocabulary

Bachelor's Degree	степень бакалавра
Master's degree	степень магистра
first-year student	первокурсник
to study full-time	учиться на очном отделении
dean	декан
professor	преподаватель вуза
associate professor	доцент
teaching assistant	ассистент
assistant professor	старший преподаватель
senior	студент выпускного курса
graduate student /postgraduate student	аспирант
scholarship	стипендия
specialize <u>in</u>	специализироваться в чем-либо
graduate <u>from</u>	заканчивать (ВУЗ)
take exams	сдавать экзамены
pass an exam	сдать экзамен (успешно)
thesis	дипломная работа, диссертация
faculty / department	факультет, кафедра, преподавательский состав

teaching staff	преподаватели
dormitory/dorm; hostel	общежитие
college / institute	колледж, факультет
chair	кафедра
head of the department	зав кафедрой
student union	студенческий профсоюз
campus	кампус, территория вуза
a major / to major in	специальность/специализироваться в
term	семестр
to get a university degree	получить высшее образование
extracurricular activities	внеучебная деятельность

What's the word/phrase from the list to match the definition?

- 1) to be successful in an exam
- 2) the head of a department
- 3) activities that are not part of the usual school or college course
- 4) one of the parts into which some universities are divided
- 5) a large building at a college or university where students live
- 6) a first degree at a college or university
- 7) the buildings of a college or university and the land that surrounds them
- 8) a student in the first year of high school, college, or university
- 9) an amount of money given by a college, university, or other organization to pay for the studies of a person with great ability
- 10) a long piece of writing on a particular subject, done for a university degree

2. Describing your university life

a) Complete the gaps in the text with the words from the list in Ex.1.

MY STUDIES

I am a first-year student of Agricultural University. I am studying at the Institute of Mechanical Engineering. My a) _____ is agricultural engineering. I will study for four years to get a b) _____. I am a c) _____ student, which means I attend

the University 5 days a week. This year we are studying a wide range of subjects such as History, Foreign Languages, Mathematics, Physics and we have a few specialized courses such as Machinery Operation and Farming Machines. I'm good at most subjects and hope to become a highly-qualified specialist.

Classes usually begin at 9 a.m. We have lectures, seminars and tutorials. There is up-to-date equipment and laboratories where students do research work and conduct experiments. Our university d)_____ show us how to apply theory to practice. There is a new modern library at students' disposal and I attend a reading-room to find necessary literature and to do my homework. Some of my groupmates live in a e)_____ but I live with my parents. Our university has a sports centre which has really good facilities, so all of us do different kinds of sports.

The academic year consists of two f)_____: the first is from September till the end of January and the second is from February till late June. At the end of each term we g)_____. Those students who pass exams well get a h)_____ or grants. Students also have an opportunity to participate in the Exchange Programme and go abroad to improve their professional skills and practice a foreign language.

The Students' Union is a group of elected students, which runs different i)_____, parties, events, helps you get discounts. There is a Community Centre at our University where I can spend my leisure time. There are lots of clubs from Cinema Club to Acting Society.

At the end of my study I'll have to take final university exams and write a j) _____ to get a diploma. The graduates of our university work for different agribusiness firms, so I hope to find a well-paid and interesting job in a successful company.

b) What answers would the author of the text give?

1. Are you a sophomore?
2. What institute are you studying at?
3. What is your major?
4. How long do you have to study to get a degree?
5. What subjects are you studying this year?
6. How many terms does the academic year consist of?
7. Do you live in a dormitory?

8. What facilities does your University have?
9. What can you do in your free time?
10. Where would you like to work after graduating from the University?

3. Reading RUSSIAN STATE AGRARIAN UNIVERSITY–MOSCOW TIMIRYAZEV AGRICULTURAL ACADEMY

a) Can you pronounce the words correctly? Mind the stress.

Higher education, academy, bachelor, agricultural, mechanics, campus, economics, scientific, curriculum, canteen, finance, faculty, theses.

b) Read the text below and fill in the gaps with the words in the box.

***RUSSIAN STATE AGRARIAN UNIVERSITY–MOSCOW
TIMIRYAZEV AGRICULTURAL ACADEMY***

founded	campus	higher-education	rector	Faculty	research	Bachelor
	canteens	specialists	dormitories	full-time		

1. The Timiryazev Agricultural Academy is the oldest 1)_____ institution of agriculture in Russia. It was 2)_____ on December 3, 1865. The Russian State Agrarian University–Moscow Timiryazev Agricultural Academy was granted a status of the Base Organization of the Ministry of Agriculture in 2017, and now it provides training, advanced training and professional retraining of agriculture 3)_____ .

2. In March 2018 the organizational structure of the university was changed, and three institutes were founded: Institute of Economics and Management in Agro-Industrial Sector, which included former 4)_____ of Economics and Faculty of Economics and Finance; Institute of Amelioration, Water Management and Construction named after Alexey Kostyakov and Institute of Mechanics and Power Engineering named after Vasily Goryachkin.

3. The university provides accommodation at 14 well-equipped comfortable 5)_____ (the housing capacity is 10200 people). The 6)_____ includes a scientific library, sports facilities, Students Activity centre, 7)_____ , cafes, a self-service

laundry, parking lots. Most dormitories are within the walking distance of lecture halls and laboratories. The accommodation is provided for the entire study period to all 8)_____ students from outside of Moscow.

4. The acting 9)_____ is Vladimir I. Trukhachev who is Academician of the Russian Academy of Sciences and Doctor of Science in Economics and Agriculture.

The university provides:

- 4-year 10)_____ 's Degree programmes
- 2-year Master's Degree programmes
- Postgraduate (PhD) research programmes of 3-4 years

5. The curriculum in the first and second years of study includes core courses that are similar for all faculties. The study programmes in the third and fourth years consist of specialized courses that students take in accordance with their professional interest and experience. After the third year of study, students conduct 11)_____, which is an essential part of their diploma theses.

c) Find the English equivalents for the following words and phrases.

1. Министерство сельского хозяйства
2. Профессиональная переподготовка
3. Быть названным в честь
4. Энергетика
5. Обеспечивать условия для проживания
6. Научная библиотека
7. Условия для занятия спортом
8. Быть в пешей доступности
9. Лекционный зал
10. Действующий ректор
11. Программа обучения
12. Дипломное исследование

d) Is all the information given in the text accurate? Check the University website and update the information.

e) Correct the statements.

1. The Timiryazev Agricultural Academy is the youngest higher-education institution of agriculture in Russia.
2. The university was rearranged in 2019.
3. The university now has 5 institutes.
4. The university has 10 dormitories.
5. The dormitories are situated far from the university buildings.
6. The former Rector of the Academy is Vladimir Trukhachev.
7. Students have specialized courses in the 1-2 years of study.
8. Students do not need to conduct research for their theses.

d) Answer the questions.

Where are you studying now?	
When was your university/institute founded?	
What degree will you get after graduating?	
When do students conduct their own research?	
How long is the course of study?	
What subjects are you learning this term?	

4. Read and translate the text; then do the tasks after the text.

The Technical University of Munich (TUM) is one of the best universities in Europe. They offer excellence in research and teaching, interdisciplinarity and talent development. In addition, there are strong links with companies and scientific institutions around the world.

It was founded in 1868. TUM was founded to provide the state of Bavaria with a center of learning dedicated to the natural sciences. Since then TUM has been at the forefront of innovation. TUM scientists today have the same goal as their 19th century counterparts: finding solutions to the major challenges facing society.

The Technical University of Munich (TUM) combines top-class facilities for cutting-edge research with unique learning opportunities for 42,705 students. The spectrum of disciplines represented at the university includes medicine, engineering,

the natural and life sciences, as well as political and social sciences and management. It is one of the biggest technical universities in Germany.

a) Try to find more information about this university and add 5 more facts.

b) Answer the question in writing.

Would you like to study (continue studying) at this university? Why (not)?

5. Reading AGRICULTURE NURTURES FRESH CAREER PROSPECTS FOR SCHOOL LEAVERS

a) What is Russian for the following words and phrases?

Livestock handling, pasture, farm equipment maintenance, general farm upkeep

b) Match the following words and phrases with those highlighted in the text.

- 1) обучение на рабочем месте
- 2) высшее и послевузовское образование
- 3) налаживать профессиональные связи
- 4) профессиональное обучение
- 5) рабочая сила
- 6) кандидаты
- 7) нестандартное мышление
- 8) современный

c) Read the text below and answer the questions.

- 1) Who is the Agricultural Pathways Program for?
- 2) What will the key duties of the on-the-job students include?
- 3) What are the benefits of this programme?
- 4) Do you think such programmes are necessary? Why (not)?

***AGRICULTURE NURTURES FRESH CAREER PROSPECTS
FOR SCHOOL LEAVERS***

School leavers exploring career pathways are encouraged to consider a future in the agriculture industry.

The Agricultural Pathways Program is a two-year course, open to budding agronomists, livestock managers and farmers wanting to get a head start in their agriculture careers.

Successful applicants will join the Department of Primary Industries' 13,000-hectare research station portfolio as farm assistants.

They will immerse themselves in on-the-job learning, with key duties including general crop, pasture, animal and farm operations, horticultural activities, livestock handling, tractor and farm equipment maintenance, and general farm upkeep.

The program adds to the NSW Government's approach to supporting the state's future agriculture workforce, with education and skill-based programs that start in primary and secondary school through to tertiary and post-tertiary education levels.

Skills and Training Minister Alister Henskens highlighted the importance of thinking outside the box when it comes to vocational education and training.

"We want to provide more opportunities for young people to get the skills they need for the jobs they want, and this program is another great example of that," Mr Henskens said, - "By giving school leavers a foot-in-the-door, they can learn on the job and build industry connections, which in turn helps employers identify talent for ongoing roles within the sector."

Source: <https://www.nsw.gov.au/news/agricultural-pathways-program>

(accessed 22.08.2022)

6. Vocabulary revision

a) Do you remember the English for the words and phrases from this unit?

1. сельскохозяйственный университет
2. ректор
3. декан

4. преподаватель/лектор
5. студент очного/заочного отделения
6. первокурсник/второкурсник
7. аспирант
8. степень бакалавра
9. степень магистра
10. факультет
11. проводить (исследование)
12. курсовая работа
13. дипломное исследование
14. учебная программа
15. высшее учебное заведение
16. сдавать экзамены
17. территория университета
18. общежитие
19. столовые
20. лаборатория
21. учебная аудитория
22. лекционный зал
23. спортзал
24. современное оборудование
25. закончить университет
26. ученый
27. профессиональное обучение
28. высшее образование
29. академия
30. университет
31. учебный год
32. обучение на рабочем месте
33. одногруппник
34. провалить экзамен
35. студенческий профсоюз

36. семестр

37. экзаменационная сессия

38. агропромышленный сектор

39. научная библиотека

40. Институт механики и энергетики им. В.П. Горячкина

b) Complete the sentences. Use the words from the list above.

1) The academic year consists of two _____ .

2) It will take you longer to complete your education if you are a _____ .

3) Our _____ provides good conditions for self-education and intellectual leisure.

4) _____ is based on the principle of “learning by doing”.

5) It is not always easy to find a job after you _____ from university.

6) Wi-fi is also provided in many locations around the _____ .

7) Many departments require their students to do a _____ defense as part of a university degree.

8) Being a part of a _____ is a great way you can make your studies at university more fun.

9) Living in a _____ gives you the best opportunity to get involved in on-campus activities, such as sports, concerts, and other group activities.

10) _____ is the most dynamically developing sectors in today’s Russia.

UNIT 4 FUTURE JOB

1. Read the quotes and answer the questions.

a) Do you agree?

People who work sitting down earn more than people who work standing up.

Ogden Nash

b) Read and translate another quote. Are the things mentioned in the quote enough to enjoy your job? What else is important to you?

As I have gotten older and wiser I discovered that there are six things that I really loved about my job. Pay day, lunch time, quitting time, vacation time, holidays, and of course retirement. *Tom Goins*

2. Write 2-3 more jobs in each column.

-er	-or	-ist	-ian	others
lawyer developer ...	administrator actor ...	scientist psychologist ...	technician librarian ...	chef policeman ...

3. Describing your job

a) Match the description with the job title.

OFFICE ASSISTANT / MOTOR MECHANIC

? _____

I only work **part-time**, three mornings a week. Sometimes I **do overtime** on Saturday afternoon. My job is **temporary** as I have a six-month **contract**. My salary is not very big, but the **working hours** suit me because I have very young children. When they go to school, I will be able to work **full-time**. So I'll try to find a **permanent** job then. What

I like most about my current job is communicating with customers. Although handling paperwork can sometimes be boring, I always feel happy when they are satisfied with our auto repair service.

? _____

I did a twelfth-month **training course** at a Technical College to get my **qualification**. Then I started working in a local automobile company to get some **experience**. I worked long hours for a low salary. Two years later I decided to **resign** and I became **self-employed**. I like working for myself. I don't work regular hours (sometimes people ask for urgent help in the middle of the night), but I earn a much higher **salary**, so I hope I'll be able to **retire** earlier, when I'm 60.

b) Match the highlighted words in the texts to the definitions.

- 1) a written legal agreement _____
- 2) the knowledge you get from doing a job _____
- 3) a series of classes to learn to do a job _____
- 4) the time you spend doing a job _____
- 5) working for yourself, not for a company _____
- 6) to stop working when you reach a certain age, e.g. 65 _____
- 7) to leave a job because you want to _____
- 8) lasting for a short time _____ (opposite _____)
- 9) for only a part of the day or a week _____ (opposite _____)
- 10) exams you've passed or courses you've done _____
- 11) a fixed amount of money paid for the work a person does _____
- 12) time worked in addition to your usual job hours _____

c) Put the sentences into the right order to make a story.

- A. But he was happy because he had a good salary and a company car.
- B. He applied for a job with an international company and sent in his CV.
- C. He was sacked. Jack was unemployed again.
- D. After six months he got promoted.
- E. Jack was unemployed and he was looking for a job.
- F. He had to work very hard and do overtime.

G. But then he had an argument with his boss.

H. He had an interview and got the job.

d) Writing: Describe a job you are doing now (or a job your relative/friend does). Try to use as many words and expressions from the exercises above as possible.

4. Will you be satisfied with your job if you follow your passion?

a) Read the extract from an article to find out if you are right?

***FOLLOWING YOUR PASSION DOESN'T NECESSARILY LEAD
TO JOB SATISFACTION***

First, let's get a common misconception out of the way. At some point in your life, you've undoubtedly heard someone tell you to follow your passion. Their intentions were probably good, but their advice wasn't.

Here's why: Most career advice starts with asking you to write down a list of what you want from a job or your passions, like "working with animals" or "being outdoors." But while imagining your ideal job might seem to make sense, research has shown that we're terrible at predicting what will make us happy.

According to research from psychologists at Stanford and Yale-NUS, telling someone to "follow their passion" can be extremely limiting. Rather than being motivated by their passions, the study found that people who believed they only had to find the thing they were interested in ended up less satisfied and were more likely to lose interest in jobs quickly.

Source: *6 Things that the Best Jobs Have in Common*

<https://www.fastcompany.com/90233182/6-characteristics-of-a-satisfying-job>

(accessed 11.08.2022)

b) Write down what characteristics of a future job can make you feel happy (e.g. working from home), share your ideas in a group.

5. Read the article and choose A, B, or C to answer the questions below.

HOW I GOT MY DREAM JOB

Are you still looking for your dream job? Don't give up. Here's how three people achieved their goals.

Mario Mendes, 29

I'm doing something I really enjoy. I'm part of a team that develops new technologies. I work with intelligent, interesting people and occasionally get to travel abroad. I won't pretend it was easy getting my dream job, but it was worth the effort. My advice? Decide exactly what your dream job is and what it involves. Learn about the job. Make contact with companies that could offer your chosen career. Make sure they know your strengths. You may just get that dream job.

Andy Collins, 46

As a student, I earned \$295 a week in cash working in a beach café. At the time, it was my dream job! Later I became a chef. It was hard work, I was often in a hot kitchen for twelve hours a day, six days a week. But you have to know the meaning of hard work if you want to achieve your goals. I now own five restaurants around the U.S. My best advice is to find out what your skills and talents are. Talent is something you're born with. Skills are something you've learned to do. People like doing things that come naturally to them, so work and enjoy!

Sarah Cooper, 38

I'd been working as a secretary for three years when I decided to change my career. My work was often boring and always busy. I started studying to become a teacher. It certainly wasn't easy; I continued working full-time to pay for my training at night school. I was exhausted most of the time, but after two years, I finally got my qualifications and resigned. I'm now a primary school teacher and it's as good as I imagined. So don't wait! Write a list of the things that are stopping you from getting your dream job. Make a plan to deal with each thing. There's always an answer.

1) Mario sometimes _____.

A enjoys his job B travels abroad C works in a team

2) Mario thinks he got his dream job because _____.

A he's intelligent B it was easy C he did a lot of preparation

3) When Andy was young, his dream job was to _____.

A become a chef B have his own restaurant

C work in a café by the beach

4) When he was a chef, Andy _____.

A earned \$295 a week B didn't enjoy his job

C didn't get much time off

5) Andy says it's important to know _____.

A your goals B what you're good at C what you enjoy doing

6) It took Sarah _____ years to train to be a teacher.

A five B three C two

7) Sarah's job as a secretary wasn't very _____.

A hard B exciting C easy

8) Sarah studied _____.

A full-time B at evening classes C during the day

9) Sarah advises people to _____.

A plan how they can achieve their goals B become primary school teachers

C continue working while they train

10) Who has become a successful businessman / woman?

A Andy B Mario C Sarah

6. Discovering your career interests

Take a test which will help you discover your career interests at <https://www.yourfreecareertest.com/career-tests/free-career-test-for-students/>, and your ideal career work environment. Share your results. Do you agree with them?

7. Reading ENGINEERING JOBS

a) What engineering jobs do you know? Discuss in groups and make a list of jobs.

b) Scan the article. How many of the jobs are mentioned in the article?

ENGINEERING JOBS

A.

Professional engineers may work as:

Design engineers: They work as part of a team to create new products and extend the life of old products by updating them and finding new applications for them. Their aim is to build quality and reliability into the design and to introduce new components and materials to make the product cheaper, lighter, or stronger.

Installation engineers: They work on the customer's premises to install equipment produced by their company.

Production engineers: They ensure that the production process is efficient, that materials are handled safely and correctly, and that faults which occur in production are corrected. The design and development departments consult with them to ensure that any innovations proposed are practicable and cost-effective.

B.

Just below the professional engineers are technician engineers. They require a detailed knowledge of a particular technology – electrical, mechanical, electronic, etc. They may lead teams of engineering technicians. Technician engineers and engineering technicians may work as:

Test/laboratory technicians: They test samples of the materials and of the product to ensure quality as maintained.

Installation/service technicians: They ensure the equipment sold by the company is installed correctly and carry out preventative maintenance and essential repairs.

Production planning and control technicians: They produce the manufacturing instructions and organize the work of production so that it can be done as quickly, cheaply, and efficiently as possible.

Inspection technicians: They check and insure that incoming and outgoing components and products meet specifications.

Debug technicians: They find fault, repair, and test equipment and products down to component level.

Draughtsmen/women and designers: They produce the drawings and design documents from which the product is manufactured.

C.

The next grade are craftsmen/women. Their work is highly skilled and practical. They may work as:

Toolmakers: They make dies and molding tools which are used to punch and form metal components and produce plastic components such as bumpers.

Fitters: They assemble components into larger products.

Maintenance fitters: They repair machinery.

Welders: They do specialized joining, fabricating, and repair work.

Electricians: They wire and install electrical equipment.

Operators require fewer skills. Many operator jobs consist mainly of minding a machine, especially now that more and more processes are automated. However, some operators may have to check components produced by their machines to ensure they are accurate. They may require training in the use of instruments such as micrometers, verniers, or simple 'go/no go' gauges.

Source: *Adapted from S.Moss & A.S.Watts, Careers in Engineering, 3d edition*

c) Who of those listed above would be employed to:

1. test completed motors from a production line?
2. find out why a new electronics assembly does not work?
3. produce a mould for a car body part?
4. create the manufacturing instructions for production processes?
5. find a cheaper way of manufacturing a crankshaft?
6. repair heating systems installed by their company?
7. see that a new product is safe to use?
8. commission a turbine in a power station?

9. inspect the produced parts with precision and measuring tools

10. record tests and analyses and then report the results

8. What skills do you need to be a successful agricultural engineer?

Match the skill and its description

It's helpful for agricultural engineers to have these hard and soft skills to be successful in the industry:

<i>Communication skills</i>	a) Agricultural engineers require advanced design skills and knowledge, as their job involves creating agricultural equipment, systems and infrastructure
<i>Engineering skills</i>	b) They handle numbers daily to collate data, create their machinery and infrastructure designs and improve equipment
<i>Design skills</i>	c) Agricultural engineers typically spend time both indoors and outdoors, so they require these skills for inputting laboratory data, writing reports on research findings and creating their designs using software
<i>Teamwork skills</i>	d) Agricultural engineers must complete tasks like improving machinery, developing new technology and planning agricultural systems
<i>Computing skills</i>	e) Working with various other professionals and people is a key aspect of this role, so the ability to work well with others is beneficial
<i>Problem-solving skills</i>	f) Agricultural engineers must be good at written and verbal communication, as the job involves writing reports and dealing with a wide variety of people. This includes people working in the farming industry, government officials and residents
<i>Math skills</i>	g) They include attention to detail and the ability to think critically and analyse information effectively
<i>Analytical skills</i>	h) As this role involves evaluating and solving issues concerning the environmental effects of farms, it's beneficial for agricultural engineers to be able to handle unexpected situations in the workplace as well as complex business challenges

Which skills are the most important for an engineer, in your opinion?

What sort of engineering jobs would you like/are you going to do in the future?

9. Understanding job advertisements

a) Answer the questions below the job advertisement.

Agricultural Technician

Perfect Placement UK Ltd ★★★★★ 45 reviews

Oakfield

£ 42,000 a year

Apply on company site

Job details

Salary £42,000 a year

Full Job Description

Agricultural Engineer

- Hourly Rate up to £18 per hour plus overtime
- 42.5 Hour Working Week!

This is a fantastic opportunity for a skilled agricultural service engineer to work alongside a world-class engineering company!

Our Client is looking for experienced Field Service Engineers.

You will be responsible for servicing and repairing agricultural equipment to an extensive customer base.

Your key responsibilities will include:

- Keeping machinery in peak operating condition through scheduled maintenance, repairs and inspections
- Completing jobs to a high standard within a given timeframe
- Developing and maintaining good working relationships with customers
- Good customer service skills
- Having the ability to work independently to solve problems
- Ensuring work/personal equipment complies with safety standards
- Supervising Apprentices, when required, to ensure high quality of work and safe working procedures

Key skills we are looking for:

- NVQ level or equivalent in Plant/Land Base Mechanical Engineering
- Ability to service a wide range of heavy tracked plant machines

- Investigate & diagnose technical problems
- Interpersonal relationships/ Customer awareness
- Efficient and flexible with the ability to work without supervision

In return, you will receive:

- Competitive salary
- Company Van
- Company Fuel Card
- Discounted Tools
- Contributory Pension scheme
- Uniform
- Continuous In-house training!

If you require any further information, please do not hesitate to contact me.

We are the UK's leading Automotive Recruitment Consultancy, and we will not send your CV to a job until we have spoken to you so it is important that you provide your daytime contact mobile number.

Questions

1. Do you have any information about the company advertising this position?
2. Where is the job placed?
3. What qualifications are required?
4. Will you be considered for a job if you are not experienced?
5. What characteristics should applicants have in addition to qualification and experience?
6. What are some of the job requirements?
7. Which non-professional qualities are essential?
8. What will a benefits package include?
9. What does NVQ mean?
10. What is a CV?

b) Language focus: Word-building

Read and translate the nouns. Which adjectives from the text correspond to these nouns? Then use some of them in the sentences below in the right form.

1. skill

2. responsibility
3. automobile
4. flexibility
5. competition
6. contribution
7. efficiency
8. person (2 adjectives)
9. responsibility
10. extension

a. A _____ work schedule allows employees to find a work-life balance that works for them.

b. Agricultural managers are _____ for the daily planning, organisation, supervision and administration of activities on a farm.

c. Increasing mechanization has improved farm _____ in many countries.

d. Practical training help young people be more _____ on the job market.

e. The seminar helps to develop new _____ for digital farming.

10. Interview questions and tips

a) Watch TOP 10 JOB INTERVIEW QUESTIONS IN ENGLISH at <https://www.youtube.com/watch?v=jaxgeXPgAz0> and write down the questions discussed in it.

b) Reorder the words to get some common interview questions.

- 1) about Tell yourself me.
- 2) are weaknesses your What ?
- 3) are strengths What your ?
- 4) do you five see Where yourself in years ?
- 5) you Why we should hire ?
- 6) did the learn How about you opening ?
- 7) want Why job do you this ?
- 8) your job dream Describe.

- 9) do Why you to current leave your want job ?
- 10)kind of best What work you environment do like ?
- 11)How other would you people describe ?
- 12)What your last salary in your job was ?
- 13)leaving Why job are your you current ?
- 14)your What expectations are salary ?

c) Here is some advice on how to answer a few of the interview questions above. Match each piece of advice to its interview question.

A) I'm not sure why interviewers ask this question; your resume and experience should make your strengths apparent.

Even so, if they ask you, provide a good answer. Be clear and precise. If you're a great problem solver, don't just say that: Provide a few examples, pertinent to the opening, that prove you're a great problem solver. If you're an emotionally intelligent leader, don't just say that: Provide a few examples.

B) Your employer wants to see how goal-oriented you are. They also want to check that your expectations are realistic. In your answer, demonstrate your awareness of industry trends and ability to be flexible.

If you give a salary range exceedingly lower or higher than the market value of the position, it gives the impression that you don't know your worth. Here are three ways to approach this response:

Provide a range: Research the typical salary range for the position and make the low end of your range your lowest acceptable salary. For example, if you require at least \$50,000 annually, you might offer the interviewer a range of \$50,000-\$60,000 per year. Let the hiring manager know if you're flexible. Example answer: "My salary expectation is between \$XX,XXX and \$XX,XXX, which is the average salary for a candidate with my level of experience in this city. However, I am flexible and willing to discuss."

C) It's critical to give your answer in the positive. Never say anything negative about your current employer. Instead, focus on the specific, positive things that a career change to the new role will bring, for example, professional development opportunities or the excitement of a new challenge.

D) Understanding how you imagine your life in the future can help employers understand whether the trajectory of the role and company fits in with your personal development goals. To answer this question you can:

Describe skills you want to develop and goals you'd like to achieve: "In five years, I'd like to be an industry expert in my field, able to train and mentor students and entry-level designers. I would also like to work with design and marketing teams on large-scale projects that make a difference both in the company and the global community."

d) Find the following words and phrases in the text. Make up your own sentences with some of these words.

1. резюме
2. опыт
3. умение решать проблемы
4. эмоционально интеллектуальный лидер
5. целеустремленный
6. отраслевые тенденции
7. гибкий
8. диапазон заработной платы
9. производить впечатление
10. ежегодно
11. сотрудник отдела кадров
12. возможности профессионального роста
13. совершенствовать навыки
14. достигать цели
15. широкомасштабные проекты

e) Choose one question from b) and write a piece of advice about how to answer it. You can search the web for ideas.

11. When you're applying for a job, a CV is essential. Find out what to include and what to avoid for the best chance of getting an interview.

a) Vocabulary focus: Match the definitions (a–h) with the vocabulary (1–8).

Vocabulary	Definition
1. neatly	<i>a.</i> possible in the future
2. bullet points	<i>b.</i> deliberately choosing some things and not others
3. to exaggerate	<i>c.</i> to bring attention to something important
4. to highlight	<i>d.</i> directly connected with what is happening or being talked about
5. potential	<i>e.</i> the way that something is designed or arranged on the page
6. the layout	<i>f.</i> symbols, usually small black circles, used in a text to separate each item in a list
7. selective	<i>g.</i> to make something seem bigger, more important, better, worse, etc. than it is
8. relevant	<i>h.</i> in a simple and tidy way

b) Read the text and do the tasks after it.

When you're looking for work, you need an attractive, clear and memorable CV (curriculum vitae) that shows your potential employer the skills and experience you have for the job.

What should you include in a CV?

This article mainly focuses on writing a UK-style CV. If you're applying for a job internationally, be aware that the standard length, format and tone can vary from country to country. It's a good idea to check the expected format in the country or company you're applying to.

Contact details

Make sure the potential employer has a way of contacting you. Include your full name, telephone number and email address.

Photo?

In many countries, employers expect to see a professional-looking photo on a CV. In others, like the UK, Canada and the USA, the law prohibits employers from asking

for a photo, and it is better not to include one. Try to find out if it is usual to include a photo in the working environment you're applying to.

Education

List and date the most important qualifications you have obtained, starting with the most recent. You can also include any professional qualifications you have.

Work experience

List and date the jobs you've had and the companies you've worked for, starting with the most recent. It's usually enough to cover the last ten years of your work history. Include your job title, responsibilities and achievements in the job.

If you have a lot of work experience, give the job titles but be selective about which responsibilities and achievements you highlight. Reduce the detail about jobs that are less relevant to the role you're applying for and draw attention to the most important experience you bring.

Skills

These could include the languages you speak, the computer programs you can use well, the class type of your driving licence, and any other professional skills you might have that are relevant to the job.

Eight useful tips

Before you start getting ready to list your qualifications and work experience, here are eight useful tips to think about.

1. Keep it short ... but not too short!

Your CV should be one to two sides of A4 paper. If you find you've got too much information, summarise and select the most relevant points. If it's shorter than a page, consider including more information about your skills and the responsibilities you had in your previous roles.

2. Use active verbs.

When you describe what you have achieved in previous jobs, use active verbs for a strong positive effect on the reader. For example, to make a change from was responsible for, use verbs like led or managed (a team/a project); created or developed (a product/a positive atmosphere); delivered (results/training); and provided (support/training).

3. Fill in the gaps.

Avoid leaving gaps in your employment history. If you were travelling the world, on maternity leave or looking after small children, include that in your CV.

4. Make sure it's up to date.

Always ensure your CV is up to date. Include your most recent experience at the top of each section.

5. Don't exaggerate or lie.

Your potential employer can easily check information about where you have studied and worked. Don't be tempted to lie or exaggerate about your expertise, because sooner or later this will be discovered and may result in losing the job.

6. Spend time on the layout.

Make sure your CV is clear and easy to read. Use bullet points and appropriate spacing, keep your sentences short, line up your lists neatly and use a professional-looking font (e.g. Arial font size 12).

7. Check for mistakes.

Mistakes on a CV create a bad impression. Use spell check, reread your CV and ask someone else to check it for you too before you send it.

8. Include a cover letter.

When you send your CV to apply for a job, you should send it with a cover letter or email to introduce your application. The cover letter should show your personal interest in the role, highlight the skills and experience you bring and encourage the employer to read the attached CV.

Writing a good CV takes time and is hard work, but these tips and your effort will help you get the best possible start in your job search. Good luck!

c) Are the sentences true or false?

1. It's always a good idea to include a photo.
2. When you list your work experience, you should start with the job you did first.
3. The longer your CV is, the better it is.
4. Using active verbs rather than passive structures helps to create a good impression.
5. It's better not to mention periods of time when you were not in paid work.
6. You should always tell the truth on your CV.

7. Presentation and small mistakes don't matter – it's the content that's important.

8. Cover letters are nice to have but not entirely necessary

d) Put the details in the correct groups.

- a) Responsible for production in a reputable Seoul-based design firm
- b) Led a team of designers to develop graphic and production materials
- c) MA in Creative Arts and Design, Leeds Arts University (July 2011)
- d) Developed over 200 graphic design projects
- e) Diploma in Graphic Design, York College (July 2008)
- f) Proficient with Microsoft Office, Adobe Photoshop and Sketch
- g) High levels of critical thinking, creativity and problem solving skills
- h) Excellent communicator who brings friendliness, confidence and empathy to leadership and delegation skills
- i) BA in Philosophy, Politics and Economics, University of Oxford (June 1998)

Skills	Education	Work experience – Chief Graphic Designer, BEE&BONN Ltd

Source: <https://learnenglish.britishcouncil.org/business-english/business-magazine/writing-a-good-cv> (accessed 29.07.2022)

Discussion

Which tips do you think are the most useful for writing a good CV?

9. Read a CV sample and do the tasks.

a) Title each part of the CV (you will need some of the captions more than once).

Experience	Dennis Johnston	Duties and Responsibilities Personal information	Skills	Education	Objective
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AUTOMOTIVE ENGINEER RESUME/CV SAMPLE

1) _____

Address: 250 North State St Big Rapids, MI 49307

Phone: (231) 796-6848

Email: DJohnston@yahoo.com

Current job: Quality Engineer at General Motors

2) _____

Pursuing a position in the automotive industry in which I can use my current knowledge of modern automotive manufacturing and engineering.

3) _____

1. Strong analytical skills
2. Detail-oriented and striven for perfection
3. Outstanding written and verbal skills
4. Capability to work in a group environment
5. Understanding of essential automotive terms
6. Ability to work in a fast-paced environment
7. Strong background in mathematics and physics
8. Experienced in use of CAD systems
9. Extensive background in IT

4) _____

Automotive Quality Engineer, 2017 – Present

General Motors Fairfax Assembly Plant, Kansas City, KS

5) _____

- Resolved issues regarding the customer voice navigation unit.
- Developed timely solutions that minimized overall cost and time to implement.
- Designed projects to improve products in the automotive industry.
- Directed a group of employees engaged in the specialized tasks.
- Devised tests for clients and other engineers on the development of the product.

Automotive Engineer in Product Innovation, 2015 – 2017

Ford Motor Company, Dearborn, Michigan

6) _____

- Used my innovation to bring forth different kinds of test procedures.

- Managed all the details of projects, including projected costs.
- Attended team meetings regularly to report my progress and any problems I have found with the project.

- Supervised the technical staff of engineers and designers.

Automotive Assistant, 2016 – 2015

Firestone, Big Rapids, Michigan

7) _____

- Performed simple maintenance tasks such as battery checks and replacement of air filters and spark plugs

- Assisted lead mechanics in jobs by providing tools and following orders
- Performed test drives to assess automotive issues
- Kept shelves properly stocked and work area clean and safe
- Made sure all tools and diagnostic equipment functioned properly
- Sustained inventory and maintained records of shop paperwork
- Answered calls and customer questions

8) _____

Master of Science in Automotive Engineering

University of Michigan, Ann Arbor, MI

2015-2015, 3.6 GPA

Bachelor of Science in Automotive Engineering

Ferris State University, Big Rapids, MI

2017-2015, 3.7 GPA

9) _____

- DOB: August 1, 1984
- Hobbies include working on project cars
- Married with one child

b) Find the following words and expressions in the CV

- 1) Аналитические навыки
- 2) Навыки устной и письменной речи
- 3) Быстро меняющаяся обстановка
- 4) Глубокие знания в (математике)

- 5) Клиент/покупатель
- 6) Снизить расходы
- 7) Сотрудники, задействованные в чем-либо
- 8) Качество продукции
- 9) Совершенствование продукта
- 10) Обязанности
- 11) Предполагаемые расходы
- 12) Посещать собрания коллектива
- 13) Руководить группой (инженеров)
- 14) Выполнять простые работы по техобслуживанию
- 15) Свеча зажигания
- 16) Инструменты и диагностическое оборудование
- 17) Вести записи в мастерской
- 18) Магистр (бакалавр) технических наук
- 19) Гоночный симулятор

c) Translate the CV. If you have to create a similar CV in Russian, will it look the same?

UNIT 5

AGRICULTURAL ENGINEERING

The field of agricultural engineering involves implementing innovative ways to keep farms sustainable, efficient and environmentally friendly. People who enjoy spending time outdoors and have an interest in farming tools and technologies may consider a career in this sphere.

1. Reading AGRICULTURAL ENGINEERING

a) Language focus: word-building

What part of speech do these suffixes belong to?

-tion -ment -ity -ture -or -ist -ence

Make a noun using the suffixes above (you can find all the nouns in the text below)

to educate	to manage
to equip	intelligent
genetics	to govern
to pollute	to sequestrate
to improve	to solve
sustainable	

b) Read the text and match each question with the paragraph that answers it.

1. Where does an agricultural engineer work?
2. What are work schedules like?
3. What is an agricultural engineer?
4. What do agricultural engineers do?

AGRICULTURAL ENGINEERING

A _____

Agricultural Engineering is the area of engineering concerned with the design, construction and improvement of farming equipment and machinery. Agricultural engineers integrate technology with farming. For example, they design new and improved farming equipment that may work more efficiently, or perform new tasks. They

design and build agricultural infrastructure such as dams, water reservoirs, warehouses, and other structures. They may also help engineer solutions for pollution control at large farms. Some agricultural engineers develop new forms of biofuels from non-food resources like agricultural waste. Such fuels could economically replace gasoline without jeopardizing the food supply. Agricultural engineering is a multifaceted career that integrates innovative technology like artificial intelligence with farming. It combines elements of mechanical, civil, electrical and chemical engineering with agricultural principles

B _____

While agricultural engineers may develop specialties, most are involved in certain core activities. For example, most professionals design and test agricultural machinery, equipment, and parts. They may also design food storage structures and food processing plants. Some may design housing and environments for livestock.

Those interested in sustainability may provide advice on water quality and water pollution control issues. They may also plan and oversee land reclamation projects on farms. Others may be involved in agricultural waste-to-energy projects and carbon sequestration (absorbing carbon dioxide from the atmosphere into the soil, crops and trees).

C _____

Most agricultural engineers are employed in architectural, engineering and related services. Some are employed by the federal government, food manufacturing, in agriculture, construction, and mining machinery manufacturing. About 6% are employed as educators.

Agricultural engineers work both indoors and outdoors. They work in offices creating plans and managing projects, and in agricultural settings inspecting sites, monitoring equipment, overseeing reclamation and water management projects. These positions may involve a significant amount of travel. These engineers also work in laboratories and classrooms. They collaborate with others to plan and solve problems. For example, they work with horticulturalists, agronomists, animal scientists, and geneticists.

D _____

Agricultural engineers usually work full time, including occasional overtime. For example, they may work long hours to make progress on projects during periods of

good weather. They are also often on call to manage problems that may arise on various projects.

c) Find the English equivalents in the text.

1. сельскохозяйственная техника/оборудование
2. проектировать сельскохозяйственную инфраструктуру
3. контроль загрязнения окружающей среды
4. сельскохозяйственные отходы
5. пищевые запасы
6. завод по производству продуктов питания
7. домашний скот
8. контроль загрязнения водных ресурсов
9. проект освоения земель
10. связывание углерода

d) Yes or No? Correct the wrong statements.

1. Agricultural engineers can make new forms of biofuels from non-food resources like agricultural waste.
2. Designing and testing agricultural machinery and equipment is one of the core activities of agricultural engineers.
3. Agricultural engineers are usually employed in farming.
4. Agricultural engineers usually work indoors.
5. Agricultural engineers have to work overtime if the weather is good.

e) Write a summary of the text (see Appendix 1).

2. Reading FARM MACHINERY

a) Can you pronounce correctly? Mind the stress.

Machinery, mechanical, fertilizer, cultivation, livestock, gasoline, machine, engine, cultivator, GPS, temperature, technology.

b) Read the text about different kinds of farm machinery and do the tasks after the text.

FARM MACHINERY

Farm machinery are mechanical devices, including tractors and implements, used in farming to save labour. The operations for which machines are used are diverse. In crop production they are tillage of the soil; fertilizer distribution and application; seeding, planting; cultivation; pest control; harvesting; transportation; storage; water conservation. Livestock production, which not so long ago depended primarily on the pitchfork and scoop shovel, now uses many complicated and highly sophisticated machines for handling water, feeding, and bedding. There are as well many special operations involved in producing milk and eggs.

Farm machines include a great variety of devices with a wide range of complexity: from simple hand-held implements used since prehistoric times to complex harvesters of modern mechanized agriculture. In the early 19th century, animals were the chief source of power in farming. Later, steam power grew in importance. During World War I gasoline/petrol-powered tractors became common, and diesel engines became prevalent later. In the developed countries, the number of farm workers steadily declined in the 20th century, while farm production has increased thanks to the use of machinery.

It has become possible because of mechanical innovations that facilitate the production processes in all phases. The most common machines are seeders, agricultural tractors, plows, combine harvesters, field sprayers, and motor cultivators.

However, roughly 800 million people worldwide suffer from hunger and recent scientific data suggest that by 2050 we will need to produce 70 percent more food. Under a business-as-usual scenario, 8 percent of the world's population (or 650 million) will still be undernourished by 2030. It seems there has not been enough innovation in the industry.

Apparently, farms and agricultural operations will have to be run very differently, mainly due to advancements in technology such as sensors, devices, machines, and information technology. Future agriculture will use sophisticated technologies such as robots, temperature and moisture sensors, aerial images, and GPS technology. These

advanced devices, precision agriculture and robotic systems will allow farms to be more profitable, efficient, safe, and environmentally friendly.

c) True or false? Correct the wrong facts.

- 1) Pest control refers to livestock production.
- 2) Diesel engines started to be used after WWI.
- 3) The number of farm workers increased in the 20 century due to the growth of the population.
- 4) The world will need much more food in the future.
- 5) The farms will have to use sophisticated technologies to be more efficient.

d) Answer the questions.

- 1) What is the general function of farm machinery in agriculture?
- 2) What kinds of machinery are the most common in Russian farms? What operations can they perform?
- 3) Has the machinery helped to solve the problem of hunger?
- 4) What kind of innovations will the farm machinery need in the future?
- 5) What kind of innovations can you facilitate or deal with in the future?

e) Which farm machines can perform this function?

harvesting -

transporting -

feeding animals -

planting -

preparing land for planting -

3. Reading THE RISE OF MECHANIZED AGRICULTURE EQUIPMENT

a) Vocabulary focus: Do you know these terms? Match them to their meaning.

1. a seed drill	a. борозда
2. a planting row	b. паровой двигатель

3. a harrow	с. уборочная машина
4. a cotton gin	d. молотилка
5. a reaper	е. сеялка
6. a threshing machine	f. хлопкоочистительная машина
7. a scythe [said]	g. борона
8. a steam engine	h. коса
9. a drive chain	i. двигатель внутреннего сгорания
10. internal combustion engine	j. цепной привод

b) Read an extract from the article HISTORY OF AGRICULTURE EQUIPMENT: IMPORTANT DEVELOPMENTS AND EXAMPLES and answer the questions.

1. Which parts did Tull's mechanical seed drill consist of?
2. Could people use cotton gins for long-staple cotton in the 18th century?
3. What were the earliest agricultural steam engines like?
4. When did the first gasoline-powered tractor appear?

THE RISE OF MECHANIZED AGRICULTURE EQUIPMENT

Jethro Tull's invention of an improved mechanical seed drill in 1701 marked the beginning of a new age for agriculture equipment. Tull's machine combined a small plow for creating a planting row, integrated with a hopper for storing seed, a funnel for distributing it, and a harrow for re-covering the newly planted seed. Prior to this invention, seeds were either scattered (or in some cases, individually hand-planted). Tull's seed drill could be pulled by hand or animal.

Tull's invention foreshadowed a common trend for the coming mechanical revolution. Innovations began emerging more quickly than ever.

Other Important Examples of Agricultural Equipment Innovation

In 1794, Eli Whitney developed the first hand-powered cotton gin suitable for the short-staple cotton grown in North America (gins used for long-staple cotton in India have a much longer history). This device separates seeds/hulls and other detritus from cotton fibers, a process that had earlier been extremely labor-intensive.

By 1834, rival reaper designs from Hussey and McCormick marked the first move away from sickle/scythe reaping of grains. These devices were drawn by horse, while

a hand-crank powered a reciprocating cutting bar. While a skilled farmer could harvest at most 1-2 acres per day with a scythe, the mechanical reaper allowed one man (with a horse) to harvest large fields in a day. With this increase in efficiency, farm sizes could expand to hundreds or even thousands of acres.

The steam engine created the first technological options for replacing human and animal power in agriculture. The earliest agricultural steam engines were used in the early 19th century. These examples were portable machines that could be placed in a field or a barn to power farm machinery like threshing machines. Power was transmitted using a belt or drive chain (a mechanism used to transmit power to machinery towed by tractors to this day).

While experimental steam-tractors found some applications, they were heavy and dangerous pieces of machinery. The invention of the internal combustion engine led to the first gasoline-powered tractor by John Froelich in 1892. Henry Ford introduced a popular mass-produced tractor, the Fordson, by 1917. Ever since, the tractor has been at the center of agriculture: it can both tow and power a variety of implements, from simple plows to combine harvesters, operating as a flexible investment for farm mechanization across the entire cultivation cycle.

Source: <https://www.tstar.com/blog/history-of-agriculture-equipment-important-developments-and-examples> (accessed 10.08.2022)

4. What do auto mechanics do? Work in groups and make a list of their responsibilities.

e.g. repair cars, ...

a) Vocabulary focus: Match the word and its meaning.

1. a truck	a. коробка передач
2. a drive belt	b. тормоза, тормозная система
3. transmission	c. грузовик
4. steering	d. топливо
5. brakes	e. ремень привода
6. fuel	f. транспортное средство
7. maintenance	g. двигатель

8. hood	h. рулевой механизм
9. engine	i. техобслуживание
10. vehicle	j. капот (автомобиля)

b) Now look through the list below and choose the responsibilities that must be performed by auto mechanics.

Auto mechanics

1. create and conduct experiments using live organisms or biomolecular processes in a laboratory setting to develop new products.
2. run diagnostic testing, repairs, and inspections of trucks and cars.
3. work on engines, drive belts, transmissions, and electronic systems such as steering, brakes, and accident-avoidance systems.
4. set up, maintain and operate standard laboratory equipment and computers
5. work on vehicles with alternative fuels like electricity or ethanol.
6. use microorganisms to help to break down waste materials
7. remove parts that are not operating properly and replace them with new parts.
8. develop gene therapy techniques to help humans and animals.
9. perform routine maintenance like oil, filter, and belt changes according to schedules established by car manufacturers.
10. perform diagnostics and repairs and explain repairs to customers.

c) Read the text and say if you find the reasons compelling enough.

3 REASONS TO BECOME AN AUTO MECHANIC

For some people, wanting to become a mechanic is a dream they've had since childhood. They might have nostalgic memories of watching family members work on cars and have always dreamed of getting under the hood themselves. Some people may have developed their love for cars in their teen years, when they became old enough to drive. Others are just mechanically inclined and have always been hands-on and curious about how engines work.

If you see yourself in any of these examples, you're probably meant for an auto mechanic career. While a love for cars and hands-on work are great reasons to become a mechanic, there are also other reasons to pursue this career.

Auto Mechanics are Always in Demand

Entering a career as a mechanic means guaranteeing a future of steady work. Slumps in the economy can affect consumers buying new cars, but vehicles will always require maintenance and repair.

Changes that may disrupt other businesses have very little effect on the automotive service industry, so there's really no such thing as a slow season for auto mechanics.

Auto Mechanics Have an Amazing Collection of Tools

In most garages, mechanics are required to use their own set of tools. In fact, many even start building their collection of tools while attending Mechanic College.

If you're a hands-on person, then imagine what you can do with dozens of tools at your fingertips! Your tool collection together with knowledge and skills will be your most valuable asset and investment as an auto mechanic.

Auto Mechanics are Knowledgeable

When you start gaining experience as an auto mechanic, you become an expert on the subject of cars. After working on similar issues with a particular model of car several times, you will be able to diagnose problems much more quickly.

Your knowledge can save friends and family a lot of time and money, whether or not you fix their cars for them. Your knowledge will expand over time, and putting your expertise to use is one of the many things that make this career rewarding.

Can you think of any other good reasons to become an auto mechanic?

d) Are the statements true or false? Correct the false ones.

1. Sometimes people start dreaming to become an auto mechanic in their childhood.
2. Economic problems can easily influence the automotive service industry.
3. Mechanics often have their own collection of tools.
4. Your friends and relatives can benefit a lot from your knowledge and experience.

5. Reading FERRUCCIO LAMBORGHINI

a) What associations do you have when you hear the name Lamborghini?

b) Vocabulary focus: Match the word and the meaning.

1. army surplus	a) advanced and using the newest methods, systems, equipment
2. wealthy	b) the part of a car that connects and disconnects the engine from the transmission
3. a factory	c) something expensive that you do not need, but you buy for pleasure and enjoyment
4. a clutch	d) a building or group of buildings where parts are assembled
5. to hire	e) the part of a vehicle that produces power to make it move
6. luxury	f) rich
7. an engine	g) a type of animal
8. cutting-edge	h) extra machinery from the army
9. a breed	i) to give a person a job

c) Read the text and answer the questions after the text.

FERRUCCIO LAMBORGHINI



The history of ‘Lamborghini Automobili’ officially starts in 1963. Nevertheless, we must consider the distant roots of this event, and they are the roots of Ferruccio Lamborghini. Born in 1916, this capable, strong-willed person was the leading character in the foundation of the company and the early phases of its history.

Lamborghini Started as a Tractor Company. By the time he decided to build a factory of luxury sports cars, Ferruccio was already a very wealthy man. Ferruccio Lamborghini was always interested in engines, and he loved repairing any kind of vehicle. After World War II, he founded his tractor factory, which he launched with energy and determination. He began to build tractors out of army surplus supplies. By 1960, his tractor company was building close to 400 tractors a month, and he was a very wealthy and powerful man.

Lamborghini loved owning and driving sports cars. According to one story, he was inspired to build his own sports car, because a Ferrari that he owned had a weak clutch. When he said he would build the best super sports car ever, many people thought he was mad. Constructing that kind of car was viewed as an unexplainable extravagance.

He started working on this project in late 1962, and by May 1963 he had already founded ‘Automobili Ferruccio Lamborghini’, buying a large plot of land in Sant’Agata Bolognese, about 25 kilometres from Bologna, to build a new large and ultramodern factory. He hired some successful engine builders. But Lamborghini would often roll up his shirt-sleeves and go to work on the cars personally when he saw something that wasn’t done just the way he wanted. His first sports car was the Lamborghini 350 GT, which came out in 1964. Soon it was acknowledged as a true 12-cylinder masterpiece.

Lamborghini’s enthusiasm led his mechanics and engineers to produce increasingly cutting-edge sports cars such as the Miura, the Islero, the Espada, and the Jarama, always able to stun the world at each release. Although the production and the employees constantly grew in numbers, Ferruccio Lamborghini always played a crucial and strategic role within the company. He actually started the now famous tradition of naming the cars after breeds of fighting bulls – gallant, strong and intimidating, just like his cars.

Ferruccio Lamborghini died in his estate in 1993, at the age of 76. On the one hundredth anniversary of his birth, the Lamborghini Centenario debuted, paying tribute to the bravery and unique personality of the company’s founder.

Source: <https://www.grange.co.uk/lamborghini/heritage> (accessed 15.08.2022)

Questions

1. What did Ferruccio Lamborghini produce before he started making sports cars?
2. Why does this article mention the army?
3. When did he start his sports car company?
4. When did the first Lamborghini sports car come out?
5. Who constructed his cars?
6. How did he name his cars?

d) Find the English equivalents in the text. Make your own sentences using the words from the list below and from part a).

1. образование компании
2. богатый человек
3. отремонтировать
4. транспортное средство

5. работать над проектом
6. закатать рукава
7. шедевр
8. играть ведущую роль
9. годовщина
10. воздать должное

e) Do you know any other outstanding people who have influenced the engineering field? Make a report on one of them and tell the others about their achievements.

6. Why is transport important in farming? First discuss this question in pairs then read the blog and do the tasks.

a) Read the first two paragraphs and answer the question: What is transport used for in farming?

TRANSPORT AS AN IMPORTANT FACTOR FOR A FARMER'S SUCCESS

By Ines Hajdu | Agronomy, Blog

The story of an adequate farm management begins and ends with efficient and properly managed transport. Transport takes a very important place in every industry, including agriculture.

In order to produce food, farmers need certain resources, such as seed, fertilizers, pesticides, packaging materials, and many others. Precisely because of that, transport is an essential aspect of crop production that enables the delivery of agricultural resources to a farmer. Furthermore, every harvested crop needs to be transported, either directly from the field to the market, or to the packing house and storage.

b) Fill in the table in the next part of the blog with the description of advantages and disadvantages of each mode of transport:

Transport is a practice common to every farmer. Each transport mode has its advantages and disadvantages:

Mode of transport	Advantages	Disadvantages
Road	A. 1	B
Rail	C.	D
Water	E.	F
Air	G.	H

1 - Relatively cheap and fast enough for short distances - Loading and unloading is possible almost at any destination	5 - Quite slow - The cargo can be loaded only in places with a suitable port
2 - Less flexible than road mode transport (infrastructure is not set everywhere) - Expensive when practiced for short distances	6 - Expensive and less efficient for longer distances - Potential problems with traffic jams - Contributes to air pollution
3 - Suitable for large quantities of goods that need to be transported on a long distance - Less dependant on weather conditions	7 - Relatively cheap and efficient way of transporting large quantities of goods, as well as for long distances
4 - The most expensive - Not suitable for short distances	8 - The fastest mode of transport - Efficient for long distances

c) Read the rest of the blog about the factors which should be taken into consideration when choosing the optimal mode of transport. Fill in the gaps with the words from the box.

properties material destination regulations quantity
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When choosing the optimal mode of transport, farmers should consider a few important aspects:

- the distance and the accessibility of the 1. _____;
- the type of goods that are transported; for instance, there are different requirements for transition of perishable crops and packing 2. _____;

- the size or the 3. _____ of goods that need to be transported;
- international or national laws and 4. _____ ;
- available infrastructure and farmer's financial possibilities;
- functionality and additional 5. _____ of any transport mode, as well as any means of transport.

Take your time and manage transport carefully. After all, transport can determine the success at the beginning as well as at the end of a farm season.

7. Reading THIS ELECTRIC TRACTOR DOESN'T NEED A DRIVER

a) Vocabulary focus: Match the word and its definition.

1. automate	a) a device that measures or reacts to heat, movement, light, etc
2. sensor	b) a substance used in chemistry or produced by a chemical process
3. generator	c) the amount of work that a person, company, etc. does compared with how much time, money, and effort it takes them
4. productivity	d) an object that provides electricity for something such as a radio, car, ...
5. crash	e) a machine used for producing electricity
6. chemicals	f) to use robots, computers, etc. instead of people to do something
7. battery	g) to have an accident in a car, plane etc

b) Complete each gap with a word from the table above and translate the sentence.

1. When this _____ detects smoke, it sets off an alarm.
2. The _____ of my old phone had a longer life.
3. Computers have enabled us to _____ many of the routine tasks in offices.
4. He and his father have two laptops, three tablets and a _____ to keep the devices working.
5. This machine has helped increase the company's _____.
6. Farmers are moving away from using _____ and pesticides .
7. The _____ was caused by metal fatigue in one of the propeller blades.

c) Read the article.

THIS ELECTRIC TRACTOR DOESN'T NEED A DRIVER

Monarch Tractor, a California-based company, has built a fully electric ‘smart’ tractor that can operate with or without a driver. The tractor can also move in response to gestures from a person standing on the ground, and can be set to automatically follow a human worker — enabling it to, for example, carry heavy feed bags behind a worker as they feed animals around a farm.



The tractor’s 360-degree cameras help it avoid crashes, while its sensors allow it to collect and analyze over 240 gigabytes of data every day it works in the field. Farmers can receive updates from the tractor on their phone, including weather information from its built in weather station, as well as operation reports.

The company believes that the data collected by the tractor will help farmers increase productivity. “It fundamentally changes farmers’ economics, and allows them to be more profitable,” said company president and co-founder Mark Schwager.

An automated tractor can also be used longer than a regular one. “If I remove the driver, it means that the tractor, as a piece of equipment, can be operated 24/7, versus an eight-hour shift,” said Dr. Zachary Omohundro, the company’s co-founder and chief technology officer.

Automation also improves safety, allowing workers to keep their distance from chemicals as the tractor sprays them on crops, for example.

The tractor’s battery can last 10 or more hours, and takes four to five hours to charge. It also produces no emissions – unlike a diesel tractor, which produces about 14 times more than a regular car.

Omohundro also says that the Monarch is as powerful as a tractor one or two sizes larger. The vehicle can even be used as a remote generator when it is out in the field.

Source: <https://xwqapp.com/this-electric-tractor-doesnt-need-a-driver/>
(accessed 15.08.2022)

d) Find the following words and phrases in the text.

1. Кормить животных
2. Избегать аварии
3. Собирать данные
4. Быть прибыльным
5. Сооснователь (компании)
6. 8-часовая смена
7. Технический директор
8. Не производить выбросов
9. Транспортное средство
10. Готов для отгрузки

e) Answer the questions.

1. What helps the electric tractor to avoid crashes?
2. How long can an electric tractor be used?
3. Does the tractor improve safety? How?
4. Is it harmful for the environment?
5. Have you ever driven a tractor? If not, would you like to? Is it the same as driving a car?

8. What is the future of agricultural engineering? Surf the net and take notes of the trends that are usually mentioned by different authors. Share your ideas in a group.

a) Vocabulary focus: Match synonyms.

1. to develop	a. farming
2. to increase	b. data
3. productivity	c. to boost, to improve
4. agriculture	d. traditional
5. influence	e. predict
6. abilities	f. to advance
7. information	g. efficiency

8. to forecast	h. capabilities
9. main	i. accurate
10. to harvest	j. impact
11. conventional	k. yield
12. correct	l. major

b) Read the article and take notes of the new technology and their benefits for farmers (e.g. AI – optimizing planning, ...).

TRENDS IN AGRICULTURAL ENGINEERING

Technology is advancing faster than we have ever imagined. New tools are developed and released each day to boost efficiency, improve safety, increase profits and create innovative ways to communicate, navigate, and do business. Farming, one of the world’s oldest and most respected professions, is among those constantly experiencing change.

In the world of farming, new technologies offer greater opportunities. The major advantages of using technology are increased crop productivity, lower impact on the environment/ecosystems, minimal use of water, energy, pesticide to turn down food prices, reduced water pollution, etc.

Here are a few agriculture technology trends that help modern farmers make better, faster and smarter decisions and shape the future of farming.

Artificial intelligence (AI) is the ability of a computer to imitate capabilities of the human mind and actions of the human body. AI computers are able to learn and apply facts and processes, recognize objects, understand language and solve problems in order to successfully perform humanlike functions. In farming, AI has the power to increase revenues, boost resource efficiencies and improve sustainability.

AI can predict which crops will deliver the highest returns. AI helps farmers analyze a variety of real-time and future data to make more informed decisions, including weather and temperature forecasting, water usage and soil conditions. AI helps farmers optimize their planning to get a better harvest by determining crop choices and resource utilization. AI also helps to harvest crops at a higher volume and faster rate than humans – thereby reducing labor and yielding more accurate results.

A Geographic Information System (GIS) is a technology that represents a geographical entity in the spatial representation using hardware, software, and data (GIS usage have led to its other names – *satellite farming* or *precision agriculture*). The hardware can be anything from a desktop computer or laptop to satellites, drones, and handheld GPS units. Farmers can use GIS to analyze complex spatial data like rainfall amount, topography, soil elevation, slope aspect, wind direction, flooding, erosion, etc., and so much more. GIS allows farmers to visualize, analyze and understand a huge amount of data that is stored and collected on a daily basis. It can now be easily seen which crops are flourishing, the extent that pollution and natural disasters hinder production and control the use of fertilisers.

These days conventional farming practices aren't easy to attain due to the climate risks. Also, with growing urbanization, growing crops in populated cities along with population growth isn't favorable. A solution to the above situation is ***controlled environment agriculture (CEA)*** where plants grow within a controlled environment, receiving a controlled portion of light, humidity, nutrients, and water, to optimize growing practices. Some of the CEA settings are vertical farming, indoor farming, greenhouses, etc. CEA has the potential to produce high-quality food close to consumers, using minimal water and other inputs. Many of the fresh tomatoes, herbs and leafy greens are already grown in controlled environments. CEA can minimize inputs such as water, nutrients and chemicals, while also reducing the potential for food borne pathogens, as well as save on labor costs. CEA systems can also be placed in urban areas not suitable for traditional agriculture, bringing food production closer to consumers and making use of existing space.

At the end of the day, technologies help produce healthy crops, control pests, monitor soil and develop a range of farming-oriented tasks. These trends will aid the industry in overcoming challenges.

c) Write a summary of the text (see Appendix 1).

UNIT 6

ELECTRICAL ENGINEERING

Electrical engineering closely impacts our day-to-day life and is responsible for various technological innovations we enjoy today. At its core, electrical engineering involves the study and design of devices and equipment that uses electricity, electromagnetism, and electronics.

1. Reading WHAT IS ELECTRICAL ENGINEERING?

a) Read the following international words; mind the stress.

Component, design, electricity, electrical, experiment, induction, microprocessor, radar, transmission, technology.

b) Scan the text and say what electrical engineers do and why their work is important for agriculture today.

WHAT IS ELECTRICAL ENGINEERING?

Electrical engineering is one of the newer branches of engineering, and dates back to the late 19th century. It is the branch of engineering that deals with the technology of electricity. Electrical engineers work on a wide range of components, devices and systems, from tiny microchips to huge power station generators.

Early experiments with electricity included primitive batteries and static charges. However, the design, construction and manufacturing of useful devices and systems began with the implementation of Michael Faraday's Law of Induction, which states that the voltage in a circuit is proportional to the rate of change in the magnetic field through the circuit. This law applies to the basic principles of the electric generator, the electric motor and the transformer. The beginning of the modern age saw the introduction of electricity to homes, businesses and industry, all of which were made possible by electrical engineers.

Some of the most prominent pioneers in electrical engineering include Thomas Edison (electric light bulb), George Westinghouse (alternating current), Nikola

Tesla (induction motor), Guglielmo Marconi (radio) and Philo T. Farnsworth (television). These innovators turned ideas and concepts about electricity into practical devices and systems.

Since its early beginning, the field of electrical engineering has grown into a number of specialized categories, including power generation and transmission systems, motors, batteries and control systems. Electrical engineering also includes electronics, which has itself branched into an even greater number of subcategories, such as radio frequency (RF) systems, telecommunications, remote sensing, signal processing, digital circuits, audio, video and optoelectronics.

What does an electrical engineer do?

Electrical engineers design, develop, test and supervise the manufacturing of electrical equipment, such as electric motors, radar and navigation systems, communications systems and power generation equipment; they design and develop electronic equipment – from portable music players to global positioning systems (GPS). Additionally, engineers may conduct or write the specifications for destructive or nondestructive testing of the performance, reliability and long-term durability of devices and components.

Today's electrical engineers design electrical devices and systems using basic components such as conductors, coils, magnets, batteries, switches, resistors, capacitors, inductors, diodes and transistors. Nearly all electrical and electronic devices, from the generators at an electric power plant to the microprocessors in your phone, use these few basic components.

Critical skills needed in electrical engineering include an in-depth understanding of electrical and electronic theory, mathematics and materials. This knowledge allows engineers to design circuits to perform specific functions and meet requirements for safety, reliability and energy efficiency, and to predict how they will behave before a hardware design is implemented.

Electrical engineers are now relying on computer-aided design (CAD) systems to create schematics and lay out circuits. They also use computers to simulate how electrical devices and systems will function. Computer simulations can be used to model a national power grid or a microprocessor; therefore, proficiency with computers is essential for electrical engineers.

Electrical engineering in farming

Electrical engineering relates to the development of intelligent machines and operating systems to help us create more efficient farming systems that increase productivity and safety in food production. Electrical engineering is important for artificial intelligence, machine learning, Internet of Things–linked sensors, and many other technologies. Controlled environment agriculture (CEA) integrates these technologies to grow crops inside high-performance controlled environments for food production. CEA entails using automated processes and optimized systems to improve sustainability and make more efficient use of inputs and outputs.

c) Give Russian equivalents of the following words and phrases.

Power station generator, Law of Induction, alternating current, circuit, voltage, alternating current, power generation, radio frequency, remote sensing, signal processing, digital circuits, nondestructive testing, electric power plant, computer-aided design (CAD) systems, power grid, controlled environment agriculture.

d) Answer the questions.

- 1) What is Michael Faraday’s Law of Induction?
- 2) Can you name anybody else who made a significant contribution in electrical engineering?
- 3) What are the basic components of most electrical devices and systems?
- 4) What skills and knowledge are important in electrical engineering?

e) Complete the summary of the text with the words in the box.

specialized	<i>branch</i>	<i>computers</i>	<i>specifications</i>	<i>equipment</i>
		<i>productivity</i>	<i>skills</i>	

Electrical engineering is a A. _____ of engineering dealing with the technology of electricity. Electrical engineers work on a wide range of components, devices and systems. Since its beginning, the field of electrical engineering has grown into a number of B. _____ categories. Electrical engineers design, develop, test and supervise the manufacturing of electrical and electronic C. _____. Engineers conduct or write

the D. _____ for testing of the performance, reliability and durability of devices and components. Critical E. _____ needed in electrical engineering include an understanding of electrical and electronic theory, mathematics and materials. Electrical engineers can also rely on computer-aided design systems to create schematics and lay out circuits. They should be able to use F. _____ to simulate how electrical devices and systems will function. In agriculture, electrical engineering relates to the development of intelligent machines and operating systems to help create more efficient farming systems that increase G. _____ and safety in food production.

2. Reading WHAT IS ENERGY?

a) Vocabulary focus: match the term with their definition; give Russian equivalents to the terms.

a. fossil fuel	b. emission	c. ozone depletion	d. resources	e. energy
f. environment	g. industry	h. pollution	i. renewable	

1) gradual thinning of Earth's ozone layer in the upper atmosphere caused by the release of chemical compounds containing gaseous chlorine or bromine from industry and other human activities;

2) the natural world in which people, animals and plants live;

3) all the materials available in our environment which are technologically accessible, economically feasible and culturally sustainable and help us satisfy our needs;

4) the companies and activities involved in the process of producing goods, especially in a factory or special area;

5) a fuel such as gas, coal, and oil that has been produced in the earth from plants and animals;

6) the power from something such as electricity or oil that can do work;

7) something that can be used and easily replaced;

8) damage caused to water, air, etc. by harmful substances or waste;

9) an amount of something, especially a gas that harms the environment, that is sent out into the air.

b) Can you answer the questions What is energy? Why do we need it?

Read the text to check if you are right.

WHAT IS ENERGY?

Energy lights our cities, powers our vehicles, and runs machinery in factories. It warms and cools our homes, cooks our food, plays our music, and gives us pictures on television.

Energy is defined as the ability or the capacity to do work. We use energy to do work and make movements. When we eat, our bodies transform the food into energy to do work. When we run or walk or do some work, we ‘burn’ energy. Cars, planes, boats, and machinery also transform energy into work. Work means moving or lifting something, warming or lighting something.

There are many sources of energy that help run various machines. The discovery of fire by man led to the possibility of burning wood for cooking and heating, thereby using energy. For a long time human energy demands were met only by renewable energy sources – sun, biomass (wood, leaves, twigs), water, and wind power.

As early as 4000-3500 BC, the first sailing ships and windmills were developed, harnessing wind energy. With the use of hydropower through water mills or irrigation systems, things began to change faster. However, fuelwood is still a major source of energy in some areas. Solar energy is used for drying and heating.

With the Industrial Revolution, the use of energy in the form of fossil fuels grew significantly. This occurred in stages, from the exploitation of coal deposits to the exploitation of oil and natural gas fields. It has been a little over half a century since nuclear power began being used as an energy source.

Now it is evident that the consumption of non-renewable sources of energy has caused more environmental damage than any other human activity. Electricity generated from fossil fuels such as coal and crude oil has led to high concentrations of harmful gases in the atmosphere. This has in turn led to problems such as ozone depletion and global warming.

There has been an enormous increase in the demand for energy since the middle of the last century as a result of industrial development and population growth. The world’s population more than tripled in size between 1950 and 2020, per capita use

of industrial energy increased about twentyfold, and total world use of industrial and traditional energy forms increased more than twelvefold over the last century.

Due to the problems associated with the use of fossil fuels, alternative sources of energy have become relevant in today's world. These sources, such as the sun and wind, can never be exhausted and are therefore called renewable. They cause less emission and are available locally. Their use can significantly reduce chemical, radioactive, and thermal pollution, as most of the renewable sources of energy are fairly non-polluting and considered clean.

Fossil fuels are nonrenewable sources. Renewable energy sources include the sun, wind, water, agricultural residue, fuelwood, and animal dung. Energy generated from the sun is known as solar energy. Hydel (short for 'hydroelectricity') is the energy derived from water. Biomass – firewood, animal dung, and biodegradable waste from cities and crop residues – becomes a source of energy when it is burnt. Geothermal energy is derived from hot dry rocks, magma, hot water springs, natural geysers, etc. Ocean thermal energy can produce electricity by using the temperature difference between deep cold ocean water and warm surface waters.

In some respects, the global energy system has evolved in a cleaner direction in the last 20-25 years. The share of the world primary energy derived from natural gas – the cleanest fossil fuel – has increased. So has the use of renewable energy sources.

Still, the overall efficiency of energy production remains extremely low: on average, about 90% of energy consumed is lost or wasted in the process of conversion from raw materials such as coal to the final energy service such as the light to read a book. The main problem isn't that we use energy, but how we produce and consume energy resources. What we really need is energy sources that will last forever and can be used without polluting the environment. Conserving energy has become the need of the day, be it in the transport, household, or industrial sectors.

c) Are the statements true or false?

- 1) The discovery of fire by man was the first step to use energy.
- 2) The first energy sources were renewable.
- 3) Hydropower is still a major source of energy in some countries.
- 4) Nuclear power has been used as an energy source for over a century.

- 5) The Industrial Revolution led to the decrease in fossil fuel use.
- 6) Coal and crude oil are nonrenewable energy sources.
- 7) Alternative sources of energy cause less emission.
- 8) Geothermal energy is derived from the ocean.
- 9) Natural gas is considered the cleanest type of fossil fuels.
- 10) The efficiency of energy production has increased significantly over the last decades.

d) Complete the sentences, using the information from the text.

- 1) Energy can be defined as _____ .
- 2) The renewable energy sources are _____ .
- 3) The consumption of non-renewable sources of energy has caused _____ .
- 4) The use of renewable energy sources can significantly reduce _____ .
- 5) A lot of energy is lost _____ .

e) Language focus: Fill in the prepositions. Use the text to check.

- 1) Our bodies transform the food _____ energy to do work.
- 2) Electricity generated _____ fossil fuels such as coal and crude oil has led _____ high concentrations of harmful gases _____ the atmosphere.
- 3) There has been an enormous increase _____ the demand _____ energy since the middle of the last century.
- 4) Due _____ the problems associated _____ the use of fossil fuels, alternative sources of energy have become relevant today.
- 5) _____ average, about 90% of energy consumed is lost or wasted _____ the process of conversion _____ raw materials _____ the final energy service.

d) Write a summary of the text WHAT IS ENERGY?

3. Reading TYPES OF ENERGY

a) Read these international words; mind the stress.

Thermal, chemical, nuclear, molecules, biomass, geothermal, gravitational.

b) Answer the question: What forms of energy do you know? Read the text to check.

TYPES OF ENERGY

Types of energy can be categorised into two broad categories – kinetic energy (the energy of moving objects) and potential energy (energy that is stored). These are the two basic forms of energy that include thermal energy, radiant energy, chemical energy, nuclear energy, electrical energy, motion energy, sound energy, elastic energy and gravitational energy.

Potential Energy	Kinetic Energy
Potential energy is stored energy and the energy of position	Kinetic energy is the motion of waves, electrons, atoms, molecules, substances, and objects
<p>Chemical energy is energy stored in the bonds of atoms and molecules. When a chemical reaction takes place, the stored chemical energy is released. Heat is often produced as a by-product of a chemical reaction. Chemical energy is the most widely used type of energy in the world. Batteries, biomass, petroleum, natural gas, and coal are examples of chemical energy.</p> <p>Mechanical energy is energy stored in objects by tension. Compressed springs and stretched rubber bands are examples of stored mechanical energy.</p> <p>Nuclear energy is energy stored in the nucleus of an atom – the energy that holds the nucleus together. Large amounts of energy can be released when the nuclei are combined or split apart.</p> <p>Gravitational energy is energy stored in an object's height.</p>	<p>Radiant energy is electromagnetic energy that travels in transverse waves. Radiant energy includes visible light, x-rays, gamma rays, and radio waves. Light is one type of radiant energy. Sunshine is radiant energy, which provides the fuel and warmth that make life on earth possible.</p> <p>Thermal energy, or heat, is the energy that comes from the movement of atoms and molecules in a substance. Heat increases when these particles move faster. Geothermal energy is the thermal energy in the earth.</p> <p>Motion energy is energy stored in the movement of objects. The faster they move, the more energy is stored. It takes energy to get an object moving, and energy is released when an object slows down. Wind is an example of motion energy.</p> <p>Sound energy is the movement of energy through substances in longitudinal (compression/rarefaction) waves. Sound is produced when a force causes an object or substance to vibrate. The energy is transferred through the substance in a wave.</p>

<p>The higher and heavier the object, the more gravitational energy is stored. When a person rides a bicycle down a steep hill and picks up speed, the gravitational energy is converting to motion energy. Hydropower is another example of gravitational energy, where gravity forces water down through a hydroelectric turbine to produce electricity</p>	<p>Typically, the energy in sound is smaller than in other forms of energy. Electrical energy is energy from moving electrons. All matter is made up of atoms which are made up of smaller particles, called protons (having positive charge), neutrons (having neutral charge), and electrons (negatively charged). Electrons orbit around the nucleus, like the moon orbits the Earth. Some materials, particularly metals, have electrons that are loosely attached to their atoms. They can easily be made to move from one atom to another if an electric or magnetic field is applied to them. When those electrons move among the atoms of matter, a current of electricity is created</p>
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c) Answer the questions.

- 1) What are the main categories of energy?
- 2) What is potential energy?
- 3) What is kinetic energy?
- 4) What is the most widely used type of energy?
- 5) Mechanical energy is another name of motion energy, isn't it? Why? Why not?
- 6) What physical process happens when you ride a bicycle?
- 7) What is an electron?
- 8) What energy is produced when atoms and molecules move in a substance?
- 9) What is the least form of energy?
- 10) What form of energy makes life on earth possible?

4. Reading ELECTRIC MOTOR

a) The text is divided into several parts. Scan the text and choose an appropriate title for each part.

- 1) Who invented the electric motor?
- 2) What is an electric motor?
- 3) How does an electric motor work?

ELECTRIC MOTOR



A _____

While steam engines create mechanical energy using hot steam or, more precisely, steam pressure, electric motors use electric energy as their source. For this reason, electric motors are also called electromechanical transducers.

The counter piece to the electric motor is the generator, which has a similar structure. Generators transform mechanic motion into electric power. The physical basis of both processes is the electromagnetic induction. In a generator, current is induced and electrical energy is created when a conductor is within a moving magnetic field. Meanwhile, in an electric motor a current-carrying conductor induces magnetic fields. Their alternating forces of attraction and repulsion create the basis for generating motion.

B _____

In general, the heart of an electric motor consists of a stator and a rotor (see the picture *Motor housing with stator*). The term “stator” is derived from the Latin verb “stare” = “to stand still”. The stator is the immobile part of an electric motor. It is firmly attached to the equally immobile housing. The rotor on the contrary is mounted to the motor shaft and can move (rotate).

Electric motors can be powered by direct current (DC) sources, such as batteries or rectifiers. Or by alternating current (AC) sources, such as inverters, electric generators, or a power grid.

In case of AC motors, the stator includes the so-called laminated core, which is wrapped in copper wires. The winding acts as a coil and generates a rotating magnetic field when current is flowing through the wires. This magnetic field created by the stator induces a current in the rotor. This current then generates an electromagnetic field around the rotor. As a result, the rotor (and the attached motor shaft) rotate to follow the rotating magnetic field of the stator.

DC motors consist of an immobile part, the stator, and a moving component, the rotor. The stator consists either of an electric magnet used to induce the magnetic field, or of permanent magnets that continuously generate a magnetic field. Inside of the stator is where the rotor is located, also called armature, wrapped in a coil. If the coil

is connected to a source of direct current (a battery, accumulator, or DC voltage supply unit), it generates a magnetic field and the ferromagnetic core of the rotor turns into an electromagnet. The rotor is mounted via bearings and can rotate so that it aligns with the attracting. In order to set the rotor in a continuous rotary motion, the magnetic alignment must be reversed again and again. This is achieved by changing the current direction in the coil. The motor has a so-called commutator for this purpose. The two supply contacts are connected to the commutator and it assumes the task of polarity reversal.

All inventions began with the DC motor. Nowadays however, AC motors of various designs are the most commonly used electric motors in the industry. DC motors are mainly used in applications with low power ratings. These include smaller tools, hoists, elevators or electric vehicles.

C _____

The invention of the electric motor cannot be traced back to a single person. Its discovery was the result of the research of several inventors.

Since the first electric motors were dependent on the current supply of zinc batteries, there was still a long way to go before they could seriously compete with the predominant steam engines. This changed with the development of the first power generators.

Here a small, not complete insight into some historical data and facts:

In 1800 the Italian professor of physics Alessandro Volta constructed the Voltaic pile named after him. It was able to generate electricity continuously – the first functioning battery consisting of a stack of copper and zinc plates layered on top of each other.

1820: The physical basis for the electric motor is electromagnetism, the discovery of which goes back to the Danish physicist, chemist and natural philosopher Christian Oersted.

1821: The English natural scientist Michael Faraday discovered electromagnetic rotation. With the aid of a permanent magnet, he set a current-carrying conductor in a rotary motion and thus created the basis for the development of the electric motor.

1822: The Barlow's wheel, named after the English mathematician and physicist Peter Barlow, goes back to this time. He succeeded in turning a device by means of direct current.

1831: Ten years after his discovery of electromagnetic rotation, Michael Faraday successfully carried out an experiment in which he was able to generate electric current

with a variable magnetic field. The invention of electromagnetic induction belongs to him, and he also created the conditions for the development of the current generator. Independently of Faraday, American physicist Joseph Henry discovered electromagnetic induction with his electromagnetically driven oscillating rocker.

1834: the Prussian-Russian physicist and engineer Moritz Hermann von Jacobi developed the first electric motor suitable for use in real-life practice and built the first electrically operated boat.

1837: the American goldsmith and inventor Thomas Davenport received the first patent for a DC electric motor developed by him in 1834, which he used to drive his model of an electric locomotive.

1866: the German industrialist Werner Siemens invented an electric generator based on the principle of the dynamo, which later gave rise to the DC motor.

1888: Nicola Tesla received several patents regarding the polyphase alternating current. Completely independent from Tesla, the Italian engineer and physics professor Galileo Ferraris delves into the technology of alternating and three-phase current.

1889: the Russian-born design engineer, Michail von Dolivo-Dobrowolsky bases his research on the findings of Tesla and Ferraris, and develops the first three-phase squirrel-cage motor. This has paved the road to success for the asynchronous motor to become commonly used in the industry.

c) Make up a glossary for the text.

A glossary is an alphabetical list of difficult, technical, or foreign words in a text with definitions or explanations of their meanings.

You can use <https://dictionary.cambridge.org/ru/> to look up the definition. Also provide the terms with the Russian equivalents.

Word/phrase	Definition	Translation
steam engine	an engine that uses steam to produce power	паровой двигатель
transducer

d) Write down five questions to the text. Exchange the questions with your partner. Answer your partner's questions.

5. Reading ENERGY SMART AGRICULTURE

a) Vocabulary focus: match synonyms.

1. to manufacture	a. to cause
2. shortage	b. cheap
3. to trigger	c. deficit
4. target	d. to produce
5. inexpensive	e. poor
6. impoverished	f. profit
7. essential	g. important
8. revenue	h. goal

b) Translate the attributive phrases.

Agri-food chain, forestry products, post-harvest operations, food storage, food preparation, food security goals, plant breeding, food processing, food processing, energy prices, food productivity targets, greenhouse gas emissions, poverty reduction targets, rural communities.

c) Read the text and complete the gaps with the missing part of the sentence.

1. and increasing the use of fossil fuels for farm mechanization, food processing and transport
2. electricity, mechanical power, solid, liquid and gaseous fuels.
3. Without access to electricity and sustainable energy sources,
4. We need to rethink the role of energy
5. they can also produce energy.
6. Without access to electricity and sustainable energy sources,

ENERGY SMART AGRICULTURE

Energy is needed in all steps along the agri-food chain: in the production of crops, fish, livestock and forestry products; in post-harvest operations; in food storage and processing; in food transport and distribution; and in food preparation.

Direct energy includes A. _____ . Indirect energy, on the other hand, refers to the energy required to manufacture inputs such as machinery, farm equipment, fertilizers and pesticides.

The type of energy we use in the agrifood chain and how we use it will determine whether our food systems will be able to meet future food security goals. Agrifood systems not only require energy, B. _____. For this reason, agrifood systems have a unique role to play in coping with ‘energy’ poverty.

The ‘green revolution’ of the 1960s and 1970s addressed food shortages, not only through improved plant breeding, but also by tripling the application of inorganic fertilizers, expanding the land area under irrigation C. _____. However, cheap energy sources are becoming scarcer and energy markets more volatile, and this has triggered higher energy prices. Our ability to reach food productivity targets may be limited in the future by a lack of inexpensive fossil fuels. This has serious implications both for countries that benefited from the initial green revolution and for those countries that are looking to modernize their agrifood systems along similar lines.

Modernizing food and agriculture systems by increasing the use of fossil fuels may no longer be an affordable option. D. _____ when we think about improving food systems.

Globally, the agrifood chain consumes 30 percent of the world’s available energy, producing about 20 percent of the world’s greenhouse gas emissions. More than one-third of the food we produce is lost or wasted, but it consumes about 38 percent of the energy in the agrifood chain.

Improving energy access to impoverished communities is essential if we want to meet the poverty reduction targets set out in the Millennium Development Goals.

Almost 3 billion people have limited access to modern energy services for heating and cooking, and 1.4 billion have zero or limited access to electricity (WHO, 2009). E. _____ communities have little chance to achieve food security and no opportunities for securing productive livelihoods that can lift them out of poverty.

Renewable energies such as bioenergy, solar, wind, hydro and geothermal can be used in agrifood systems as a substitute for fossil fuels to generate heat or electricity for use on farms or in aquaculture operations. If excess energy is produced, it can be

exported off the property to earn additional revenue for the owners. Such activities can bring benefits for farmers, landowners, small industries and rural communities.

d) Look through the text once again and answer the questions.

- 1) What does indirect energy refer to in agriculture?
- 2) What is the role of agrifood systems in reducing 'energy' poverty?
- 3) Why can our ability to achieve food productivity targets be limited in the future?
- 4) What can be used as an alternative for fossil fuels?

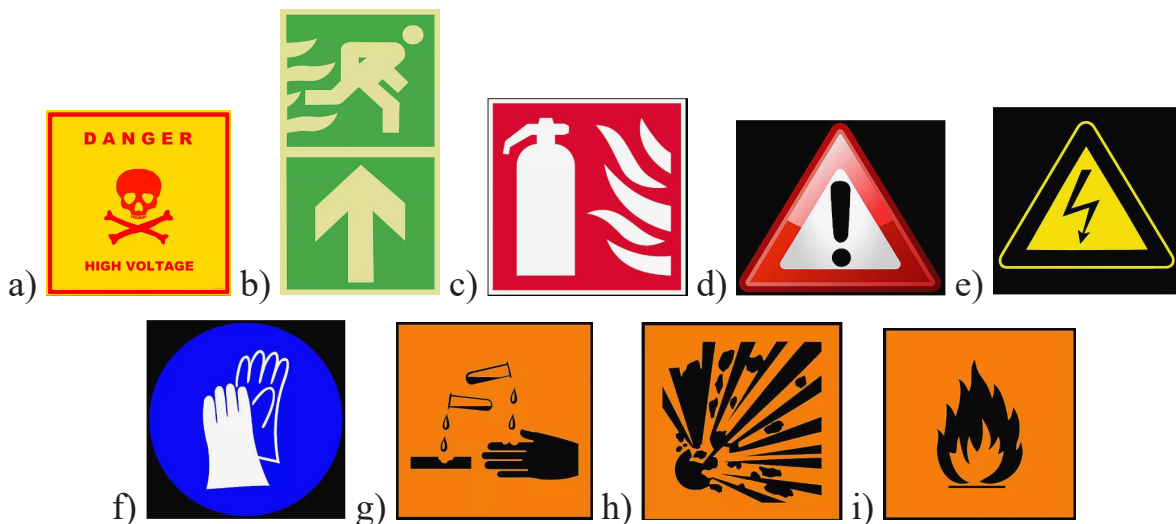
e) Language focus: Fill in preposition if necessary. Use the text to check.

- 1) Indirect energy refers ____ the energy required to manufacture machinery, farm equipment, fertilizers and pesticides.
- 2) ____ the other hand, agrifood systems can also produce energy themselves.
- 3) The 'green revolution' addressed food shortages ____ tripling the application of inorganic fertilizers.
- 4) Many countries benefited ____ the green revolution at the beginning.
- 5) Many people still have limited access ____ electricity.
- 6) Solar energy can be used in agrifood systems as a substitute ____ fossil fuels to generate electricity for use ____ farms.

f) Write a summary of the text. Give your opinion on the issue.

6. Safety at work

a) Study the labels and match them to the correct warning



- 1) The location of a fire extinguisher
- 2) You need to wear gloves or other hand protection
- 3) High voltage hazard
- 4) Emergency exit
- 5) An explosion hazard
- 6) The presence of a high voltage hazard
- 7) Something is important
- 8) Flammable substances
- 9) Corrosive materials

b) Vocabulary focus: Read the text SAFETY AT WORK. Match the Russian terms listed below with the highlighted word or phrase.

Сетевое напряжение, поражение током, проводник (электрического тока), заземленные металлоконструкции, электроприборы, взрывоопасная среда, меры предосторожности, испытательная установка, планово-предупредительный ремонт, оборудование под напряжением, воздушная линия электропередач, удлинительный кабель, ввод в эксплуатацию.

SAFETY AT WORK

Electricity can kill or severely injure people and cause damage to property. Every year many accidents at work involving **electric shock** or burns are reported. Most of the fatal incidents are caused by contact with **overhead power lines**.

Those using or working with electricity may not be the only ones at risk – poor electrical installations and faulty **electrical appliances** can lead to fire, which may also cause death or injury to others. Most of these accidents can be avoided by careful planning and necessary **precautions**.

What are the hazards?

The main hazards are:

- contact with live parts causing shock and burns – normal **mains voltage**, 230 volts AC, can kill;
- faults which could cause fire;

- fire or explosion where electricity could be the source of ignition in a potentially flammable or **explosive atmosphere**.

Most electrical accidents occur because people are on or near equipment that is:

- thought to be dead but in fact it is **live equipment**;
- known to be live but the people working do not have appropriate training or equipment to prevent injury, or they have not taken adequate precautions.

Assessing the risk

Your health and safety risk assessment should take into account the risks associated with electricity. It will help you decide what action to take, how to use and maintain electrical installations and equipment and also how often maintenance is needed.

The risk of injury from electricity is strongly linked to where and how it is used. The risks are greatest in harsh conditions, for example:

- in wet surroundings – unsuitable equipment can easily become live and can make its surroundings live;
- outdoors – equipment may become wet and may be at greater risk of damage; and
- in cramped spaces with a lot of **earthed metalwork** such as inside a tank – if an electrical fault developed it could be very difficult to avoid a shock.

Some items of equipment can involve greater risk than others. **Extension leads** are particularly liable to damage – their plugs, sockets, connections and the cable itself. Other flexible leads, particularly those connected to equipment which is often moved, can suffer from similar problems.

Reducing the risk

Once you have completed the risk assessment, you can use your findings to reduce unacceptable risks from the electrical equipment in your workplace. There are many things you can do to achieve this, and some of them are listed below.

- ensure people working on or with your electrical equipment or systems are competent enough to do the task.
- ensure the electrical installation is safe.
- provide safe and suitable equipment.
- reduce the voltage.
- provide a safety device.

- carry out **preventative maintenance**

Correct selection and use of equipment

- Equipment must be properly designed, constructed, installed and maintained.
- The user must have sufficient knowledge and experience to recognise the danger and avoid it.
- Equipment must be suitable for the environment in which it is used.
- Certified explosion-protected equipment must be used in places where there could be potentially explosive atmospheres.
- You must assess the situation before work is carried out on or near equipment.
- Where possible, you must avoid live working during **commissioning** and fault finding by using suitably designed equipment with in-built **test facilities** and diagnostic aids.

Deciding whether to work dead or live

You should plan and programme the work to allow all jobs to be carried out where possible with the equipment dead. Three conditions must be met for live working to be permitted where danger may arise. If just one of these conditions cannot be met, live working must not be permitted and dead working is essential. The assessment procedure illustrates this. The conditions are:

- it is unreasonable in all the circumstances for the **conductor** to be dead; and
- it is reasonable in all the circumstances for the person to be at work on or near that conductor while it is live; and
- suitable precautions (including, where necessary, the provision of personal protective equipment) have been taken to prevent injury.

c) Agree or disagree with the statements.

- 1) Fatal incidents happen only to those who use or work with electricity.
- 2) Most electrical accidents occur because the equipment is live or necessary precautions are not taken.
- 3) Wet surroundings don't increase the risk of injury from electricity.
- 4) Extension leads involve less risk than other items of electrical equipment.
- 5) Regular preventative maintenance can reduce the risk from the electrical equipment in the workplace.

6) All jobs should be carried out where possible with the equipment dead.

7) To permit live working it is enough to meet one of the conditions for live working (out of 3)

d) Quiz: Do the quiz, check your answers and share the results in your group.

Electricians need to be fully aware of all aspects of safety in and around electricity because: from how to properly ground themselves, to de-powering machines and tools to understanding what safety equipment is necessary, when and why. Electrical safety is definitely something that comes with knowledge and experience – 16- and 17-year-olds who work with electricity experience electrical accidents at a rate 5.4 times higher than normal. If you think you know your electrician safety, then you need to take the quiz!

1. Which of these risks is associated with electricity?

- A. Shock
- B. Fire
- C. Explosions
- D. All of the above

2. What's the first thing you should do if a coworker is being electrocuted?

- A. Pull them free of the power source.
- B. Turn off the power source.
- C. Call 911.
- D. Alert a foreman.

3. If you're working in a damp space, what do you need to do?

- A. Mop first.
- B. Elevate all electrical outlets and wiring.
- C. Install and use ground fault circuit interrupters.
- D. Use heaters to dry the area.

4. If you're servicing an appliance, what's the first thing you need to do?

- A. Expose the battery or motor.
- B. Test to ensure it's de-powered.
- C. Inspect the power lines leading into it.
- D. Remove any batteries.

5. *What is the name of the practice that involves locking down an electrical device and labeling it so others know who locked it and why?*

- A. Lockout/Tagout
- B. Lock and Label
- C. Go and Show
- D. Stop/Gap

6. *What is PPE?*

- A. Pulse Protection Equipment
- B. Physical Protection Equipment
- C. Physical Pulse Event
- D. Personal Protective Equipment

7. *Ladders can be made from a variety of materials, but what material is best for an electrician's ladder?*

- A. Fiberglass
- B. Wood
- C. Aluminum
- D. All of the above

8. *Which one of these would require that a device is replaced or repaired?*

- A. Frayed wire
- B. Cracked insulation
- C. Broken plug
- D. All of the above

9. *What kind of jewelry is safe to wear when doing electrical work?*

- A. Watches
- B. Earrings
- C. Necklaces
- D. None of the above

10. *Gloves should be made of what two materials when dealing with electricity?*

- A. Cotton and polymers
- B. Leather and rubber
- C. Cotton and rubber
- D. Leather and cotton

11. *What should you assume about every electrical device when you first start work?*

- A. It's live.
- B. It's malfunctioning.
- C. It has a short.
- D. It's wired incorrectly.

12. *Any tools used around electricity should have what kind of handle?*

- A. Plastic
- B. Non-conductive
- C. Wood
- D. Grounded

13. *A room that can get very cold has certain risks relating to electricity. What's one of them?*

- A. Frozen wires
- B. Condensation
- C. Unreliable circuits
- D. Slow reaction time

14. *There are three shock approach boundaries, do you know what they are?*

- A. 1st, 2nd, and 3rd
- B. Main, Secondary, Tertiary.
- C. Green, Yellow and Red.
- D. Limited, Restricted and Prohibited

15. *What do you call the minimum distance from a live item that an unqualified person is allowed to safely stand?*

- A. Limited Approach Boundary
- B. Restricted Approach Boundary
- C. Prohibited Approach Boundary
- D. Safe Zone

16. *How often must your safety gloves be electrically tested?*

- A. Once a year
- B. Every 6 months
- C. Every 2 years
- D. Every month

17. *What's the point of grounding?*

- A. To provide an alternate path for electricity to get to the ground
- B. To close a circuit
- C. To break a circuit
- D. To lower the voltage

18. *Which of these would likely be a lethal current?*

- A. 40 milliamperes
- B. 175 milliamperes
- C. 600 milliamperes
- D. 10,000 milliamperes

19. *How often should you inspect an extension cord?*

- A. Monthly
- B. At the end of any job
- C. Every 6 months
- D. Daily before use

20. *How many basic types of electricity are there?*

- A. One
- B. Two
- C. Three
- D. Four

KEY + Explanation

1. D *Electricity can be harmful in any number of ways. Direct exposure is a shock risk while the heat generated by electricity can be a fire hazard or, if other dangerous materials are nearby, an explosion risk as well.*

2. B Turning off the power source is the first thing you need to do, if possible, when someone is being electrocuted. You never want to make physical contact with that person with your bare hands, as you'll end up being electrocuted also.

3. C In any damp space, you'll want to make use of ground fault circuit interrupters. Because the risk of shock is so high in damp conditions, a GFCI will interrupt the circuit before electric shock can occur.

4. B The power to any device or appliance needs to be off before electrical work can be done. If you aren't 100% sure it's off, it should be tested before any work is done. A tester can check wires, the outer box and any exposed wires for a current.

5. A Lockout/Tagout, or lock and tag, is a standard procedure of locking down any machine and tagging it at the same time so that anyone else who might approach knows it's shut down and knows why, so they don't turn it back on again.

6. D PPE, or personal protective equipment, is any equipment and gear that protects against health and safety risks in the workplace. Any tradespeople, not just electricians, will have a specific set of PPE that works for their job.

7. A An aluminum ladder could conduct electricity while a wooden ladder will deteriorate over time and in wet environments. A fiberglass ladder is durable and also will not conduct electricity, making it a solid choice for an electrician.

8. D All of the above. If the wires to any device have started to fray or the insulation over the metal wiring is showing signs of cracking and damage that could expose the fire inside, these devices should be replaced or repaired before use. Likewise, a broke plug must be replaced before attempting use.

9. None of the above. Your safest bet for doing any electrical work is to not have anything on that could potentially conduct electricity. Even if an earring would not come in contact with a piece of equipment, electricity can arc and will be attracted to that metal.

10. B A good pair of safety gloves should have an insulating leather interior that does not conduct electricity and have a leather outer layer which offers additional protection as well as some dexterity and warmth.

11. A It's live. Every single device should be treated initially as though it were live and energized. With this precaution in mind, you'll greatly reduce the chance of accidental shock by being prepared to deal with a live device.

12. B Non-conductive and insulated handles are essential for any tools being used in and around electricity. Anything that lowers the risk of conducting electricity and causing a shock to a human is key.

13. B Condensation. The potential risk of electrical equipment in rooms that can get very cold is condensation. Warm, humid air can condense and then warm up again, which creates that moist condensation and increases the risk of damage and shock. Equipment should be wall mounted if possible.

14. D Limited, restricted and prohibited boundaries are part of the electrical code that determines, based on the voltage of a system, what the minimum safe distance from an energized item is and what precautions should be taken to cross that boundary.

15. A The limited approach boundary is the shock protection boundary that unqualified personnel should not cross unless accompanied by a qualified individual. The area beyond the boundary should be treated as though it were live.

16. B To ensure your gloves are actually able to protect you from electricity, they need to be tested every six months. Holes or cracks that are undetectable to the naked eye could present a safety risk.

17. A To provide an alternate path for electricity to get to the ground. Grounding creates a pathway for electricity to follow to literally get to the ground, which is naturally where electricity will travel. Since electricity will follow the simplest path to the ground, using a ground wire gives it a simpler path than going through a human.

18. D A current as low as 5 milliamperes will result in a shock and as little as 30 can cause noticeable pain. The human body is pretty resilient and can handle a lot, but 10,000 and above can cause severe damage including death. Most circuits in a home provide over 20,000.

19. D Daily before use. An extension cord needs to be inspected each and every day before use to look for any frayed wires or damaged insulation. Extension cords are never to be used permanently and should be unplugged once the task is done.

20. B There are two basic types of electricity. The first is static, which is the buildup of a charge on the surface of an object. The second is current or dynamic electricity, which is the flow of a charge across a conductor, or what you might simply refer to as current.

Source: <https://play.howstuffworks.com/quiz/the-electrician-safety-quiz>
(accessed 12.08.2022)

APPENDIX 1

HOW TO WRITE A SUMMARY

Writing a summary means giving a short overview of a text's main points usually in your own words. A summary is always much shorter than the original text.

If we compare an abstract and a summary, we see that an abstract explains the key points of an academic text such as a thesis or journal article. An abstract is a type of summary, but summaries are also written elsewhere in academic writing. For example, you might summarize a source in a paper or in a literature review.

There are five key steps that can help you write a summary:

- read the text;
- break it down into sections;
- identify the key points in each section;
- write the summary;
- check the summary against the article.

Writing a summary does not involve criticizing or analyzing the source. You simply provide an accurate account of the most important information and ideas.

Step 1: Read the text

You should read the article more than once to make sure you've thoroughly understood it. It's often effective to read in three stages:

- Scan the article quickly to get a sense of its topic and shape.
- Read the article carefully, highlighting important points and taking notes.
- Skim the article again to make sure you've understood the key points, and reread any particularly important or difficult passages.

There are some tricks you can use to identify the key points:

Pay attention to headings and subheadings. These should give you a good sense of what each part is about. Read the introduction and the conclusion together and compare them: What did the author set out to do, and what was the outcome?

Step 2: Break the text down into sections

If the text is a scientific paper that follows a standard structure, it is probably already organized into clearly marked sections, usually including an introduction, methods, results, and discussion.

Other types of articles may not be clearly divided into sections. But most articles and essays are structured around a series of sub-points or themes.

Tip: To see at a glance what each part of the text focuses on, try writing a word or phrase in the margin next to each paragraph that describes the paragraph's content. If several paragraphs cover similar topics, you may group them together.

Step 3: Identify the key points in each section

Go through each section and pick out its most important points. Keep in mind that a summary does not involve paraphrasing every single paragraph of the article. Your goal is to extract the essential points, leaving out anything that can be considered background information or supplementary detail. Pay particular attention to the central claim that the author wants us to accept, which usually appears in the introduction and the topic sentences that signal the main idea of each paragraph.

Step 4: Write the summary

Now that you know the key points that the article aims to communicate, you need to put them in your own words.


To avoid plagiarism and show you understand the article, it's essential to paraphrase the author's ideas. Try not to copy and paste parts of the article, not even just a sentence or two. The best way to do this is to put the article aside and write out your own understanding of the author's key points.

Step 5: Check the summary against the article

Finally, read through the article once more to ensure that:

- you've accurately represented the author's work;
- you haven't missed any essential information;
- the phrasing is not too similar to any sentences in the original.

Source: <https://www.scribbr.com/working-with-sources/how-to-summarize/>
(accessed 11/08/2022)

You can find a summary template and useful vocabulary for writing a summary at:	
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APPENDIX 2

TEST YOUR VOCABULARY

<p>UNIT 1 Getting Acquainted https://forms.gle/GHkz4kbuYgiUAN4ZA</p>	
<p>UNIT 2 Language Learning https://forms.gle/NEiEcbndDUt71Moz9</p>	
<p>UNIT 3 University/Studies https://forms.gle/8DV4S7B7czn6EFTV9</p>	
<p>UNIT 4 Future Job https://forms.gle/izgQM65c8EpZJZpa6</p>	
<p>UNIT 5 Agricultural Engineering https://forms.gle/rct4kA7rVHi8EhFx8</p>	
<p>UNIT 6 Electrical Engineering https://forms.gle/b9nKyWt2DR4MUL7s9</p>	

KEYS

Unit 1

Ex.3 b) : 1, 2, 5, 6, 8

Ex.4 d) : 1) obsession 2) spark plug 3) pricey 4) dementia 5) underrated 6) invention
7) eccentricity 8) degree 9) high school

Ex.6 b) : 1.g 2.d 3.j 4.a 5.b 6.e 7.i 8.f 9.c 10.h

Ex.7 b) : a. coast b. industrial c. museums d. climate e. mild f. mountains g. attraction
h. parties i. hospitable j. history

Ex.8 b) : Possible answers: 1) Ryerson University in Toronto; 2) Farmers' market, their customers, and the food room at university (where students get food for free); 3) Anything: corn, broccoli, potatoes, tomatoes, etc.; 4) Tomatoes, peas, beans, greens, radishes, carrots, beets; 5) Once a week for 24-48 hours; 6) as a student initiative; 7) Yes; 8) the load-bearing capacity to support extra weight; 9) They have to include a green roof.

Ex.8 d) : 1) Agree 2) Agree 3) Disagree 4) Disagree

Ex.8 e) : 1) to produce 2) commercial 3) construction 4) beneficial 5) educational
6) agriculture 7) suburban

Unit 3

Ex. 2 a) : a) major b) Bachelor's Degree c) full-time d) professors e) dormitory
f) terms g) take exams h) scholarship i) extracurricular activities j) thesis

Ex. 6 b) : 1) terms, 2) part-time student, 3) scientific library, 4) On-the-Job training
5) graduate from 6) campus 7) thesis 8) student union 9) dormitory 10) agro-industrial sector/agribusiness

Unit 4

Ex.5 : 1.B 2.C 3.C 4.C 5.B 6.C 7.B 8.B 9.A 10.A

Ex.7 c) : 1. Test/laboratory technicians 2. Debug technicians 3. Toolmakers
4. Production planning and control technicians 5. Design engineers 6. Maintenance
fitters 7. Production engineers 8. Electricians 9. Operators 10 Test/laboratory technicians

Ex.8 : 1.f 2.d 3.a 4.e 5.g 6.h 7.b 8.g

Ex.9 b) : a. flexible b. responsible c. efficiency d. competitive e. skills

Ex.11 a) : 1.h 2.f 3.g 4.c 5.a 6.e 7.b 8.d

Ex.11 c) : 1. False 2. False 3. False 4. True 5. False 6. True 7. False 8. False

Ex.11 d) : Skills f, g, h; Education c, e, i; Work experience a, b, d.

Unit 5

Ex.3 : 1.e 2.a 3.g 4.f 5.c 6.d 7.h 8.b 9.j 10.i

Ex.4 a) : 1.c 2.e 3.a 4.h 5.b 6.d 7.i 8.j 9.g 10.f

Ex.4 b) : 2, 3, 5, 7, 9, 10

Ex.4 d) : 1.True 2. False 3. True 4. True

Ex.6 b) : A.1 B.6 C.3 D.2 E.7 F.5 G.8 H.4

Ex.6 c) : 1. Destination 2. Material 3. Quantity 4. Regulations 5. Properties

Ex.7 b) : 1. Sensor 2. Battery 3. Automate 4. Generator 5. Productivity 6. Chemicals

7. Crash

Ex. 8 a) : 1.f 2.c 3.g 4.a 5.j 6.h 7.b 8.e 9.l 10.k 11.d 12.i

Unit 6

Ex.1 e) : A. branch B. specialized C. equipment D. specifications E. skills
F. computers G. productivity

Ex.2 a) : 1.c 2.f 3.d 4.g 5.a 6.e 7.i 8.h 9.b

Ex.2 c) : 1) T 2) T 3) F 4) F 5) F 6) T 7) T 8) F 9) T 10) F

Ex.2 e) : 1) into 2) from, to, in 3) in, for 4) to, with 5) on, in, from, to

Ex.5 a) : 1.d 2.c 3.a 4.h 5.b 6.e 7.g 8.f

Ex.5 c) : 1.C 2.A 3.E 4.D 5.B 6.E

Ex.5 e) : 1) to 2) on 3) by 4) from 5) to 6) for, on

Ex.6 a) : 1)c 2)f 3)a 4)b 5)h 6)a 7)d 8)i 9)g

Ex.6 c) : 1) F 2) T 3) F 4) F 5) T 6) T 7) F

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