

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ТАВРІЙСЬКИЙ ДЕРЖАВНИЙ АГРОТЕХНОЛОГІЧНИЙ УНІВЕРСИТЕТ
ІМЕНІ ДМИТРА МОТОРНОГО

OCCUPATIONAL SAFETY AND HEALTH

НАВЧАЛЬНИЙ ПОСІБНИК З АНГЛІЙСЬКОЇ МОВИ

ДЛЯ ЗДОБУВАЧІВ СТУПЕНЯ ВИЩОЇ ОСВІТИ

ЗАОЧНОЇ ФОРМИ НАВЧАННЯ

ЗІ СПЕЦІАЛЬНОСТІ 263 «ЦИВІЛЬНА БЕЗПЕКА»

Мелітополь 2020

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Вченою радою Таврійського державного агротехнологічного
університету ім. Дмитра Моторного як навчальний посібник для
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Навчальний посібник складається з 11 блоків, що включають
англомовні наукові автентичні тексти, пов'язані з питаннями охорони
праці та безпеки життєдіяльності. Кожен розділ закінчується тестовими
завданнями на перевірку засвоєного матеріалу та інформаційно-
розважальним блоком. Для полегшення роботи з даним навчальним
посібником і кращої орієнтації здобувачів вищої освіти у навчальному
матеріалі, що є важливим фактором успішного засвоєння знань, усі
заняття у навчальному посібнику мають єдину структуру.

При підготовці навчального посібника були використані матеріали
різних спеціалізованих видань, що містять сучасні оригінальні тексти,
монографії; електронні ресурси.

Навчальний посібник розраховано на здобувачів ступеню вищої
освіти «Бакалавр» у закладах вищої освіти III-IV рівня акредитації.

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Зміст

Передмова.....	4
Unit 1. Occupational Safety and Health.....	6
Unit 2. Workplace Safety	16
Unit 3. Ergonomics	25
Unit 4. Environmental Pollution.....	35
Unit 5. Human Influence on Ecosystems.....	43
Unit 6. Earthquake Information	52
Unit 7. Preparing for Emergencies	60
Unit 8. Stress in the Workplace	68
Unit 9. Safety Engineering	77
Unit 10. Computer Influence on a Man Health	84
Unit 11. Mobile Phone Radiation and Health	91
Keys to the tests and quizzes	98
References.....	104

Передмова

Даний навчальний посібник призначений для здобувачів вищої освіти заочної форми навчання за спеціальністю 263 «Цивільна безпека».

Навчальний посібник розрахований на здобувачів вищої освіти, які вже мають знання нормативної граматики англійської мови та словниковий запас загальнонавчальної лексики. Навчальний посібник складено з урахуванням вимог, що викладені у програмі навчальної дисципліни з англійської мови для закладів вищої освіти.

Навчальний посібник має на меті забезпечити підготовку здобувачів вищої освіти до самостійного читання, розуміння і перекладу наукових текстів на англійській мові в галузі цивільної безпеки, а також розвинення навичок усного мовлення, формування широкого професійного словника та навичок ведення бесіди у рамках професійної тематики. Система лексико-комунікативних вправ спрямована на свідоме практичне засвоєння мовних елементів фахового стилю.

Начальний посібник складається з 11 занять, що охоплюють широке коло питань пов'язаних з охороною праці та безпекою життєдіяльності. Для полегшення роботи з даним навчальним посібником і кращої орієнтації здобувачів вищої освіти у навчальному матеріалі, що є важливим фактором успішного засвоєння знань, усі заняття у посібнику мають єдину структуру, яка включає наступні розділи:

1. Список лексики.
2. Вправи на засвоєння лексики.
3. Текст.
4. Лексико-комунікативні вправи.
5. Обговорення тематичного матеріалу.
6. Тести для перевірки засвоєного на занятті навчального матеріалу.
7. Інформаційно-розважальний розділ.

Список лексики містить слова, які пропонуються для активного засвоєння і носять тематичний характер, але іноді включають лексику, яка полегшує розуміння тексту.

Диференційні, повторювальні та конструктивні вправи направлені на засвоєння лексичного матеріалу та базуються на списку лексики.

Тексти є науковими і включають загальні положення теми.

Розділ «Лексико-комунікативні вправи» містить завдання, які направлені на контроль розуміння базового тексту, а також вправи на активізацію словника, розвинення мовної догадки, засвоєння наукових термінів.

Вправи представлені у двох варіантах: вправи, які базуються на основі додаткового науково-практичного тексту, що є джерелом інформації по темі заняття. Інформація таких текстів може бути використана у повсякденному житті спеціалістів. Усі тексти супроводжуються списками слів та

словосполучень, які можуть бути корисними для їх розуміння, що не виключає роботу із словником.

Розділ «Обговорення тематичного матеріалу» направлений на удосконалення мовних навичок та формування вміння вести бесіду на професійну тематику.

При підготовці навчального посібника були використані матеріали різних спеціалізованих видань, що містять сучасні оригінальні тексти, монографії; електронні ресурси.

Unit 1

Occupational Safety and Health

Vocabulary List

occupational safety	охорона праці
occupational health and safety	охорона праці та безпека життєдіяльності
safe work environment	безпечні умови праці
workplace environment	обстановка на робочому місці
occupational (or industrial) hygiene	медицина праці
public health	професійна гігієна
safety engineering	охорона здоров'я
health physics	техніка безпеки
hazard assessment	радіаційна безпека
risk management	оцінка безпеки керування ризиками

1. Answer the questions using the vocabulary list and words in the box.

- 1) What is an essence of occupational safety?
- 2) Which spheres of life does the occupational safety touch upon?
- 3) Is it so important to know the main rules of occupational safety? Why?
- 4) Which rules of occupational safety do you use in everyday life?

mustn't smoke near...	be careful when you cross the street	do not touch the
wet hands	wall outlet	a live wire
a sharp blade	electricity	transport
cooking	light matches or cigarettes near...	to wear rubber gloves
to die	to make harm to the health	use chemicals
electric shock	cut something	knives
cleaning	electricity device	wash the hands

2. Read the text “Occupational health and safety” and answer the following questions:

- 1) Which discipline deals with protection people from hazards?
- 2) What is the goal of all occupational health and safety programs?
- 3) What are the closest subjects to subject of occupational safety?
- 4) There are a lot of tasks in the sphere of occupational health and safety.

What are they?

- 5) What knowledge must the occupational health and safety officers have?
- 6) What is the essence of safety training classes?

“Occupational health and safety”

Occupational health and safety (OSH) is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment¹. The goal of all occupational health and safety programs is to foster a safe work environment. As a secondary effect, it may also protect co-workers, family members, employers, customers, suppliers, nearby communities, and other members of the public who are impacted by the workplace environment. It may involve interactions among many subject areas, including occupational medicine, occupational (or industrial) hygiene, public health, safety engineering, chemistry, health physics.



Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health² caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job.

Occupational health and safety officers promote health and safety procedures in an organization. They recognize hazards and measure health and safety risks, set suitable safety controls in place, and give recommendations on avoiding accidents to management and employees in an organization. Like it or not, organization have a duty to provide health and safety training.

An effective training program can reduce the number of injuries and deaths, property damage, legal liability, illnesses, workers' compensation claims, and missed time from work.

Safety training classes help to establish a safety culture in which employees themselves help to promote proper safety procedures while on the job. It is important that new employees be properly trained and embraced the importance of workplace safety as it is easy for seasoned workers to negatively influence the new

hires. That negative influence however, can be purged with the establishment of new, hands-on, innovative effective safety training which will ultimately lead to an effective safety culture.

¹ *Employment - is a contract between two parties, one being the employer and the other being the employee.*

² *departures from health- the loss of health*

3. Comprehension:

a) Match the words from (a) with the words from (b) according to the text.

a)	b)
1. occupational	a) injuries and deaths
2. public	b) program
3. safety	c) environment
4. safe work	d) health
5. recognize	e) safety procedures
6. set suitable safety	f) avoiding accidents
7. give recommendations on	g) controls
8. training	h) hazards
9. reduce the number of	i) hygiene
10. establish a safety culture	j) engineering
11. promote proper	k) physics

b) Choose the words with the similar meaning for the word underlined.

- Occupational health and safety (OSH) is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment.
 - to preserve
 - to progress
 - to care for
 - to support
- The goal of all occupational health and safety programs is to foster a safe work environment.
 - to ground
 - to care for
 - to support
 - to open
- Occupational health and safety officers promote health and safety procedures in an organization.
 - to encourage
 - to contribute to
 - to push
 - to increase

- 4) Occupational health and safety officers recognize hazards and measure health and safety risk.
 - a) to recall
 - b) to identify
 - c) to understand
 - d) to enter
- 5) Safety training classes help to establish a safety culture.
 - a) to organize
 - b) to rate
 - c) to set up
 - d) to work

c) Replace the underlined words in the sentences by the words with the similar meaning.

- 1) Safety training classes help to set up a safety culture.
- 2) Safety training classes help to encourage proper safety procedures.
- 3) To support a safe work environment is an aim of occupational health and safety programs.
- 4) One of the tasks of occupational health and safety officers is to identify the degree of likely risk.
- 5) The aim of occupational health is to contribute to the development of the highest degree of physical, mental and social well-being of workers in all occupations.

d) Make up sentences putting the words in the correct order beginning from the first word.

- 1) **Occupational**, and, thinks, protecting, health and welfare, of workers, safety, on, the safety, working, about, place, health, their.
- 2) **The** aim, to foster, work, occupational, health and, of all, is, a safe, environment, safety programs.
- 3) **Safety**, encourage, classes, help to, safety, training, procedures, proper,
- 4) **Occupational**, and, safety, recognize, and, measure, officers, health, and, safety, risk, health, hazards.
- 5) **The goal**, health, the highest, is to, and, conserve, degree of, workplace, of occupational, promote, safety.
- 6) **Occupational**, health, and, officers, advice, on, escaping, to management, present, in an organization, and employees, safety, accidents.

e) Match terms in the box with their definitions.

1) occupational hygiene	a) the science of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals;
-------------------------	---

2) public health	b) is generally defined as the art and science dedicated to the anticipation, recognition, evaluation, communication and control of environmental stressors in, or arising from, the workplace that may result in injury, illness, impairment, or affect the well-being of workers and members of the community;
3) safety engineering	c) is the field of study deals with the hazards of radiation and protection against such hazards;
4) health physics	d) is a study of all causes and the prevention of accidental deaths and injuries;
5) occupational medicine	e) is the branch of clinical medicine most active in the field of occupational health;
6) occupational health and safety	f) is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment.

f) Match two halves of the sentences and translate them.

1) The task of occupational hygiene	a) is to carry out prophylaxis and take measures for preventing of epidemics arising
2) The task of public health	b) is to know the reasons of arising and preventing of traumatic situations on the workplace
3) The task of safety engineering	c) is the provision of health advice to organizations and individuals to ensure that the highest standards of health and safety at work can be achieved and maintained.
4) The task of health physics	d) is to protect the safety and health of people engaged in work
5) The task of occupational medicine	f) is to control the level of radiation and another biological hazards
6) The task of occupational health and safety	g) is to control and prevent possibilities of arising different accidents on the workplace

3. Read the text “Identifying Safety and Health Hazards” about hazards, risks, outcomes and make a summary.

Identifying Safety and Health Hazards

- **A hazard** is something that can cause harm if not controlled.
- **The outcome** is the harm that results from an uncontrolled hazard.
- **A risk** is a combination of the probability that a particular outcome will occur and the severity of the harm involved.

Hazard Assessment

A hazard is something that can cause harm if not controlled. For example, repetitively carrying out manual handling¹ of heavy objects is a hazard.

Hazard analysis or hazard assessment is a process in which individual hazards of the workplace are identified, assessed and controlled/eliminated as close to source (location of the hazard) as reasonable and possible. Hazard control is a dynamic program of prevention.

Hazards are typically categorized into one of six groups:

1. Safety (moving machinery, working at heights, slippery surfaces, mobile equipment, etc.)
2. Ergonomic (material handling, environment, work organization, etc.)
3. Chemical Agents
4. Biological Agents
5. Physical Agents (noise, lighting, radiation, etc.)
6. Psychosocial (stress, violence, etc.)

Risk assessment

Modern occupational safety and health legislation usually demands that a risk assessment be carried out prior to making an intervention. This assessment should:

- identify the hazards
- identify all affected by the hazard and how
- evaluate the risk
- identify and prioritize appropriate control measures

The calculation of risk is based on the probability of the harm being realized and the severity of the consequences. The risk can be expressed numerically (e.g. a 0.5 or 50/50 chance of the outcome occurring during a year), in relative terms (e.g. “high/medium/low”), or with a multi-dimensional classification scheme (e.g. situation-specific risks). The assessment should be recorded and reviewed periodically and whenever there is a significant change to work practices. The assessment should include practical recommendations to control the risk.

The outcome could be a musculoskeletal disorder (MSD) or an acute back or joint injury.



¹involves the use of the human body to lift, lower, fill, empty, or carry loads.

3. Single out the main points of the text. Use the following opening phrases:

The text looks at (the problem of...)

The text deals with the issue of..

It is clear from the text that...

Among other things the text raises the issue of...

The problem of...is of great importance

One of the main points to be singled out is

Great importance is also attached to...

In this connection, I'd like to say...

It further says that...

I find the question of...very important because...

We shouldn't forget that...

4. Talking points.

1) You are an occupational health and safety officer. Explain your tasks and give the examples of your activity.

2) A lot of people think that the profession of occupational health and safety officer is useless and primitive; it is a waste of time and firm's money. Prove that they are wrong.

TEST YOURSELF

- 1) Occupational health and safety is a cross-disciplinary area concerned with....
 - a) protecting the safety
 - b) health and welfare of people
 - c) customers habits
 - d) interactions among households
- 2) The goal of all occupational health and safety programs is....
 - a) to care for a safe work environment
 - b) to care for animals
 - c) to take care for ecology
 - d) to take care for customers
- 3) Occupational health and safety officers...
 - a) contribute health and safety procedures
 - b) promote vacations for workers in an organization
 - c) offer salaries and wages
 - d) increase working hours

- 4) The science of preventing disease through the organized efforts...
 - a) occupational hygiene
 - b) public health
 - c) occupational medicine
 - d) health physics

- 5) It is a study of all causes and the prevention of accidental deaths and injuries.
 - a) health physics
 - b) public health
 - c) safety engineering
 - d) occupational medicine

- 6) To carry out prophylaxis and take measures for preventing of epidemics arising is the task of...
 - a) occupational hygiene
 - b) public health
 - c) health physics
 - d) safety engineering

- 7) To protect the safety and health of people engaged in work is the task of...
 - a) public health
 - b) health physics
 - c) safety engineering
 - d) occupational health and safety

- 8) It is the harm that results from an uncontrolled hazard.
 - a) the outcome
 - b) a hazard
 - c) a risk
 - d) harm

- 9) It is something that can cause harm if not controlled.
 - a) the outcome
 - b) a hazard
 - c) a risk
 - d) harm

- 10) It is a combination of the probability that a particular outcome will occur and the severity of the harm involved.
 - a) the outcome
 - b) a hazard
 - c) a risk
 - d) harm

For Fun

Learning Styles

Each person is unique. Each boy or a girl has not only his/her special appearance but also the unique style of learning. Some people like learning by listening (auditory); others like learning by seeing (visual) or by doing (kinesthetic). What about you? Define your learning style.
(Check your answers with keys. (page 98)

What kind of learner are you?

Choose the statement which is true about you. Circle the letter of the statement.

- 1) How can other people best interpret your emotions?
 - a. through your facial expressions
 - b. from the quality of your voice
 - c. through your general body language
- 2) How do you manage to keep up with current events?
 - a. by reading the newspaper thoroughly when you have free time
 - b. by listening to the radio or watching the TV news
 - c. by quickly reading the paper or spending just a few minutes watching the TV news
- 3) What sort of driver or passenger are you?
 - a. you frequently check the rear view mirror and watch the road carefully
 - b. you turn on the radio as soon as you get into the car
 - c. you can't get comfortable in the seat and continually shift position
- 4) How do you prefer to conduct business?
 - a. by having face-to-face meetings or writing letters
 - b. over the phone because it saves time
 - c. by talking while you are walking, jogging or doing something else physically
- 5) How do you react when you are angry?
 - a. by clamming up and giving others the silent treatment
 - b. by quickly letting others know when you are angry
 - c. by clenching your fists, grasping something tightly or storming off
- 6) How would you describe the way you dress?
 - a. a neat and tidy dresser
 - b. a sensible dresser
 - c. a comfortable dresser
- 7) What do you think the best way to discipline a child?
 - a. to isolate the child by separating him/her from the group
 - b. to reason with the child and discuss the situation
 - c. to use acceptable forms of corporal punishment

- 8) How do you behave at meetings?
- a. you come prepared with notes and displays
 - b. you enjoy discussing issues and hearing other points of view
 - c. you would rather be somewhere else and so spend your time doodling
- 9) What do you like doing at your free time?
- a. watching TV or going to the cinema
 - b. listening to the radio, going to a concert or playing a musical instrument
 - c. engaging in a physical activity of some kind
- 10) What do you consider to be the best way of rewarding students?
- a. writing positive commitments on their work
 - b. expressing oral praise to the student
 - c. a pat on the back, a hug, or some other appropriate physical action

Unit 2

Workplace Safety

Vocabulary list

injury	ушкодження, пошкодження
lawsuit	судова справа, судовий процес
to trip and fall	спотикатися та падати
to prevent	запобігати
hazard	небезпека, ризик
to avoid	уникати
equipment	обладнання
to protect	захищати

1. Work in pairs. What are the safety rules in your university? Make a list of rules using the vocabulary list and words in the box.

upstairs	to approach	use
stairs	run	lift
slowly	push	rules
attentively	to speak loudly	keep
windows	left	jump
open	right	food
close	side	canteen
door	downstairs	alcohol

2. Complete the sentences with should, shouldn't or may. How can we name these rules?

- 1) The students' ... leave things lying on the floor.
- 2) You ... use your mobile phone during the lesson.
- 3) Be careful! High-voltage electricity. You ... get an electric shock.
- 4) You ... wash your hands after using different chemicals.
- 5) Take care. Heavy weight. You ... injure your back.
- 6) Be careful! You ... burn your hands.
- 7) Be careful! Someone left things. You ... trip and fall.

3. Read the text and translate.

“Workplace Safety”

Workplace safety & health is a category of management responsibility in places of employment.

Office injuries are extremely dangerous situations because of the lawsuits that can evolve. In office areas, trips and falls are the number one cause of injury, and can be easily prevented. There are many different workplace safety measures to prevent yourself from getting injured in the office. They include:

1. ***Understand the risks.*** Once you know the particular hazards of your job or workplace, you can take steps to reduce your risk of work-related injury or illness.
2. ***Reduce workplace stress.*** Common causes include long hours, heavy workload, job insecurity and conflicts with coworkers or bosses. Stress can lead to depression, sleeping difficulties and problems with concentration.
3. ***Take regular breaks.*** Staying fresh and alert will help you avoid injury. Schedule the most difficult tasks of each day for times when your concentration is best, such as first thing in the morning.
4. ***Avoid stooping or twisting.*** Use ergonomically designed furniture and equipment or rearrange your work area so that everything you need is within easy reach.
5. ***Use mechanical aids whenever possible.*** Instead of trying to lift or carry a heavy object, use a wheelbarrow, conveyor belt, crane.
6. ***Protect your back.*** If you do need to pick up and carry heavy loads, keep the load close to your body and lift with your thigh¹ muscles.
7. ***Wear protective equipment to suit the task.*** If worn correctly, gear such as earplugs, earmuffs, hard hat, safety goggles, gloves or full-face mask can dramatically reduce your risk of injury.
8. ***Stay sober.*** Alcohol and drugs are a contributing factor in around three per cent of workplace fatalities.
9. ***Talk over any concerns.*** Your employer or human resources manager need to be informed about hazards and risks. Your employer is legally obliged to ensure a safe working environment.
10. ***Know your rights.*** Organisations can offer information and advice on workplace safety issues.

Staying healthy and safe at work is important. No matter what your job, it is important to reduce your risks of injury and illness at work.

The workplace, just like anywhere else, can be a dangerous place if you are not careful. The key is to use your natural senses, so that you can avoid any potentially dangerous situations. Of course, if any injuries do occur at the office, or in the workplace, be sure to report them immediately, and seek help. There may also be some form of legal action that you can take if you feel that it is necessary.



¹thigh - стегно

4. Comprehension:

a) Match the words from (a) with the words from (b) according to the text.

a)	b)
1) management	a) responsibility
2) stay	b) stooping
3) office	c) injuries
4) trips and	d) sober
5) workplace safety	e) getting injured
6) to prevent yourself from	f) reduce your risk
7) take steps to	g) injury or burnout
8) avoid	h) falls
9) avoid	i) measures

b) Choose the words with the similar meaning for the word underlined.

1) Workplace safety & health is a category of management responsibility in places of employment.

- a) obligation
- b) task
- c) duty
- d) measure

2) Office injuries are extremely dangerous situations.

- a) risk
- b) damage
- c) harm
- d) trauma

3) There are many different workplace safety measures to prevent yourself from getting injured in the office.

- a) to avoid
- b) to estimate
- c) to stop
- d) to check

4) Protect your back.

- a) help
- b) care for
- c) look after
- d) annoy

c) Replace the underlined words in the sentences by the words with the opposite meaning.

1) Injuries are extremely dangerous situations.

- a) hazardous
- b) safe
- c) critical
- d) harmless

2) Common causes include long hours, heavy workload, and job insecurity.

- a) security
- b) confidence
- c) trust
- d) area

3) Reduce workplace stress.

- a) decrease
- b) extend
- c) decline
- d) increase

4) Instead of trying to lift or carry a heavy object, use a wheelbarrow.

- a) elevate
- b) drop
- c) lower
- d) fall

d) Make up sentences putting the words in the correct order beginning from the first word.

- 1) **Office**, extremely, injuries, situations, are, dangerous.
- 2) **Stress**, lead, can, to, depression, problems, difficulties, and, concentration, with.
- 3) **Staying**, injury, alert, helps, fresh, and, you, will, avoid.
- 4) **Use**, designed, furniture, ergonomically.
- 5) **Use**, possible, aids, whenever, mechanical.
- 6) **Wear**, equipment, protective, the task, to suit.
- 7) **Staying**, important, safe, at, healthy, and, work, is.

5. Form groups of words with the opposite meaning with the help of these prefixes and translate them. Make up sentences according to the theme of the unit.

dis	use, organize, approve, close, place, satisfy, appear, like, agree
in-	correct, definite, active, complete
im-	possible, perfect, personal
ir-	regular, rational
il-	logical, legal
un--	usual, able, comfortable, experienced, known, true

6. Read the text and make a list of safety precautions.

Laboratory Safety Equipment

Laboratory safety equipment can be found in every general chemistry lab. It is important for everyone using the lab to be aware of where the laboratory safety products are located, and how to use them properly. The most important equipments



are goggles and gloves. These will protect you from the majority of dangers occurring in the laboratory.

Here are some other important lab equipment items that are used in case of an emergency: eye wash (if chemicals get in your eyes), fire blanket (smother a fire), safety shower (in case of chemical spill), and first aid kits (for minor injuries). The variety of equipment allows people to be safe in almost any situation, even if it is dangerous. Of course, if anything does go wrong, there is always the telephone with which calling 103, or the appropriate emergency service would be a good idea.

The first time you visit any lab, your teacher or assistant will show you the location of all of the safety gear, how to use it, as well as the two exits. Learning how to use these items before doing any experiments is imperative. If you perform any experiments before you have learned about them and have an accident, you will be unable help yourself.

7. Read the texts choose one and fill in each gap with a suitable word from the box. Retell the text.

a) Workplace safety - dangerous goods

1. product	5. hazardous substances
2. transported	6 .alcohol
3. harmful	7. dangerous
4. blow up	8 .goods

a)_____ goods are objects or substances that are potentially b)_____ to people or the environment, such as explosives or chemicals. Dangerous goods can c)_____ burn, corrode or poison people. They should be handled, stored and d)_____ with great care.

Some dangerous e) _____, such as certain chemicals, are also classified as f)_____. Employers using these g) _____ in the workplace must abide by the regulations for both dangerous goods and hazardous substances.

Dangerous goods include:

- Compressed oxygen or other gases
- Explosives
- Flammable liquids, such as h)_____, and flammable solids, such as nitrocellulose
- Infectious substances
- Oxidising substances, such as ammonium dichromate or pool chlorine
- Radioactive materials.

Dangerous goods are classified according to their properties, such as 'compressed toxic gases, 'flammable solid' or 'toxic liquid'. Some dangerous goods attract subsidiary risk classifications - for example, chlorine gas is classed as toxic first and corrosive second.



b) Dangerous goods in households.

1.substance	5.children
2.be stored	6.poisoning
3.hazardous	7.goods
4.liquid	8.pesticides

a) ... substances such as chemicals cause over 2,000 deaths in Australia every year. Exposure to chemicals commonly used in households can lead to a variety of short and long term health effects such as b) ... , skin rashes and disorders of the lung, kidney and liver.

A hazardous c) ... can take many forms – gas, powder, d) ... , solid or dust.

Australian homes commonly store small quantities of dangerous e) ... including petrol, kerosene, f) ... and pool chemicals such as chlorine. Safe handling suggestions include:

- Dangerous goods should be kept in their original containers and never decanted into other bottles.
- All labelling, including warning labels and manufacturers' instructions, should remain intact on the packaging.
- Different types of dangerous goods should g) ... separately to prevent a chemical reaction. Liquids and powders should be separated.
- All ignition sources should be kept well away from the storage area.
- If in doubt, contact the manufacturer for information. They are required to provide safety information on their products.
- Dangerous goods should be kept out of reach of h) ... in a secure location.



8. Single out the main points of the text. Use the following opening phrases:

The text looks at (the problem of...)

The text deals with the issue of..

It is clear from the text that...

Among other things the text raises the issue of...

The problem of...is of great importance

One of the main points to be singled out is

Great importance is also attached to...

In this connection, I'd like to say...

It further says that...

I find the question of...very important because...

We shouldn't forget that...

I think that...should be mentioned here as a very important...mechanism of... .

9. Talking points.

Work in small groups. You are responsible for training some new apprentices on safety in your workplace.

- 1) Brainstorm different safety precautions people in your workplace should take. (think over a place of job) Write a list.
- 2) Prepare to explain your list to new apprentices. Explain what they should and shouldn't do, and what could happen if they don't take precautions.
- 3) Present your safety precautions to the class and answer any questions they have.

TEST YOURSELF

- One of the main reasons of injuries is....
 - trips and falls
 - hazard
 - upstairs
 - uncareful
- Staying ... will help you avoid injury.
 - tired
 - fresh and alert
 - uncareful
 - in depression
- The ergonomically designed furniture and equipment can help you to avoid...
 - injuries
 - stooping and twisting
 - sleeping
 - stress
- If you want to protect your back you....
 - need to carry heavy loads
 - need to sit all day long
 - need to keep the load close to your body
 - need to do exercises
- The variety of equipment allows people to be ... in almost any situation.
 - safe
 - hazardous
 - critical
 - harmless
- ... goods are objects or substances that are potentially ... to people or the environment.
 - harmful, useful
 - customer, useful
 - any, useless
 - dangerous, harmful
- Dangerous goods are classified according to their...
 - properties
 - use
 - harm
 - substance

- ## For Fun

Earlier it was considered that a person had either mathematical or linguistic type of intelligence. Professor Howard Gardner has changed this opinion. He identifies 8 types of intelligences: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, naturalist. Now it's your time to define your type of intelligence by doing **MULTIPLE INTELLIGENCES CHECKLIST**.

Linguistic Intelligence

- 

1. I often do calculations in my head mind.
2. I'm good at chess and/or drafts.
3. I like to put things into categories.
4. I like to play number games.
5. I love to play around with computers.
6. I ask lots of questions about how things work.

23

3. I can draw well.
4. Videos and slides help me to learn information.
5. I like books with pictures.
6. I enjoy putting puzzles together.

Bodily-Kinesthetic Intelligence

1. It's hard for me to sit quietly for a long time.
2. It's easy for me to copy exactly what people do.
3. I'm good at sewing, woodwork, building or mechanics.
4. I'm good at sports.
5. I like books with pictures.
6. I enjoy putting puzzles together.



Musical Intelligence

1. I can hum the tunes to lots of songs.
2. I'm a good singer.
3. I play a musical instrument or sing in a choir.
4. I can tell when music sounds off-key.
5. I often tap rhythmically on the table or desk.
6. I often sing songs.

Interpersonal Intelligence

1. I'm often the activities leader.
2. I've got a lot of friends.
3. I enjoy talking to my friends.
4. I often help my friends.
5. My friends often talk to me about their problems.
6. I'm a member of several clubs.

Intrapersonal Intelligence

1. I go to the cinema alone.
2. I go to the library alone to study.
3. I can tell you some things I'm good at.
4. I like to spend time alone.
5. My friends find some of my actions strange sometimes.
6. I learn from my mistakes.

Naturalist Intelligence

1. I spend a lot of time outdoors.
2. I enjoy listening to the sounds created in the natural world.
3. I can identify plant life and animal species.
4. I can distinguish between poisonous and edible mushrooms.
5. I enjoy observing plants.
6. I've got green fingers

Unit 3

Ergonomics

Vocabulary list

Ergonomics	ергономіка
disability	непрацездатність, безсилля
to fulfill	виконувати, здійснювати
to assess	оцінювати, визначати
to overextend	перенапрягатися
proactive ergonomics	проактивна ергономіка
reactive ergonomics	реактивна ергономіка

1. Answer these questions using the vocabulary list and words from the box.

- 1) What are the necessary conditions for productive work?
- 2) What working conditions are the most important for you?

silence	well-organized working conditions
convenience	breaks for lunch
comfortable furniture	dinner
workday	friendly environment
safety	task within one's power
suitable equipment	

2. Read the text and define the main characteristics of ergonomics.

Ergonomics

Ergonomics: the science of designing user interaction with equipment and workplaces to fit the user.

Ergonomics is the science of designing the workplace environment to fit the user. Proper ergonomic design is necessary to prevent repetitive strain injuries¹, which can develop over time and can lead to long-term disability.

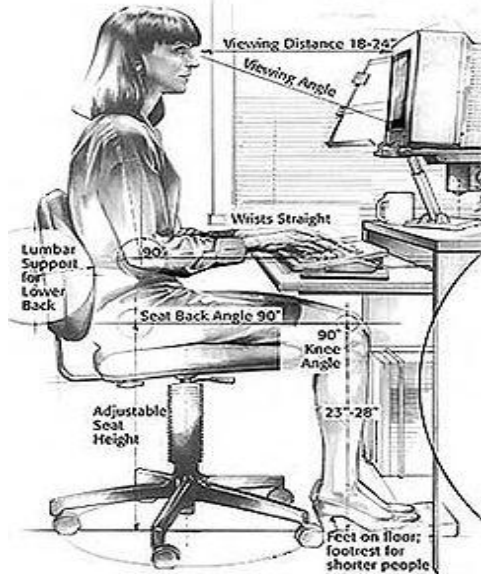
The International Ergonomics Association defines ergonomics as follows:

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.²

Ergonomics is employed to fulfill the two goals of health and productivity. It is relevant in the design of such things as safe furniture and easy-to-use interfaces to machines.

Ergonomics is concerned with the 'fit' between people and their technological tools and environments. It takes account of the user's capabilities and limitations in seeking to ensure that tasks, equipment, information and the environment suit each user.

To assess the fit between a person and the used technology, ergonomists consider the job (activity) being done and the demands on the user; the equipment used (its size, shape, and how appropriate it is for the task), and the information used (how it is presented, accessed, and changed). Ergonomics draws on many disciplines in its study of humans and their environments, including anthropometry, biomechanics, mechanical engineering, industrial engineering, industrial design, kinesiology, physiology and psychology.



According to the International Ergonomics Association:

- Physical ergonomics: is concerned with human anatomical, and some of the anthropometric, physiological and bio mechanical characteristics as they relate to physical activity.
- Cognitive ergonomics: is concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system.
- Organizational ergonomics: is concerned with the optimization of socio technical systems, including their organizational structures, policies, and processes

Ergonomics in the workplace

Outside of the discipline itself, the term 'ergonomics' is generally used to refer to physical ergonomics as it relates to the workplace (as in for example ergonomic chairs and keyboards). Ergonomics in the workplace has to do largely with the safety of employees, both long and short-term. Ergonomics can help reduce costs by improving safety. This would decrease the money paid out in workers' compensation. For example, over five million workers sustain

overextension injuries per year. Through ergonomics, workplaces can be designed so that workers do not have to overextend themselves and the manufacturing industry could save billions in workers' compensation.



Workplaces may either take the reactive or proactive approach when applying ergonomics practices. Reactive ergonomics is when something needs to be fixed, and corrective action is taken. Proactive ergonomics is the process of seeking areas that could be improved and fixing the issues before they become a large problem. Problems may be fixed through equipment design, task design, or environmental design. Equipment design changes the actual, physical devices used by people. Task design changes what people do with the equipment. Environmental design changes the environment in which people work, but not the physical equipment they use.

¹*Repetitive strain injury (RSI) - is an injury of the musculoskeletal and nervous systems that may be caused by repetitive tasks, vibrations, mechanical compression (pressing against hard surfaces), or sustained or awkward positions.*

²*overall system performance - загальна продуктивність праці*

3. Comprehension:

a) Match the words from (a) with the words from (b) according to the text.

a)	b)
1. user interaction	a. repetitive strain injuries
2. to fit	b. ergonomics
3. to prevent	c. with equipment
4. long-term	d. ergonomics
5. scientific	e. disability
6. the understanding of	f. discipline
7. to fulfill	g. interactions
8. takes account of	h. the two goals
9. tasks, equipment, information and	i. the user's capabilities
10. Physical	j. the environment suit each user
11. Organizational	k. ergonomics
12. Cognitive	l. the user

b) Make up sentences putting the words in the correct order beginning from the first word.

- 1) **Ergonomics**, the science, designing, of, the workplace, is, the user, environment, to fit.
- 2) **Proper**, different, design, can, ergonomic, a lot of, illnesses, prevents.
- 3) **Reactive**, where is, when, know, you, a problem, is, ergonomics.
- 4) **Proactive**, suppose, where, is, when, will, you, the, problem, appear, ergonomics.
- 5) **Cognitive**, mental, processes, thinks, about, ergonomics.
- 6) **The approach**, reactive, be, or, proactive, may, to ergonomics.
- 7) **Ergonomics**, disciplines, many, in, of humans, draws on, its, and, their, study, environments.

c) Match terms in the box with their definitions.

1.Organizational ergonomics	a) the engineering science concerned with the physical and psychological relationship between machines and the people who use them.
2.Physical ergonomics	b) is a branch of ergonomics that deals with the mental ergonomic aspects.
3.Cognitive ergonomics	c) is a branch of ergonomics that deals with the human side of the ergonomic coin such as anatomy, anthropometry, physiology and bio-mechanics.
4.Proactive ergonomics	d) is a branch of ergonomics that deals with the optimization of systems.
5.Reactive ergonomics	e) is responding to an issue that needs fixing and has already caused problems.
6.Ergonomics	f) is to actively seek out potential problems before they happen.

d) Match two halves of the sentences and translate them.

a. The object of ergonomics is	1. reduce costs by improving safety.
b. The aspects of cognitive ergonomics include	2. understanding how your senses work and how you perceive through them.
c. Organizational ergonomics subjects include	3. to improve the efficiency of operation by taking into account a typical person's size, strength, speed, visual acuity, and physiological stresses.
d. Ergonomics draws on many disciplines	4. such as anthropometry, biomechanics, mechanical engineering, industrial engineering, industrial design, kinesiology, physiology and psychology.
e. Ergonomics can help	5. communication, work design, shift (work hours) management, crew resource management, teamwork, virtual organizations, telework, and quality management.

4. Read and say about the importance of human factors. Think of your own examples.

Applications

More than twenty technical subgroups within the Human Factors and Ergonomics Society (HFES) indicate the range of applications for ergonomics. Human factors engineering continues to be successfully applied in the fields of aerospace, aging (старіння), health care, IT, product design, transportation, training, nuclear and virtual environments, among others. Kim Vicente, a University of Toronto Professor of Ergonomics, argues that the nuclear disaster in Chernobyl is attributable to plant designers not paying enough attention to human factors. "The operators were trained but the complexity of the reactor and the control panels nevertheless outstripped (випереджати) their ability to grasp (схоплювати) what they were seeing [during the prelude to the disaster]."

Physical ergonomics is important in the medical field, particularly to those diagnosed with physiological ailments (нездужання) or disorders (непорядках) such as arthritis (both chronic and temporary) or ¹carpal tunnel syndrome. Many ergonomically designed products are also used or recommended to treat or prevent such disorders, and to treat pressure-related chronic pain.



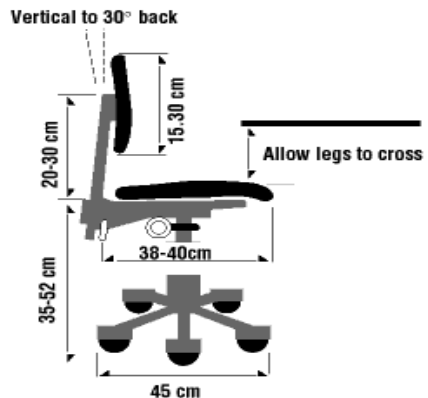
¹a condition characterized by pain and tingling (відчувати кольки у затерпліх місцях) in the fingers, caused by pressure on a nerve as it passes under the ligament(зв'язку) situated across the front of the wrist

5. Read the main rules of seating ergonomics and be ready to create your own design.

Main Rules of Seating Ergonomics

What should I consider when selecting a chair?

A basic rule of ergonomics is that there is no such thing as an "average" person. However, providing a chair specifically designed for each individual is not practical. The only solution is to provide workers with fully adjustable chairs that can



accommodate a maximum range of people (typically around 90 percent of the population; workers falling in the ranges of 5% of the shortest and the tallest will need custom-made chairs).

Choose a chair with:

- controls that are easy to operate from sitting position
- a seat that adjusts for both height and tilt (нахил)
- a seat that does not put pressure the back of thighs or knees
- a seat with a front edge that curves towards the floor
- breathable, non-slippery fabric on the seat
- a backrest shaped to support the lower back
- a stable five-point base
- wheels suitable for the type of flooring
- a swivel mechanism (шарнірне з'єднання механізмів)
- armrests (підлокітник) that can be adjusted to the elbow height when your upper arms are hanging down and your forearms(передпліччя) are at about a 90 degree angle to the upper arms
- armrests that do not interfere with free movements within the workstation



What is so controversial (дискусійне питання) about armrests?

Armrests are traditionally not recommended because they can prevent the users from getting close to the desk. However, now there are armrests that extend 25 cm (10 inches), or less, from the back of seat. People using chairs fitted with these shorter armrests can move their chairs closer to their workstations. The armrests give them a place to rest their arms which, in turn, takes some of the load off their shoulders and neck.

How do I adjust a chair for my height?

Stand in front of the chair. Adjust the height so the highest point of the seat, (when in the horizontal position), is just below the knee cap.



Sit on the chair and keep your feet flat on the floor.
Check that the clearance between the front edge of the seat and the lower part of the legs fits about 2 inches.

Sit upright with your arms hanging loosely by your sides. Bend (згинати) your elbows at about a right angle (90 degrees) and adjust the armrest(s) height until they barely touch the undersides of the elbows.



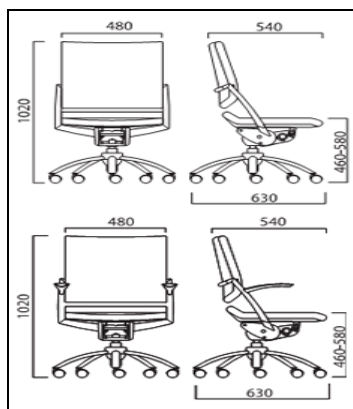
Remove the armrests from the chair if this level cannot be achieved or if armrests, in their lowest adjustment, elevate your elbows even slightly. Tilt the seat itself forwards or backwards if you prefer.

6. Read the text and study the pictures given below. Make the advertisement of the chairs of your firm using the information from the task 5.

Reaction

Ideal for the office, study or lounge reading corner, Reaction is at ease wherever there is the need for an ergonomic chair, without compromising on style. Elegant in terms of both materials and design, it provides perfect support for the back, following the natural movements of the body.

Reaction combines the virtues of an ergonomic operator's chair with a particularly elegant look. The backrest structure consists of a special chromium-plated aluminium casting and comes in the version with or without armrests. It is ideal for anyone who has to sit for long periods. The upholstery (оббивка) is made of soft leather.



You may use the following phrases:

- a) armrests and seats in order to prevent RSI (repetitive strain injuries)
- b) Modern chairs are constructed to be able to fit the individual
- c) this is where a good chair will pay dividends
- d) An ergonomic chair will correctly transfer the weight throughout the chair via armrests the seat and its back.
- e) This correct transfer of weight through the chair is the key to good design and a major factor in reducing back pain.
- f) can become pressured and can cause pain and discomfort if not seated correctly over time.
- g) Reducing lower back pressures is key to the good ergonomic design of seating.

7. Single out the main points of the theme. Use the following opening phrases:

The theme looks at (the problem of...)

The theme deals with the issue of..

It is clear from the theme that...

Among other things the theme raises the issue of...

The problem of...is of great importance

One of the main points to be singled out is

Great importance is also attached to...

In this connection, I'd like to say...

It further says that...

I find the question of...very important because...

We shouldn't forget that...

TEST YOURSELF

1) Ergonomics is the science of designing the workplace environment...

- a) to fit the user
- b) to fit the consumer needs
- c) to fit everybody's desire
- d) to fit the rules

2) Ergonomics is employed to fulfill the two goals...

- a) of the consumer needs and health
- b) of desire and productivity
- c) of health and productivity
- d) of convenience and disability

3) It is concerned with human anatomical, and some of the anthropometric, physiological and bio mechanical characteristics as they relate to physical activity.

- a) cognitive ergonomics
- b) organizational ergonomics
- c) ergonomics
- d) physical ergonomics

- 4) It is concerned with the optimization of socio technical systems.
 - a) cognitive ergonomics
 - b) organizational ergonomics
 - c) ergonomics
 - d) physical ergonomics

- 5) It is concerned with mental processes as they affect interactions among humans and other elements of a system.
 - a) cognitive ergonomics
 - b) organizational ergonomics
 - c) ergonomics
 - d) physical ergonomics

- 6) It is responding to an issue that needs fixing and has already caused problems.
 - a) cognitive ergonomics
 - b) organizational ergonomics
 - c) proactive ergonomics
 - d) reactive ergonomics

- 7) It is to actively seek out potential problems before they happen.
 - a) cognitive ergonomics
 - b) organizational ergonomics
 - c) proactive ergonomics
 - d) reactive ergonomics

- 8) It is a branch of ergonomics that deals with the mental ergonomic aspects.
 - a) cognitive ergonomics
 - b) organizational ergonomics
 - c) proactive ergonomics
 - d) reactive ergonomics

- 9) The object of ergonomics is...
 - a) to indicate the range of applications for ergonomics
 - b) to improve the efficiency of operation by taking into account health and productivity
 - c) to treat pressure-related chronic pain
 - d) to provide workers with fully adjustable chairs

- 10) Physical ergonomics is important in...
 - a) the medical field
 - b) transportation field
 - c) product design
 - d) nuclear and virtual environments

For Fun

Read the text carefully and fill in the table after reading it.

Choosing gifts for hosts is rather difficult. And people can be very sensitive, especially if they don't realize things are different in other countries. Take flowers for example. One of the most difficult presents is flowers. In some countries, like France or Germany, they cannot offer an even number of flowers. Five, seven, or nine roses are fine, but not six, eight or ten. An even number of flowers is considered bad luck. The other thing is the colour of the roses. People think of red roses as a symbol of passion in many countries. They give red roses to their loved ones, so they're not appropriate in a business context. There can be other problems with colours: yellow and white for instance, and sometimes the kind of

flowers. So, if you're giving flowers it's a good idea to stick to pink roses, or something like that.

In many countries knives of any kind are not suitable gifts. They can mean "cutting friendship", or something like that.

Shoes and boots can also be difficult. The American President once took a pair of black leather cowboy boots to the Chinese Premier as a gift. There was a terrible silence. And that's because the Chinese think that the sole of your foot is the dirtiest part of the human body.

Be careful with alcohol. A bottle of good whisky is acceptable in America, or in a European country, but obviously absolutely not in the Arab world. Something in silver, like a photograph frame or a tray, especially if it is engraved, is always acceptable or a good pen. Usually a clock is okay, except older Chinese people who sometimes think it's a sign of bad luck. And of course, chocolates, especially if they come from a well-known store like *Foster and Massons*.

Country	Present	Reason	
		Positive	Negative
	alcohol		
	flowers	pink colour	red, yellow
European countries	sweets		
	knives		
Nearly all countries			
China		traditions	

b) Now read the text about receiving, giving and packing gifts. Are these things so important? Why? Divide into pairs and discuss with your partner cultural differences in packing, receiving and giving presents.

The way you give or receive a present is very important in some countries. In Britain or America you usually open your present in front of the person who gave it to you. And you make all sorts of exclamations, like "Oh how nice", "How lovely".

Well, in Japan you don't do that. You never open the present in front of the giver. In fact, present giving is very-discreet. In many countries the way you wrap up the present in beautiful paper and ribbon is as important as the object itself.

In some countries it is more polite to send flowers after a dinner party than to arrive with them. And finally, be careful what you admire in the Middle East. If you admire a beautiful object, your host may just pick it up and offer it to you.

Unit 4

Environmental Pollution

Vocabulary list

environment	навколишнє середовище
pollution	забруднення
discharge	викидання
to cause	причиняти
detriment	шкода
pollutants	забруднюючі частки
impact	вплив
waste	відходи
to spew	вивергати

1. Answer the questions using the vocabulary list and words in the box.

- 1) What do you think about our environment?
- 2) Think of some reasons explaining why our environment is getting worse.

to pollute	hard to breathe	damage
to preserve the purity of water	to protect tress	to take care of
to preserve a healthy and clean environment	not to pollute with	to keep clean
to collect rubbish(сміття)	to affect harmfully	waste from chemical plant
to influence harmfully	release	to turn the land into desert
to recycle (вторинна переробка)	to purify (очищати)	to reduce(скорочувати)
to remove (видаляти) plants from the city	green zones	create

2. Read the text and answer the questions.

- 1) What is environmental pollution?
- 2) What are the reasons for formations of smog in the Los Angeles and the pollution of large areas of the Mediterranean Sea?
- 3) Can technology help to solve some pollution problems?

- 4) What has resulted in an exponential growth in the production of goods and services?
- 5) Is pollution always considered to be primarily a local problem in polluted places?

Environmental Pollution

Environmental pollution is any discharge of material or energy into water, land, or air that causes or may cause acute (short-term) or chronic (long-term) detriment to the Earth's ecological balance or that lowers the quality of life.

Pollutants may cause primary damage, with direct identifiable impact on the environment, or secondary damage in the form of minor perturbations in the delicate balance of the biological food web that are detectable only over long time periods.

Until relatively recently in humanity's history, where pollution has existed, it has been primarily a local problem. The industrialization of society, the introduction of motorized vehicles, and the explosion of the human population, however, have caused an exponential growth in the production of goods and services. Coupled with this growth has been a tremendous increase in waste byproducts.



The indiscriminate discharge of untreated industrial and domestic wastes into waterways, the spewing of thousands of tons of particulates and airborne gases into the atmosphere, the "throwaway" attitude toward solid wastes, and the use of newly developed chemicals without considering potential consequences have resulted in major environmental disasters, including the formation of smog in the Los Angeles area since the late 1940s and the pollution of large areas of the Mediterranean Sea. Technology has begun to solve some pollution problems, and public awareness of the extent of pollution will eventually force governments to undertake more effective environmental planning and adopt more effective antipollution measures.

3. Comprehension:

a) Checking facts and ideas.

- 1) People are getting more aware of the pollution problems.
- 2) More effective antipollution measures will be adopted by the government.
- 3) Smog is a major concern for many people in Los Angeles.
- 4) Primary damage and secondary damage are two types of damage caused by pollutants.

5) The rapid growth in the production of goods and services is mainly attributed to the industrialization of society.

b) Choose the most suitable word from the box for each of the following sentences and put it in the correct form.

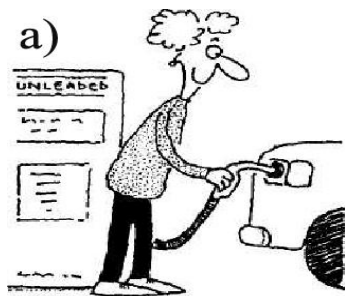
a) detriment	b) detectable	c) unreasonable
d) particulate	e) impact	f) exponential
g) disaster	h) spew	i) discharge

- 1) The urbanization has caused the ...growth in the number of people coming to big cities.
- 2) The ... use of the oceans for dumping toxic waste has resulted in the distinction of several kinds of sea animal.
- 3) The sewers ... their contents into the sea.
- 4) ... is a substance that consists of separate particles, especially airborne pollution.
- 5) People all over the world are beginning to feel the full ... of industrial activities on people and the environment.
- 6) Environmental pollution is any discharge of material water, land, or air that causes may short-term or long-term ... to the Earth's ecological balance.
- 7) The indiscriminate ... of untreated industrial and domestic wastes into waterways have resulted in major environmental

4. Name some ecological problems. Say what makes people feel anxious about their environment.

a) Read these passages about some ecological problems and match the texts with the pictures and titles: Pollution, Alternative Energy, Global Warming, Recycling, The Ozone Layer, Deforestation.

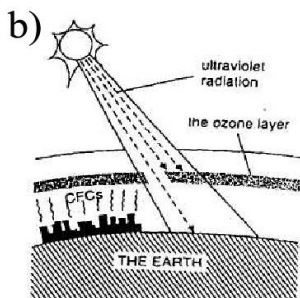
1



Scientists say the temperature of the earth could rise by 3°C over the next 50 years. This may cause drought in some parts of the world, and floods in others, as ice at the North and South Poles begins to melt and sea levels rise.

Global warming is caused by the greenhouse effect. Normally, heat from the sun warms the earth and then escapes back into space. But carbon dioxide and other gases in the atmosphere trap the sun's heat, and this is slowly making the earth warmer.

2



Most of the energy we use today comes from coal, oil and gas. But these will not last forever, and burning them is slowly harming the atmosphere. We need to look for other ways of supplying energy.

Solar power is a way of using the sun's energy as heat or to make electricity. We can also use wind-power by building modern windmills that spin in the wind. There are several types of water-power: river water in mountainous areas can be used to generate hydroelectric power, and we can also create electricity from sea water flowing in and out with the tides.

3



Factories, power stations and motor vehicles pump large quantities of carbon dioxide and other waste gases into the air. This is a major cause of the greenhouse effect. A lot of petrol contains lead, which is very poisonous and can cause brain damage in children. Many people now prefer to use unleaded petrol.

Some poisonous gases dissolve in water in the atmosphere and then fall to the earth as acid rain. Acid rain damages trees and buildings, and can kill fish in lakes and rivers. Rivers can also be polluted by industrial waste from factories and chemical fertilizers and pesticides used by farmers.

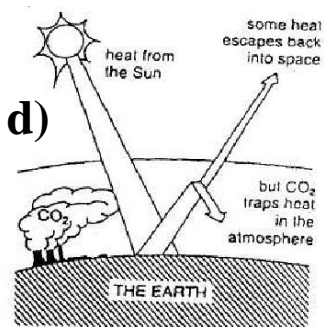
4

Recycling is the processing of used objects and materials so that they can be used again. About 60% of rubbish from homes and factories contain materials that could be recycled. Recycling saves energy and raw materials, and also reduces damage to the countryside.

Glass, paper and aluminium cans can all be recycled very easily. Many towns have bottle banks and can banks where people can leave their empty bottles and cans for recycling. A lot of paper bags, writing paper and greetings cards are now produced using recycled paper.

Rainforests help to control global warming because they absorb carbon dioxide. In recent years, large areas have been destroyed, as the trees are cut down for wood or burned to clear the land for farming. The burning releases large amounts of carbon dioxide into the atmosphere.

Many rainforests grow on poor soils, and when they are cut down or burned, the soil is washed away in the tropical rains, so that the area may turn to desert. Many plant and animal species that live there could become extinct.



The ozone layer is a layer of gas high above the surface of the earth that helps to protect it from the sun's ultraviolet radiation, which can damage our skins and cause cancer. Scientists have recently discovered holes in the ozone layer, caused by substances called CFCs (chlorofluorocarbons).

CFCs are used in refrigerators, aerosol cans and in the manufacture of some plastic products. Some companies now make aerosols that do not contain CFCs, and these are often marked 'ozone-friendly'.

b) Say what causes ecological problems and what are some of the ways to solve them.

c) Say what damage people have done to nature by treating their environment so carelessly.

d) Do you know about any places on the Earth that were destroyed, where life was killed as a result of man's interference?

TEST YOURSELF

1) Environmental pollution is any... of material or energy into water, land, or air that causes or may cause harm to Earth's ecological balance.

a) discharge

b) detriment

c) impact

d) waste

2) The sewers ... their contents into the sea.

- a) disaster
- b) spew
- c) detriment
- d) discharge

3) The ... use of the oceans for dumping toxic waste has resulted in the distinction of several kinds of sea animal.

- a) exponential
- b) pollution
- c) environment
- d) unreasonable

4) Global warming is caused by...

- a) the greenhouse effect
- b) heat
- c) melting of ice
- d) carbon dioxide

5) Rivers can also... by industrial waste from factories and chemical fertilizers and pesticides used by farmers.

- a) be dissolved
- b) be spew
- c) be polluted
- d) be impacted

6) The processing of used objects and materials is called...

- a) processing
- b) reuse
- c) use
- d) recycling

7) We can also use ... by building modern windmills that spin in the wind.

- a) wind-power
- b) solar power
- c) water power
- d) heat power

8) Some poisonous gases ... in water in the atmosphere and then..... to the earth as acid rain.

- a) go, put
- b) dissolve, fall
- c) impact, waste
- d) detriment, fall

9) ... help to control global warming because they absorb carbon dioxide.

- a) forest
- b) wood
- c) rainforests
- d) water

10) ... is a layer of gas high above the surface of the earth that helps to protect it from the sun's ultraviolet radiation.

- a) special layer
- b) stratosphere
- c) atmosphere
- d) ozone layer

For Fun

Environment Quiz

Test your environmental knowledge. Select one answer for each of the following questions and statements, which you think, is correct.

(Check your answers with keys. (page 100)

1. What does LA21 stand for?
 - a. Los Angeles in the 21st Century
 - b. 21 Large Animals
 - c. Local Agenda 21
2. What does the symbol on the right mean?
 - a. Follow the arrows
 - b. Recycle
 - c. This way round the round about
3. What do you do when you have finished with your comics and papers?
 - a. Throw them in the dustbin
 - b. Put them for recycling
4. When using your toothbrush to clean your teeth, would you
 - a. Turn off the tap whilst brushing
 - b. Leave the tap running
 - c. Flick water around the bathroom
5. By leaving your TV on standby, you will still be using electricity, what percentage will you still be using?
 - a. 10%
 - b. 15%
 - c. 20%
6. When buying vegetables or fruit from a supermarket, would you
 - a. Choose the ones with the nicest packaging
 - b. Choose loose vegetables or fruit
 - c. Choose those that are the most expensive
7. When you have grown out of your old clothes and there is no one to pass them onto, do you
 - a. Take them to a charity shop or recycling bin
 - b. Throw the old clothes in the wheelie bin
 - c. Try and squeeze into the clothes



8. The ozone layer is:
 - a. On Channel 5 every Saturday Night.
 - b. A no-go area in a city
 - c. A protective filter in the upper atmosphere that surrounds the earth
9. By taking showers rather than baths how many cups of water can you save each week?
 - a. 60 cups
 - b. 550 cups
 - c. 1000 cups
10. At your birthday party, would you use
 - a. Plastic plates
 - b. Ordinary plates
 - c. Polystyrene plates

Unit 5

Human Influence on Ecosystems

Vocabulary list

to affect	впливати
rubbish	сміття
poisonous	отруйний
contamination	забруднення
to release	визволяти, звільняти
Greenhouse effect	парниковий ефект
sulphur dioxide	двоокис сірки
acid rain	кислотний дощ
emission	викиди
nitrogen oxides	оксид азоту
to emit	вихлоп, випускати

1. Characterize the ecological situation of the area in which you live. Does it need improvement? Give an example how man is affecting the ecology of the area in which you live. You may use following words and vocabulary list.

factories	burn rubbish	awful smell	Melitopolskij myasokombinat
waste from chemical plants	to restore and protect	positive	Margarine Plant and Milk Plant of Melitopol "Oikom" (Molokozavod),
properties	chemical	negative	Melitopol Tractor Hydraulic Units Plant
influence	physical	dump	problems of Molochnij estuary
hard to breathe	biological	poisonous	nationally significant estuary
to improve	to pollute the sea with oil	quality	in an estuary
to maintain	the integrity of	awful	substances

2. Read the text and name the effects of civilization on nature.

Human Influence on Ecosystems

Natural ecosystems everywhere have been affected by humans, either directly or indirectly. The serious implications of this have become increasingly apparent, and considerable action is required. The new generation will feel the consequences more strongly than anyone previous.

A lot of rubbish is dropped as litter... Crisp packets, Big Mac cartons, aluminum cans, glass bottles, plastic bags, bus tickets. Most litter is from food and drink containers. Because it decomposes only very slowly, or not at all, it will remain in the environment for a long time.



Household rubbish is sometimes burned, which puts a lot of smoke and poisonous gases into the air, causing air pollution.

Pollution is contamination by poisonous or harmful substances. Air can become polluted by smoke or harmful gases, e.g. from factories and (mainly) car exhausts. Water can become polluted by the dumping of waste from households and factories at sea or in rivers, and by the spread of chemicals used on farms, e.g. pesticides and chemical fertilizers.

Breathing polluted air can make animals, plants and humans ill. It also causes the "Greenhouse effect," whereby Earth's atmosphere cannot get rid of enough of the Sun's heat, and so gets hotter and hotter [global warming]. The immense masses of ice at the North and South Poles could melt, releasing a massive amount of water into the oceans. Sea levels will rise all over the world, leaving a lot of land underwater. Global negative effects of air pollution include the enhanced greenhouse effect and the ozone hole.

Smog and acid rain are the best known local effects. The word "smog" is the combination of the words smoke and fog.

There are two kinds of smog:

- London-type smog. Burning coal leads to emissions of sulphur dioxide and dust. When these pollutants mix with fog, droplets of highly corrosive sulphuric acid (H_2SO_4) are produced in the air. In London in 1952, concentrations of SO_2 during a smog event exceeded 3.5 mg m^{-3} ($3500 \text{ } \mu\text{g m}^{-3}$) and many people died.

- Los Angeles-type or photochemical smog. This type of smog forms on sunny days and is the result of emissions from traffic. Nitrogen oxides from car exhausts and hydrocarbons from various anthropogenic and biogenic sources react in the presence of sunlight to produce a harmful mixture of aerosols and gases. The substances in these smogs are irritating to our eyes and can damage our respiratory system. They also affect vegetation. This type of smog is rather common now in large cities in the summer and has generally replaced the London-type smog.

Air pollution is a threat to our health and can also cause economic losses.

Air pollution has an impact on both local and global scales. Harmful substances which are emitted into the atmosphere in one country, are transported by the wind and cross over national borders. International co-operation is, therefore, necessary to improve overall air quality.

3. Comprehension:

a) Match the words from (a) with the words from (b) according to the text.

a)	b)
1) natural	a) enough of the Sun's heat
2) to feel	b) of waste
3) to remain in	c) air pollution
4) poisonous	d) the consequences
5) to cause	e) effect
6) contamination by	f) gases
7) harmful	g) ecosystems
8) to dump	h) the environment
9) greenhouse	i) gases
10) to get rid of	j) poisonous substances

b) Make up sentences putting the words in the correct order beginning from the first word.

- 1) **The word**, "smog", smoke, combination, the, is, words, fog, of, the and.
- 2) **Pollution** by, is, substances, poisonous, or, contamination, harmful.
- 3) **Air**, harmful, polluted, smokes, or, can, gases, by, become.
- 4) **Air**, to, health, and, can, our, also, is, cause, economic, a threat, losses, pollution.
- 5) **The substances**, these, irritating, smogs, to, our, are, eyes, in.
- 6) **Earth's**, cannot, get, heat, of, enough, atmosphere, of, the, rid, Sun's.
- 7) **Water**, dumping, become, by, the, can, from, waste, households, and, of, polluted, factories.

c) Match the terms with their definitions.

1. Natural ecosystems	a) ...is the addition of harmful chemicals to natural water.
2. Pollution	b) ...it's both living and non-living things that interact with each other.
3. Water pollution	c) Excessive thinning of ozone layer when more than half of the ozone gas in a particular area is depleted, and harmful ultraviolet rays can pass through to reach the earth's surface.

4. Air pollution	d) The contamination of air, water, or soil by substances that is harmful to living organisms.
5.Greenhouse effect	e) ...is the downpour that contains a high concentration of pollutants, chiefly sulphur dioxide and nitrogen oxide, released into the atmosphere by the burning of fossil fuels such as coal or oil.
6.Acid rain	f)... is the introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms.
7.Ozone hole	g) The phenomenon whereby the earth's atmosphere traps solar radiation, caused by the presence in the atmosphere of gases such as carbon dioxide, water vapor, and methane that allow incoming sunlight to pass through but absorb heat radiated back from the earth's surface.

4. Match the terms with their descriptions.

1.Natural ecosystems	4. Air pollution
2.Pollution	5.Greenhouse effect
3.Water pollution	6.Acid rain
	7.Ozone hole

a) "... the direct or indirect introduction, as a result of human activity, of substances or heat into the water or land which may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems, which result in damage to material property, or which impair or interfere with amenities and other legitimate uses of the environment."

b) It is another burning ecological problem. It comes from variety of different sources like factories, power plants, cars, buses, trucks, wildfires, etc... It threatens the health of humans, trees and animals and is destroying the ozone layer which protects us from dangerous ultra-violet radiation. Statistically speaking, every day average individual breathes more than 3,000 gallons of air and since many people live in urban areas full of smog this affect their health causing them lot of health problems.

c) There is no limit to its size. It can range from a small puddle to the Pacific Ocean. Planet Earth can be considered as it, as the entire solar system. It has two components: biotic and abiotic. Biotic components are the living entities within the system. They include microorganisms, plants and animals. Abiotic components are made up of air, rocks, water and energy. Populations make up the next scientific section of it.

d) It refers to the presence in aqua substance of harmful and objectionable material —obtained from sewers, industrial wastes and rainwater run—off— in sufficient concentrations to make it unfit for use.

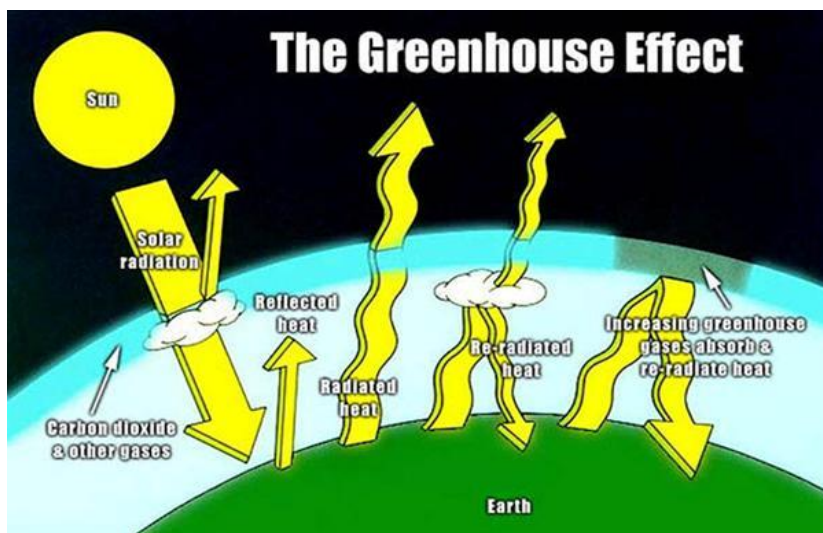
e) The warming of the atmosphere by the trapping of longwave radiation being radiated to space. The most responsible for this effect are water vapor and carbon dioxide. Steady increase in the Earth's average lower atmosphere (near surface) temperature due to heat retention caused by the accumulation of them (including water vapor, carbon dioxide, methane, nitrous oxides, and chlorofluorocarbons or CFCs). These substances form a blanket around the earth that lets the incoming sun rays (short wave radiation) to pass through but blocks the reflected heat rays (long wave radiation) from going out into the space.

f) A severe depletion (зменшування) of it in a region of layer, particularly over Antarctica and over the Arctic. The depletion is caused by the destruction of it by CFCs and by other compounds, such as carbon tetrachloride (CCl_4) and carbon tetrafluoride (CF_4). The amount of it in holes is about 55 to 60 percent of the normal concentration. The amount of ultraviolet radiation the Earth receives is greatly increased by ozone depletion, creating a heightened risk of skin cancers and likely contributing to global warming.

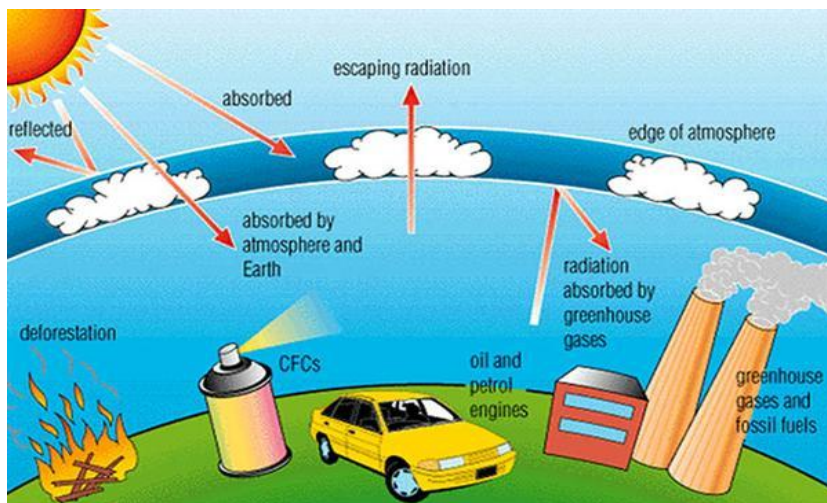
g) Most of them are generally slightly acidic due to the carbonic acid from carbon dioxide in atmosphere. But they are caused when sulfur (sulphur) dioxide and nitrogen oxides (from automobile exhausts and industrial emissions) are washed out from the atmosphere by rain as weak sulfuric (sulphuric) and nitric acid. They can cause serious damage.

5. Choose one of these pictures and describe the process of greenhouse effect.

a)



b)



6. Read the text and name the main factors which influence on people's health.

Do you think that all these factors are the result of human activity? Why?

Climate Effects on Human Health

Prepared by:
Laurence S. Kalkstein
Kathleen M. Valimont

1. Weather has a profound (глибокий) effect on human health and well-being. It has been demonstrated that weather is associated with changes in birth rates, and sperm counts, with outbreaks of pneumonia, influenza and bronchitis, and is related to other morbidity (хворобливість) effects linked to pollen concentrations and high pollution levels.

2. Large increases in mortality (смертність) have occurred during previous heat and cold waves. It is estimated that 1,327 fatalities occurred in the United States as a result of the 1980 heat wave; the number occurring in Missouri alone accounted for over 25% of the total.

3. Hot weather extremes appear to have a more substantial impact on mortality than cold wave episodes. Most research indicates that mortality during extreme heat events varies with age, sex, and race.

4. Threshold (порог) temperatures for cities, which represent maximum and minimum temperatures associated with increases in total mortality, have been determined. These threshold temperatures vary regionally; for example, the threshold temperature for winter mortality in mild southern cities such as Atlanta is 0deg.C and for more northerly cities, such as Philadelphia, it is -5deg.C.

5. Humidity has an important impact on mortality. It also has an important influence on morbidity (хворобливість) in the winter because cold, dry air leads to excessive dehydration of nasal passages.

6. Precipitation (випадіння опадів) in the form of rainfall and snow is also associated with changes in mortality.

7. The global warming cause the mortality.

7. Talking points.

- 1) Explain why so much attention is paid to ecological problems nowadays and why people are getting alarmed and demand urgent actions to protect nature.
- 2) We often hear the words “harmful effects of civilization on nature”. What do they mean? Illustrate the results of harmful and helpful influences of human contacts with nature.
- 3) Speak about the practical steps which are being undertaken for protecting our environment.
- 4) It is our responsibility to preserve this planet for future generations. Say what must be done to achieve this.

TEST YOURSELF

1) ...is contamination by poisonous or harmful substances.

- | | |
|--------------|--------------|
| a) pollution | b) detriment |
| c) exhaust | d) rubbish |

2) This type of smog forms on sunny days and is the result of emissions from traffic.

- | | |
|-----------------------|---------------------|
| a) simple smog | b) London-type smog |
| c) photochemical smog | d) fog |

3) Harmful substances which... into the atmosphere in one country, are transported by the wind.

- | | |
|------------------|---------------------|
| a) are impacted | b) are emitted |
| c) are exhausted | d) are contaminated |

4) Ice at the North and South Poles melt and ... a massive amount of water into the oceans.

- a) impact
- b) affect
- c) dump
- d) release

5) ...is the addition of harmful chemicals to natural water.

- a) air pollution
- b) pollution
- c) water pollution
- d) greenhouse effect

6) ... is the introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms.

- a) air pollution
- b) pollution
- c) water pollution
- d) greenhouse effect

7) ... is the downpour that contains a high concentration of pollutants.

- a) air pollution
- b) pollution
- c) water pollution
- d) acid rain

8) Air pollution is...to our health and can also cause economic losses.

- a) a threat
- b) a kind
- c) emission
- d) harm

9) The... in these smog are irritating to our eyes and can damage our respiratory system.

- a) products
- b) substances
- c) emissions
- d) parts

10) Global negative effects of air pollution include the enhanced... and the ozone hole.

- a) greenhouse effect
- b) rise of rains
- c) acid rains
- d) effect

For Fun

Smart Quiz

The following short quiz consists of 4 questions and will tell you whether you are qualified to be a professional.

(Check your answers with keys. (page 100)

1) How do you put a giraffe into a refrigerator?

2) How do you put an elephant into a refrigerator?

3) The Lion King is hosting an animal conference. All the animals attend... except one. Which animal does not attend?

4) There is a river you must cross but it is used by crocodiles, and you do not have a boat. How do you manage it?

According to Anderson Consulting Worldwide, around 90% of the professionals they tested got all questions wrong, but many preschoolers got several correct answers. Anderson Consulting says this conclusively disproves the theory that most professionals have the brains of a four-year-old.

Unit 6

Earthquake Information

Vocabulary list

earthquake	землетрус
divergent	що розходиться
convergent	що збігається
friction	тертя
disaster	катастрофа
precaution	обережність, передбачливість

1. Describe your supposed actions during the earthquake. You may use the following words and vocabulary list. Then answer the questions.

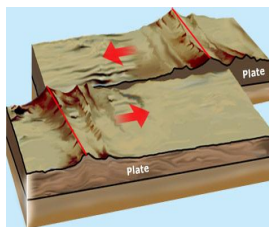
Panics	run away	take cover under a heavy piece of furniture	to stay inside corner
building	drop to the ground	to be afraid of	to fear
to cry	to find relatives	to be sure	to be calm

- 1) What are the most dangerous places in the Earth?
- 2) What are the most dangerous places in Ukraine?
- 3) Would you like to be an eyewitness of earthquake?
- 4) Have you ever been in epicenter of earthquake?
- 5) What were you actions?

2. To learn more about the earthquakes read and translate the text.

What is an Earthquake?

An earthquake is a shift in the upper layers of the Earth caused by the movement of tectonic plates; natural divisions within the planet's surface. Though the specifics of plate tectonics are relatively complex, it should be understood that there are three major kinds of tectonic boundaries, categorized by their activities: these are divergent, convergent, and transform boundaries.





When friction occurs along the edges of the plates due to their natural shifting, an earthquake occurs. The earthquake begins deep within the Earth at a place called the focus. The area of the Earth's surface directly above this point is known as the epicenter. Earthquakes are measured by devices called seismographs, which record the seismic waves of energy released by earthquakes as they happen. Seismographs are mainly used in early detection of earthquakes, but they are also helpful for measuring the duration and intensity of a quake. The strength of a quake is measured according to the Richter Intensity Scale.

Preventative Measures

When possible, the most obvious way to avoid earthquake danger is to avoid common places where earthquakes occur. Earthquakes are extremely uncommon in inland areas far from tectonic plates.

Seismicity of Ukraine becomes apparent in western, southwestern and southern areas, where two basic seismic regions are allocated: Carpathian and Crimean-Black Sea.

Seismicity of the Carpathian region is defined by earthquakes with fires in Zakarpattya, Carpathians, Prykarpattya and also in the nearby territories of neighbouring countries: Poland, Slovakia, Hungary and Romania. The most seismoactive is Zakarpattya.

Seismicity of the Crimean-Black Sea region is defined by the epicenters of the earthquakes located in the water area of the Black sea, near the Southern coast of Crimea which are characterised by the highest indicators throughout the Ukrainian territory: magnitudes up to 6.8. On the flat part of Crimea and the Sea of Azov fires of earthquakes with magnitudes over 1.0 are shown. It is possible to consider the delta of Danube as separate seismic area.

If you must be in an area where earthquakes are possible, there are important steps to take before and during the event. Fasten shelves securely, placing heavy objects on lower shelves and breakable items inside latched cabinets, check wiring, gas lines, and walls for faults and cracks that might contribute to fire. Stock up on supplies like flashlights, batteries, food and water,

and medicines. During an earthquake, drop to the ground and take cover under a heavy piece of furniture. An inside corner is the safest place to wait for shaking to stop. Stay away from windows, light fixtures and subjects that might fall, and avoid outside doors or walls. Remember that ground movement is relatively rare as a cause of death or injury from an earthquake; most earthquake fatalities take place due to collapsing walls, shattered glass, and impacts from falling items.

Earthquakes are dangerous natural disasters, and can strike suddenly, but they are confined to very specific areas. As in any crisis, it is vital to become informed and take the right precautions in order to minimize danger and to keep the basic rules of safety for saving lives.

3. Read the list given below. Which of the following would be considered acceptable normal behavior during the earthquake?

- 1) Remain calm and careful.
- 2) Cry, to run around the room.
- 3) Stand calmly near the window hoping for the help.
- 4) Drop to the ground and take cover under a heavy piece of furniture.
- 5) Lean to the outdoor wall and read a book not to worry.
- 6) Stay in inside corner.
- 7) Call to your relatives to speak about the changeability of life.
- 8) Stay away from windows, bookcases, heavy mirrors, hanging plants, and other heavy objects that could fall.
- 9) Remain calm and reassure others.
- 10) Check gas, water and electric lines. If damaged, shut off service. If gas is leaking, don't use matches, flashlights, appliances or electric switches.

4. Complete the following statements using the information from the text.

- 1) An earthquake is ...
- 2) Earthquakes are dangerous
- 3) There are three major kinds of tectonic boundaries, categorized by their activities:
- 4) The most obvious way to avoid earthquake...
- 5) Earthquakes are measured by...
- 6) Earthquake occurs when...
- 7) The strength of a quake is...
- 8) The epicenter is a....

5. Match the terms with their definitions.

1) An earthquake	a) An earthquake's point of initial rupture ¹ is called its....
2) focus	b)... is the result of a sudden release of energy in the Earth's crust that creates seismic waves.

3) The epicenter	c)... are locations where two plates slide past one another.
4) Convergent boundary	d)... is the point at ground level directly above the focus.
5) Divergent boundary	e)... is the device that scientists use to measure earthquakes.
6) Transform boundaries	f)...where one plate is literally going over another plate.
7) A seismograph	g)... is to accurately record the motion of the ground during a quake.
8)The goal of a seismograph	h)...is where the plates separate and move apart.

rupture¹ - по́рус

6. Make up sentences putting the words in the correct order beginning from the first word. Give the title to these sentences.

- 1) **During**, to, the ground, an, drop, under, and, take, earthquake, cover, piece, a heavy, of, furniture.
- 2) **Stock up** like, water, on, flashlights, supplies, medicines, batteries, food, and, and.
- 3) **An inside**, shaking, safest, is, to wait, the, place, for, to, corner, stop.
- 4) **Stay**, fixtures, windows, away, light, and, might, subjects, outside, from, that, fall, and, avoid, doors, or walls.
- 5) **There are**, to, during, before, take, important, and, the steps, event.
- 6) **Fasten** , check, securely, shelves, gas, lines, and, contribute, walls, for, faults, and, cracks, that, might, wiring, to fire.

7. Read the passages. Put them in the right order. Retell the text.

Save Yourself during an Earthquake

1) You are sitting on your desk or walking around and all of a sudden the ground is shaking (Earthquake). Don't think twice, simply head toward the nearest exit. If you notice that many people are heading toward that same exit, take a chair or anything solid enough to break a window. Run as fast as you can.

2)With all the earthquakes going on around the world what if you were in a building and all of a sudden everything starts to collapse. What would you do? This you can find some survival tips that can be extremely beneficial to you. Things You'll Need: water, cell phone, chair, small flashlight.

3) If you have no chance of getting out take shelter under a solid table and cover your head in between your knees while you are seating in a squatting position. If you have a flashlight that could help you to see what's around you or

help others to find you when they come to rescue you. Also you can use your cell phone to communicate about your needs. Whether you need medical care or not, food, rescuing.

Always carry a bottle of water with you. It could save your life!

4) In case you didn't get a chance to get out of the building look to see which part of the building is collapsing and run toward the opposite way. Avoid going to the same direction that everyone else is going. This is the reason why so many people victim, they are following everyone else.

8. Read the descriptions of earthquake made by eyewitnesses and complete them.

Check your answers with keys. (page 101)

1) I live near Greensboro, North Carolina. I felt the earthquake today, sitting at my desk on the second story of my house - my computer monitor was vibrating from side to side so badly, I thought that my washing machine in the room next door had become seriously unbalanced. The only problem is, of course, I am not using my washing machine right now! I guess this is what it feels like to live in California.

It took me a few minutes to put two and two together. Then I...



2) Reporting from Dahlgren, VA (about 50 miles south of DC): We were at the stadium. A very interesting match had been waiting when this horror began. We....



3) It began while I was driving. It was awful. I did not know what to do. I looked for the safe place away from falling-object hazards. I tried to stop the car and....



4) I used to live in Greece and in 1980, the year after I moved there, we had a 6.8 earthquake. My first thought was that I'd overloaded the washing machine. My second thought was to grab the kids and run outside - very quickly! It's the only natural disaster that you can't predict and, believe me, it's no laughing matter. I was on the top of a 16 storey office building in Athens one year, and there was a 7.0. We swayed from side to side - running down sixteen flights of stairs to get out was not an option. Granted, a 5.8 is not that huge but it's devastating if you're living in a country without the sort of infrastructure designed to withstand even a minor quake. But I knew what to do. I...



TEST YOURSELF

- 1) An earthquake's point of initial rupture¹ is called its...
a) epicenter b) focus
c) special point d) platform
- 2) ...is the device that scientists use to measure earthquakes.
a) a focus b) a quake
c) a seismograph d) engine
- 3) ... is where the plates separate and move apart.
a) platform b) divergent boundary
c) convergent boundary d) transform boundaries
- 4) ... are locations where two plates slide past one another.
a) platform b) divergent boundary
c) convergent boundary d) transform boundaries
- 5) When...occurs along the edges of the plates due to their natural shifting, an earthquake occurs.
a) friction b) shift
c) movement d) edge
- 6) The earthquake begins deep within the Earth at a place called ...
a) epicenter b) focus
c) special point d) platform
- 7) The strength of a quake is measured according to
a) seismograph b) devices
c) scale d) the Richter Intensity Scale
- 8) Earthquakes are dangerous natural...
a) harm b) damage
c) disasters d) stress
- 9) If you want to survive you must take some...
a) actions b) precautions
c) work d) items
- 10) The area of the Earth's surface directly above this point is known as...
a) epicenter b) focus
c) special point d) items

For Fun

Earthquake Challenge

Complete the multiple choice activity.

Check your answers with keys. (page 101)

- 1) An instrument used to detect and record earthquakes.
 - a) ring of fire
 - b) seismograph
 - c) tsunami
 - d) seismic waves
- 2) A crack in the earth's surface along which movement takes place.
 - a) ¹fault
 - b) epicenter
 - c) focus
 - d) tectonic plates
- 3) Used to measure the strength of earthquakes.
 - a) focus
 - b) tsunami
 - c) seismic waves
 - d) Richter scale
- 4) The point within the earth where an earthquake rupture starts.
 - a) ²subduction
 - b) San Andreas
 - c) San Francisco
 - d) focus
- 5) Large ocean wave created by undersea earthquakes or volcanic eruptions.
 - a) epicenter
 - b) tsunami
 - c) San Andreas
 - d) Mexico
- 6) The zone of earthquakes and volcanoes surrounding the Pacific Ocean.
 - a) focus
 - b) subduction
 - c) ring of fire
 - d) tsunami
- 7) The process of an oceanic plate ³colliding with and descending underneath a continental plate.
 - a) subduction
 - b) focus
 - c) Richter scale
 - d) San Francisco
- 8) Waves from an earthquake are known as these.
 - a) San Francisco
 - b) ring of fire
 - c) Richter scale
 - d) seismic waves
- 9) This country's capital city was devastated by an earthquake in 1985.
 - a) subduction
 - b) Mexico
 - c) Richter scale
 - d) epicenter

10) Fault that makes California an area of high risk for earthquakes.

- a) San Andreas
- b) ring of fire
- c) tsunami
- d) seismograph

11) The area of the earth's surface that is directly above the origin of an earthquake.

- a) ring of fire
- b) San Francisco
- c) epicenter
- d) Richter scale

12) This city experienced an earthquake in 1989 which postponed baseball's World Series.

- a) Mexico
- b) San Francisco
- c) seismic waves
- d) San Andreas

13) The large, thin, plates that move relative to one another on the outer surface of the Earth.

- a) Mexico
- b) subduction
- c) tsunami
- d) tectonic plate

¹ <i>fault</i>	<i>розлом</i>
² <i>subduction</i>	<i>підсовування (однієї тектонічної плити під другу)</i>
³ <i>collide</i>	<i>зіштовхуватися</i>

Unit 7

Preparing for Emergencies

Vocabulary list

emergency	надзвичайний стан
to hesitate	вагатися
to assess	оцінювати
uninjured	неушкоджені
safeguard	охороняти, гарантувати
casualty	нешасний випадок, поранений
to establish	установлювати

1. Answer the questions. You may use the following words and vocabulary list.

- 1) What emergencies do you know?
- 2) What is necessary to do during the emergencies?
- 3) Have you ever been in emergency situations?
- 4) What did you do? What did you feel?

tsunami	terrorism attacks	in a hurry
earthquake	accident with electrical installation	food
flood	a foot of snow	drive for higher ground
storm	social security cards	burn
	need to be ready	break the leg
	in the case of an emergency	to be hit by electric current
	evacuate your home	received an electric shock
	to gather a birth certificates and passports	fell from height

2. To learn more about the preparing for emergencies read and translate the text.

Preparing for emergencies

A prudent leader hopes for the best outcomes but plans for the possibility of the worst. Emergency plans are used infrequently but, when needed, a good plan can bring vital clarity to an urgent and demanding situation.

ty to any with life threatening
thers who need to know of the
themselves in unnecessary danger
f the group needs the leader to be
al injury.

is to link the group with the assistance as necessary. Necessary information. Leaders to consider include: emergency without delay and looked after at all times

- which include:

ership team:
press
designated media contact

ged from phoning home in the
ent - inaccurate or incomplete
speculation and anxiety

- casualty names should not be released externally
- nobody should discuss legal liability with other parties

All leaders should have arrangements in place to deal with the impact of a major incident or disaster. Through good planning, everybody can survive various threats.

3. Read the list given below. Which of the following would be considered acceptable normal behavior during the emergency?

- 1) The leader must know emergency plan.
- 2) It is necessary for leader to be in all dangerous situations not thinking about the own health.
- 3) The leader must establish the nature and extent of the emergency without delay.
- 4) All the members of the group must take care only about themselves.
- 5) The problems of saving the casualty are the problems of the leader.
- 6) It is necessary to inform the emergency services and others who need to know of the incident.
- 7) It is very important to call to the press immediately and tell them about the emergency.
- 8) You have to think about your future. That is why you must make photos and then sell them to press.

4. Complete the following statements using the information from the text.

- 1) The base contact's main responsibility...
- 2) Leaders should take care....
- 3) Emergency plans can....
- 4) Leaders should not hesitate...
- 5) All leaders should have arrangements...
- 6) One of the main factors for leaders is to ensure that....
- 7) Group members should be....
- 8) The health and safety guidance explains...

5. Make up sentences putting the words in the correct order beginning from the first word. Give the title to these sentences.

- 1) **He**, the, much, mustered, situation, must, can, be, with, as, assess, calmness, as.
- 2) **He**, the, emergency, inform, services, must.
- 3) **He**, the, emergency, without, establish, extent, the, must, nature, and, of, delay.
- 4) **He**, arrange, the, names, must, of, any, medical, casualties, establish, and, immediate, attention.
- 5) **He**, report, complete, accident, must, an, form.
- 6) **Leaders**, an, emergency, be prepared, life-saving, to act, in, and, must, action, should not, hesitate, to take.

- 7) **It is necessary**, leadership, contact, from, the, to minimize, group, and, team.
 8) **Through**, threats, everybody, planning, survive, can, various, good.

6. Match the terms with their definitions.

1) Leader	a)...is an unforeseen event where one causing injury or death.
2) Accident	b) ...is someone whose responsibility is to control a dangerous situation.
3) Casualty	c) ...is an unforeseen or sudden occurrence, especially of a danger demanding immediate remedy or action.
4) Emergency	d) ...is a person who is injured or killed in an accident.
5) Emergency plan	f) ...is the systematic procedure that clearly detail what needs to be done, how, when, and by whom before and after the time an anticipated disastrous event occurs.
6) Accident report	g) ...is a document, usually confidential, describing any unplanned occurrence that leads to the injury of personnel or other persons involved in our activities, including diseases or medical conditions contracted as a result of our activities.

7. Role Play: an investigator and a pilot.

a) Ask and answer these questions.

1. Where/incident/happen
2. When/it/take/place
3. How high/be/Boeing
4. What/be/height/of/F16
5. What/time/F16/pass/Boeing
6. How far/be/jet/from/passenger plane
7. What/be/flight number/passenger plane
8. How many passengers/be/in Boeing

b) Make an incident report according to the dialogue.

About the incident	About the injured person
Date	Name
Time	Job title
Location	Injury
Height above ground	
Type of incident(tick one box)	Description of incident
¹ Aircraft collision	
² Aircraft engine failure	
Terrorism attack	
Other	

<i>Plane flight -</i>	<i>виліт літака</i>
<i>¹Aircraft collision -</i>	<i>зіткнення літаків</i>
<i>²Aircraft engine failure -</i>	<i>відмова двигуна літака</i>
<i>Pilot error -</i>	<i>помилка пілота</i>

8. Read the text and make a summary.

Solar Storm-Another catastrophe to hit in 2012

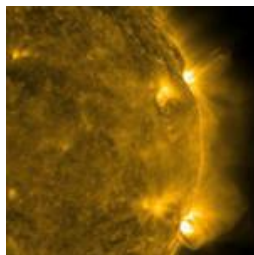
A new study from the National Academy of Sciences outlines grim possibilities on Earth for a worst-case scenario solar storm. Damage to power grids and other communications systems could be catastrophic, the scientists conclude, with effects leading to a potential loss of governmental control of the situation.

The worst storms can knock out power grids by inducing currents that melt transformers. Modern power grids are so interconnected that a big space storm — the type expected to occur about once a century — could cause a cascade of failures that would sweep across the United States, cutting power to 130 million people or more in this country alone. Such widespread power outages would affect other vital systems.

"Impacts would be felt on interdependent infrastructures with, for example, potable water distribution affected within several hours; perishable foods and medications lost in 12-24 hours; immediate or eventual loss of heating/air conditioning, sewage disposal, phone service, transportation, fuel resupply and so on," the report states.

Outages could take months to fix, the researchers say. Banks might close, and trade with other countries might halt. A remarkable 2003 rampage included 10 major solar flares over a two-week period, knocking out two Earth-orbiting satellites and crippling an instrument aboard a Mars orbiter.

"Without preventive actions or plans, the trend of increased dependency on modern space-weather sensitive assets could make society more vulnerable in the future." The report was commissioned and funded by NASA. Experts from around the world in industry, government and academia participated in the study.



TEST YOURSELF

- 1) ...is a person who is injured or killed in an accident.
 - a) leader
 - b) accident
 - c) casualty
 - d) emergency
- 2) ...is someone whose responsibility is to control a dangerous situation.
 - a) leader
 - b) accident
 - c) casualty
 - d) emergency

3) ...is an unforeseen event where one causing injury or death.

- a) leader
- b) accident
- c) casualty
- d) emergency

4)... is an unforeseen or sudden occurrence, especially of a danger demanding immediate remedy or action.

- a) leader
- b) accident
- c) casualty
- d) emergency

5) Leaders should ... to act in an emergency.

- a) not hesitate
- b) think a long time
- c) assess
- d) cry

6) The leader must establish the nature and extent of... without delay.

- a) life
- b) the emergency
- c) chance
- d) situation

7) If an accident or other emergency occurs it is necessary to...

- a) hide somewhere
- b) to stay in one place
- c) assess the situation calmly
- d) to phone to friends

8) The leader must... that all group members are safe.

- a) ensure
- b) think
- c) go away
- d) save himself

9) ...is the systematic procedures that clearly detail what needs to be done, how, when, and by whom before and after the time an anticipated disastrous event occurs.

- a) casualty
- b) emergency
- c) emergency plan
- d) accident report

10)... is a document describing any unplanned occurrence that leads to the injury of personnel.

- a) casualty
- b) emergency
- c) emergency plan
- d) accident report

For Fun

Are you ready for emergency?

Read the test and answer the questions (tick one circle).

Check your answers with keys. (page 101)

- 1) Which is the worst place to be during a tornado?
 - A. Outdoors
 - B. In cars
 - C. In mobile homes
- 2) When water at the beach recesses noticeably from the shoreline, you should:
 - A. Head to the water line to see what's going on
 - B. Stay inside your house
 - C. Get to higher ground immediately
- 3) Which natural effect of a hurricane poses the biggest threat to human life?
 - A. Wind
 - B. Storm Surge
 - C. Falling Trees
- 4) If trapped in your car during a snowstorm, what's the best strategy?
 - A. Leave your car to get help
 - B. Raise your car hood to attract attention, crack the window and warm the engine
 - C. Put your blinkers on, and avoid running the engine to preserve gas
- 5) To keep cool in excessive heat, you should drink very cold water.
 - A. True
 - B. False
- 6) What are the signs of carbon monoxide (CO) poisoning?
 - A. Headache, dizziness, weakness, nausea, vomiting, chest pain and confusion
 - B. Loss of feeling in your limbs and uncontrollable shivering
 - C. CO poisoning has no visible signs
- 7) How should you prepare your home for a wildfire?
 - A. Shut off gas at the meter and turn off pilot lights
 - B. Place sprinklers on the roof, wetting it along with shrubs that are 15 feet inside your home's perimeter
 - C. Move flammable furniture to the center of the house and turn a light on in each room
 - D. All of the above

- 8) During an earthquake, you should try to get outdoors.
A. True
B. False
- 9) You're snowed in and are beginning to feel ill. Your symptoms are uncontrollable shivering, memory loss, disorientation and incoherence, slurred speech, drowsiness and apparent exhaustion. What do you have?
A. Frostbite
B. Hypothermia
C. The flu
- 10) Which foods can last up to one year?
A. Powdered milk and dried fruit
B. Crackers and potatoes
C. Peanut butter and jelly
D. All of the above
- 11) You are outside during a storm and your hair stands on end. What does that indicate?
A. A tornado is coming
B. Lightning is about to strike
C. It's about to rain more heavily
- 12) What kills more people on average than all other natural disasters combined?
A. Excessive heat
B. Tornadoes
C. Excessive cold
D. Hurricanes
- 13) You are evacuating from a flood when water begins to rise around your car. What to do?
A. Abandon your car and move to higher ground
B. Keep driving to higher ground
C. Stay put and wait for rescue

Unit 8

Stress in the Workplace

Vocabulary list

abuse	зловживання
sleep disturbances	порушення сну
domestic violence	домашнє насильство
suicidal behavior	суїцидальна поведінка
anxiety	тривога
layoffs	звільнення
retraining	перепідготовка
mandatory overtime	обов'язкові понаднормові часи

1. Answer the questions using the words in the box and in the vocabulary list.

- 1) Can you explain what stress is?
- 2) Have you ever felt the stress?
- 3) Can you describe your emotions and desires?
- 4) From your point of view what are the reasons of the stress?
- 5) What are your own ways of getting rid of stress?

to worry	to eat a lot of food	absence of desires
to nervous	do not feel hungry	overwork
apathy	angry without any reason	dull work
unpleasant people	the conditions of work	to eat chocolate and cakes
to sleep	to listen to music	to go for a walk
to dance	to meet with friends	to go on nature
	to go to the cinema	to go in for sports

2. To learn more about stress read and translates the text.

Stress in the Workplace

How often have we heard co-workers complain that coming to work makes them sick? How often do people continue to work at full speed, despite suffering from pain or injuries because they are afraid of losing their job? These are symptoms of workplace stress.

What is stress? Stress is a medical term that describes how the human body reacts when it fears it is under attack. Stress can be caused by mental or physical conditions, or, a combination of both. When the human body fears it is under attack it automatically responds. The pulse rate increases, blood flow to the brain and to major muscle groups increases, and adrenaline and other stimulants are released into the blood stream. Imagine driving a car. You swerve to avoid an accident. You notice your pulse is up and you're more alert. This was your body's response to a dangerous situation. Very soon your body returns to normal. The problem with workplace stress is that workers can't flee. When stress becomes continuous, the body is damaged by the constant physical changes it puts itself through.



Management gurus have even developed programs for "management by stress." They understand that if a worker is placed under stress their body will react physically, enabling them to work harder and faster. Of course, management doesn't care that this takes a physical and mental toll on workers. They don't even care that this can cause a higher rate of injuries, they are interested in a short term increase in production.

Symptoms of Stress

Studies by the National Institute of Occupational Health and Safety (NIOSH) show the following symptoms are early warning signs of workplace stress:

Headaches

Sleep disturbances

Difficulty in concentrating

Upset stomach

Job dissatisfaction

Muscle aches and pains

Drug and alcohol abuse

Depression

Domestic violence

Anxiety

The Damage Stress Can Cause

There are obvious injuries that come from physical stress. NIOSH reports cite the following long term health problems that can be caused or aggravated by workplace stress: hypertension (high blood pressure), heart disease, strokes, infectious diseases, immune system dysfunction, diabetes, asthma, musculoskeletal diseases, serious depression, suicidal behavior, domestic violence, alcoholism.

Reasons of Stress

Here's a partial list of situations NIOSH has identified as causing stress in the workplace:

<u>Hiring policies</u>	Long hours
Plant closings (or threats to close)	Shift work (causes sleep disorders)
<u>Layoffs</u>	Routine tasks that make no sense
Workplace relocations	Being ordered to produce poor work
<u>Retraining</u>	Poor communication from supervisors
Work pace that is set too fast	Lack of family friendly policies
<u>Mandatory overtime</u> with no regard for family situations	Unpleasant or dangerous physical conditions such as noise, crowding, air pollution, dealing with hostile clients or customers
Heavy workloads	Ergonomic problems (bad chairs, computer glare for 8 hours a day)
Infrequent rest breaks	

Work is one of the most important aspects of a worker's life. It's not just 8 or 10 hours a day. Work is food and shelter for the family, it can mean the ability to take a vacation or not. Work affects everything, and thus stress at work affects a worker's health and family.

A family friendly workplace policy would allow workers to be absent due to a sick child, to care for a sick or dying family member, attending school conferences, or taking a family member to the doctor. Not having to worry about being fired or disciplined decreases or eliminates the stress.

3. Read the list given below. Which of the following would be considered acceptable normal behavior during the stress?

- 1) You are usually sluggish¹ to anger but get angry about unimportant things.
- 2) You are full of energy and desire to work.
- 3) Men feel chest pain, firm jaws², upset stomach, breathlessness and even high blood pressure.
- 4) You manage your everyday tasks in a systematic method.
- 5) You often have migraine or a headache.
- 6) You sleep calmly at night.
- 7) Women feel back pain, leg pain, cramps³, uneven periods, sleeplessness or lack of proper sleep.
- 8) Every day you are very organised and disciplined.

<i>sluggish¹ пасивний</i> <i>firm jaws² стиснуті щелепи</i> <i>cramps³ судоми</i>

4. Complete the following statements using the information from the text.

- 1) Work affects....
- 2) When stress becomes continuous...
- 3) The following long term health problems...
- 4) Stress is a....
- 5) A family friendly workplace....
- 6) Work is one of....
- 7) Stress can be caused.....

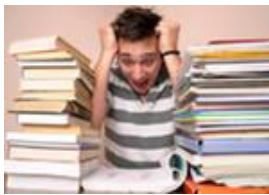
5. Choose from the text reasons which may cause stress in your life.

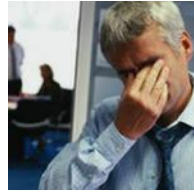
6. Make up sentences putting the words in the correct order beginning from the first word. Give the title to these sentences.

- 1) **Work**, most, one, worker's, of, aspects, the, important, of, a, is, life.
- 2) **The following**, workplace, are, signs, of, headaches, warning, stress: and, sleep, symptoms, disturbances.
- 3) **Stress**, conditions, mental, by, or, physical, can, be, or, a combination, caused, of, both.
- 4) **Stress**, describes, fears, a, term, that, reacts, how, medical, the, human, when, it, it, is, under, is, body, attack.
- 5) **When**, fears, the, body, it, under, is, responds, attack, it, automatically, human.
- 6) **There are such**, physical, stress, as, hypertension, come, heart disease, strokes diseases, diseases, infectious, that, from.
- 7) **These**, cause, in, the: hiring policies, stress, plant closings, workplace, layoffs, Reasons, can.

7. Look at the pictures and

- a) discuss the reasons of the stress and what people's reactions on it are.**



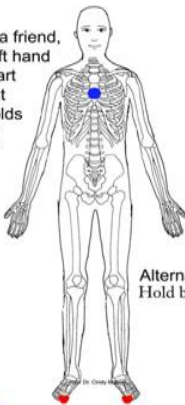


b) discuss the ways of getting rid of stress



Stress Mental

To help a friend,
place left hand
over heart
and right
hand holds
both big
toes



Right Hand



Left Hand

Self Help

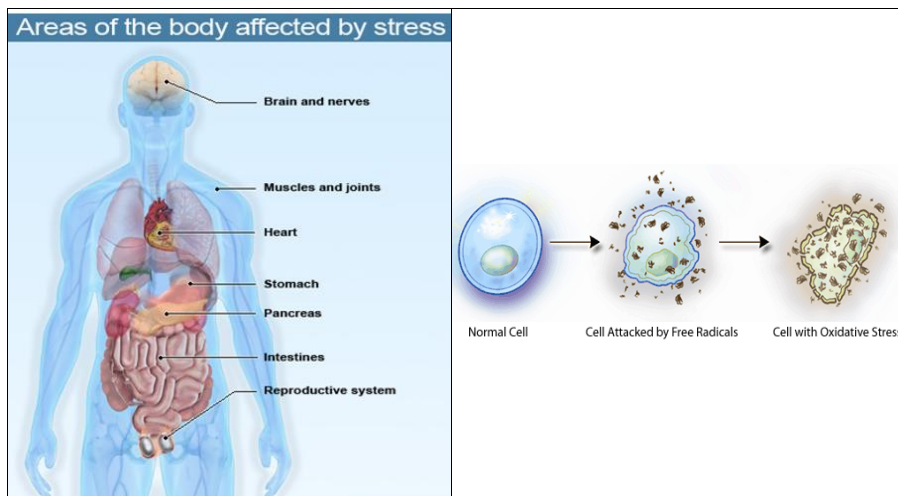


Alternate:
Scoop thumb,
index and middle
finger together
with palm
side of thumb
and hold gently.

Alternatively, just
Hold both big
toes



c) read the text again and describe the blood reaction on stress



8. Can you de-stress in five minutes? Read the text and say is it possible or not. Which of them is the most suitable for you?

1. Go For A Quick Walk

Even if you can only spare five minutes, go for a walk (it might just be to the water cooler and back). The aim here is to get yourself away from the immediate source of stress and to calm down.

2. Read Some Fiction

If I'm seriously worked up, upset or stressed, one of the best things I can do is to grab a book. Fiction is ideal (especially anything funny or uplifting). Reading fiction takes you out of the here-and-now and into a different world. You can forget everything that's troubling you, for just ten minutes, as you concentrate on the story.

3. Meditate or Pray

Often, the best thing we can do to instantly de-stress is to simply stop. Many life coaches and stress advisors recommend meditation. I also like to pray.

4. Watch A Funny Video

I don't know about you, but I just can't stay stressed out when I'm laughing.

5. Make A Herbal Tea

The act of making yourself a drink can be calming: it gets you away from your desk, and it gives you a chance to concentrate on something physical.

6. *Punch A Pillow*

Depending on where you are when you're feeling stressed, and on your personality, throwing a few punches at a pillow might help.

7. *Take Slow, Deep Breaths*

When we get stressed, we tend to breathe more quickly, taking shallow breaths. Concentrate on your. Imagine breathing from your stomach, not your chest. Take slow, deep, fulfilling breaths.

9. Talking points.

Read the quotations of famous people about stress. Choose one and explain your how you understand it.

- 1) **Maureen Killoran** ~ Stress is not what happens to us. It's our response TO what happens. And RESPONSE is something we can choose.
- 2) **Wayne Dyer** ~ The components of anxiety, stress, fear, and anger do not exist independently of you in the world. They simply do not exist in the physical world, even though we talk about them as if they do.
- 3) **Hans Selye** ~ Its not stress that kills us, it is our reaction to it.
- 4) **Maya Tatareva** ~ Anything that keeps you away from being yourself causes stress.
- 5) **Catherine Pulsifer** ~ Things could be a lot worse, the stress of the situation always could be worse, but I am alive and I have a lot to be thankful for - so I shall not waste my days with stress and frustrations - Life is too short.
- 6) **Hans Selye** ~ Adopting the right attitude can convert a negative stress into a positive one.

TEST YOURSELF

- 1) The medical term that describes how the human body reacts when it fears it is under attack.
 - a) abuse
 - b) sleep disturbances
 - c) stress
 - d) anxiety
- 2) ...is one of the most important aspects of a worker's life.
 - a) work
 - b) anxiety
 - c) headaches
 - d) depression

- 1) Do you feel guilty if you cry in public?
- 2) Do you think that crying is a sign of weakness?
- 3) Do you think that men and boys should be helped to hide their tears?
- 4) Do you feel red-faced if you find yourself crying while watching a film or reading a book?
- 5) Would you try to hold back your tears if you are visiting a funeral/burial?
- 6) Would you distrust a politician who affords tears in public?
- 7) Do you think that tears are an unnecessary expression of emotion?
- 8) Would you allow someone to help you if you were found crying?
- 9) Do you get confused/red-faced if you see men/adults crying?
- 10) Would you pretend that you had something in your eye if you were unexpectedly/suddenly found crying?
- 11) Do you always try to hide your anger?
- 12) Do you always try to hide your fiasco/misfortune?
- 13) Do you ever become angry?
- 14) Has your temper ever got you into trouble?
- 15) Do you believe that it does you good to cope with your anger?
- 16) Do you tend to think about things which have made you angry?
- 17) Do you become angry quite easily?
- 18) Do you touch someone you love at least once a day?
- 19) Do you enjoy physical signs of love?
- 20) Do you ever get broody when you see small babies?
- 21) Would you happily hold hands in public with someone you cared for/watched over?
- 22) Do you enjoy being massaged/ rubbed down?
- 23) Do you regularly tell those whom you love how you feel?
- 24) Have you ever had a pet of which you were very fond?
- 25) Do you enjoy being kissed and held tight by people you love?
- 26) Do you ever laugh out loud when you are watching funny films?
- 27) Do you ever tap/knock with your feet while listening to music?
- 28) Do you often have the last clap at concerts, sports events and the like?
- 29) Do you ever shout encouragement to sports or TV heroes?
- 30) Can you remember when you last really laughed and enjoyed yourself?

Unit 9

Safety Engineering

Vocabulary list

safety engineering	техніка безпеки
to eliminate	усувати
to suggest	пропонувати
layout	розміщення, планування
to spot	визначати місцеперебування
maintenance	утримування

1. To learn more about the safety engineering read and translate the text.

Safety engineering

Safety engineering is an applied science. Safety engineering assures that a life-critical system behaves as needed even when pieces fail.

Safety engineers are responsible for keeping people free from danger, risk, or injury in the workplace. They develop safety programs to minimize losses due to injuries and property damage. They try to eliminate unsafe practices and conditions in industrial plants, mines, and stores as well as on construction sites and throughout transportation systems. Safety engineers work for a wide variety of industrial and commercial companies. Many of them work for insurance companies. Others are employed by government agencies or safety organizations. Still others teach in colleges and universities or work as independent consultants.

Safety engineers often have other titles, such as director of safety, safety manager, or safety coordinator. Sometimes technicians assist them. *The duties of safety engineers* vary depending on where they work. Engineers employed in large manufacturing plants often develop broad safety programs. They study the buildings, equipment, procedures, and records of accidents in their plant and point out safety hazards. They may suggest ways to fix unsafe structures or recommend changes in the layout of the plant.



Other safety engineers work with designers to make sure that their company's products are safe. They may be responsible for seeing that a new automobile model meets safety standards. Or they may check the design and production of children's toys.

Safety engineers who work for insurance companies usually provide consulting services to their clients. They are experts who can spot hazards and recommend ways to eliminate them. For example, they may review plans for a shopping center that is to be insured by their company and point out dangerous traffic patterns. Once the center is built, they inspect it and check that the elevators have been installed properly so that there will not be accidents. They also study maintenance procedures and may recommend that floors be cleaned when customers are not present.

In the trucking industry, safety engineers review patterns of traffic accidents. They study routes, schedules, loads, and speeds to determine how these factors affect accidents. They also inspect trucks for safety hazards.

Overseeing the safety of various products is the major responsibility of a safety engineer. These safety tests may be completed in the laboratory or in real-world conditions and include both correct and incorrect use of the product or item in the test to address any potential safety concerns. A safety engineer is very critical in the development of a new product both from customer safety and company liability aspects.

The safety engineer must know what standards to apply to the product to keep it in compliance with safety laws. This includes researching and monitoring changes to the various regulations on all levels. In addition to completing or overseeing the safety tests the safety engineer must also prepare written documentation to support the finding of the test and be prepared to meet with clients, production teams and other types of engineers to address and problem solve any problems identified in the safety testing process.

Good communication skills, understanding of regulations and good research skills are essential for a safety engineer.

2. Read the list given below. Which of the following would be considered acceptable normal behavior for safety engineers?

- 1) Reviewing specifications for products and researching current regulations for safety testing on each different type of product or item.
- 2) Unknowing the standards of applying to the product for keeping it in compliance with safety laws.
- 3) Overseeing or completing product tests as required either in a lab or out in the actual working conditions the product will be used in.
- 4) Keeping accurate records of data obtained by the test and compiling it into reports that can be used by the production teams.
- 5) This is not part of the duties to provide consulting services to their clients.
- 6) Meeting with production teams, clients and managers to discuss modifications to the project to address any safety issues discovered.

- 7) Testifying in court or civil proceeding with regards to the safety testing if required.
- 8) In the trucking industry the driver must inspect trucks for safety hazards.

3. Match the words from (a) with the words from (b) according to the text.

a)	b)
1) safety engineers	a) keeping people free
2) responsible for	b) to eliminate
3) to minimize	c) losses
4) to eliminate	d) safety engineers
5) the duties of	e) that their company's products
6) suggest ways	f) unsafe practices
7) to make sure	g) hazards
8) spot	h) to fix unsafe structures
9) recommend	i) procedures
10) maintenance	j) ways

4. Complete the following statements using the information from the text.

- 1) They try to eliminate....
- 2) In the trucking industry, safety engineers....
- 3) Good communication skills....
- 4) The safety engineer must know....
- 5) Safety engineers are responsible for...
- 6) Engineers employed in large manufacturing plants study....
- 7) Safety engineers are experts who can spot hazards....
- 8) A safety engineer is very critical...
- 9) Overseeing the safety of various products....
- 10) Analysis techniques....

5. Make up sentences putting the words in the correct order beginning from the first word. Give the title to these sentences.

- 1) The safety, what, must, know, to, apply, product, standards, engineer, to the.
- 2) Safety, are, free, for, keeping, from, responsible, danger, risk, in the people, engineers, workplace.
- 3) They, hazards, who, can, spot, are, to eliminate, and, recommend experts, ways, them.
- 4) They, practices, conditions, industrial, to eliminate, unsafe, try, and, in plants.
- 5) They, safety, to injuries, to minimize, property, losses, programs, due, and, develop, damage.
- 6) They, the, buildings, there, and, records, plant, of equipment, point, accidents, in, and, study, out, safety, hazards.
- 7) They, maintenance, study, also, procedures.

6. Match these two halves of these sentences and translate them.

1) Safety engineering	a) the major responsibility of a safety engineer.
2) Overseeing the safety of various products is	b) to fix unsafe structures or recommend changes in the layout of the plant.
3) Standards include	c) researching and monitoring changes to the various regulations on all levels.
4) Safety engineers work for a	d) written documentation to support the finding of the test and be prepared to meet with clients.
5) In the trucking industry,	e) manufacturing plants often develop broad safety programs.
6) They may suggest ways	f) is an applied science.
7) Engineers employed in large	g) safety engineers review patterns of traffic accidents.
8) Safety engineer must also prepare	h) wide variety of industrial and commercial companies.

7. Read the text and write a summary about the peculiarities of analysis techniques.

Analysis techniques can be split into two categories: qualitative and quantitative methods. The both approaches share the goal of finding causal dependencies between a hazard on system level and failures of individual components. Qualitative approaches focus on the question "What must go wrong, such that a system hazard may occur?", while quantitative methods aim at providing estimations about probabilities, rates and/or severity of consequences.

Traditionally, safety analysis techniques rely solely on skill and expertise of the safety engineer. In the last decade model-based approaches have become prominent. In contrast to traditional methods, model-based techniques try to derive relationships between causes and consequences from some sort of model of the system.

8. One of the world leaders among engineering and construction companies is looking for Design Safety Engineer.

Read the requirements for design safety engineer and discuss them. Are you ready to suit such requirements after graduating our university?

Responsibilities:

- Responsible for Fire and Process Safety Design on the oilfield development Project
- Checking, approval and preparation of design/engineering documentation
- Evaluate safety solutions done by others and prepare comments and reports
- Provide interdisciplinary co-ordination on design safety. Support and advice to the Project team

- Ensure that all process safety elements of the project are conducted in alignment with Russian codes and standards and specific Client's requirements based on International standards
- Be proficient in interpreting Cause and Effects charts, Environmental Data, and use the information for interdisciplinary support
- Participates in meetings with Client, Design subcontractors (RDI) and design reviews
- Participates in the hazardous area classification, and design of fire suppression systems, fire zones and drainage, equipment isolation systems, detection and alarm systems
- Perform the job hazardous analysis and participate to the job safety analysis
- Report on day-to-day basis to Project and Engineering manager

Requirements:

- Engineering degree
- Extensive experience working with a Western Engineering company or design contractor in the oil/gas/refinery industry
- Knowledge of England Fire and Process Safety codes and standards. Experience of relevant safety design activities, participation in development of TEOC (Проект) and Project Documentation (Проектная документация).
- At least 10 years relevant design experience
- Understanding of Western and England design practice
- Experience of HAZOP, HAZID and SIL analysis
- English speaking
- Worked as a Lead or Deputy Lead safety engineer for a design contractor
- Preference will be given to candidates who also participated in FEED development according to International practice with adaptation to England requirements

Compensation:

- Position based in the London Main Office with missions on Construction Site.
- Khariaga Phase 3 is developed in an arctic and very remote location in England.
- London office is near underground station
- Full-time work at office (9 a.m. – 6 p.m.)
- 1 year contract with further prolongation
- “White” salary, 3-month probation period

9. Talking points.

1. Discuss the advantages and disadvantages of safety engineer's work.
2. Explain the reasons of your choice of this profession.

TEST YOURSELF

- 1) It assures that a life-critical system behaves as needed even when pieces fail.
 - a) safety engineering
 - b) safety engineers
 - c) occupational safety
 - d) workplace environment
- 2) They are responsible for keeping people free from danger, risk, or injury in the workplace.
 - a) safety engineering
 - b) safety engineers
 - c) occupational safety
 - d) leaders
- 3) Safety engineers try..... unsafe practices and conditions in industrial plants, mines.
 - a) to spot
 - b) to suggest
 - c) to keep
 - d) to eliminate
- 4) Safety engineers may..... ways to fix unsafe structures or recommend changes in the layout of the plant.
 - a) suggest
 - b) abuse
 - c) eliminate
 - d) spot
- 5) It includes researching and monitoring changes to the various regulations on all levels.
 - a) aims
 - b) tasks
 - c) standards
 - d) laws
- 6) It is the major responsibility of a safety engineer.
 - a) to write documents
 - b) control the safety of products
 - c) to produce goods
 - d) to prepare documents
- 7) Safety engineers experts who can..... hazards and recommend ways to eliminate them.
 - a) suggest
 - b) abuse
 - c) eliminate
 - d) spot
- 8) Safety engineers develop safety programs..... losses due to injuries and property damage.
 - a) to minimize
 - b) to increase
 - c) to maximize
 - d) to change
- 9) Safety engineers also study..... procedures.
 - a) safety
 - b) healthy
 - c) maintenance
 - d) present

10) Their aim is to provide estimations about probabilities, rates and/or severity of consequences.

- a) qualitative methods
- c) quantitative methods

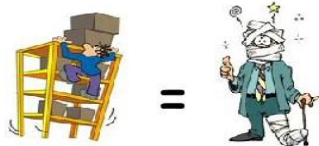
- b) analysis method
- d) safety analysis method

For Fun

Funny Safety Story

1. Two workmen were digging foundations when one of them started shouting and jumping about. The other one thought his partner had hit an underground power cable and was being electrocuted so following good health and safety practice used a shovel (лопата) to separate him from the electricity.

Luckily for the first worker he wasn't getting an electric shock but was panicking after a wasp (оса) had flown up his trousers.



Fortunately he didn't get stung (жалити), but the second worker hit him so hard with the shovel that his shoulder was dislocated.

Funny Workplace Safety Tales

1. Safety is a major concern at the manufacturing company where I work. So I'm constantly preaching (проповідую) caution to the workers I supervise. 'Does anyone know,' I asked a few guys, 'what the speed limit is in our parking lot?'

The long silence that followed was interrupted when one of them piped up (присвиснув). 'That depends. Do you mean coming to work or leaving?'

2. Safety Manager: person who writes a 10,000 word document and calls it a brief - Franz Kafka

3. A police protection officer was visiting a primary school in a particularly rough area of Manchester, England.

'Why shouldn't you touch the oven door or the kettle?' he asked the assembled class.

A young girls hand shot into the air. 'Because you might leave fingerprints,' she answered.

4. A crowd gathered around at a woodworking trade show held at Fort Purbrook, Portsmouth and were watching a sales demonstration. The demonstrator showed how machine might work when it hit an operator's finger.

For simulation purposes he used a sausage as a substitute. Intrigued, a curious spectator stepped up for a closer look and was struck in the eye by a flying piece of debris.

Unit 10

Computer Influence on a Man Health

Vocabulary list

to avoid	уникати
to get tired of	втомлюватися
to exceed	перевищувати
to conduct	проводити
blearing	затмарений, затуманений
inflammation	запалення
neurotic disorders	нервові розлади
frequency	частота, частотність
to decrease	зменшувати

1. Read the questions and answer.

- 1) Do you have a computer at home?
- 2) How often do you use a computer?
- 3) For what purpose do you use a computer?
- 4) What do you know about the computer influence on a man health?
- 5) What rules of computer safety work do you know?

2. To learn more about the computer influence on a human health

a) read and translate the text.

Computer influence on a man health

The full computerization of a country is impossible to avoid.

The last researches showed that computers don't make us healthier and with the wrong use can give an irreparable harm.

In all computer countries it is common practice that the computer operator work is one of the most intensive and tiring. For example, in Germany operator



work is included in the list of the 40 most harmful for the health works and in accordance with the prescribed rules the work at the monitor should not exceed 50% of the working time.

The last investigations conducted under the aegis of American optometrical association (which consists of 32 thousand ophthalmologists and opticians) pay attention to the obvious fact again: working at the computer is not natural for human eyesight. 70-75% of all users which routinely work at the monitor screen have problems with the eyesight. A lot of complaints come from the computer operators about sharp pain in the eyes, blurring, and the common eyesight worsening.

We have to read, to type, to compare something more than once, when we are working at the monitor. But in result eyes have to re-form thousand times a day. It has a negative influence on the eyesight.

Man gets used to deal with the horizontally lied leaf of the paper, while the monitor screen is vertically placed. Permanent imitation of the “look into the distance” occurs. It relaxes muscle eye device.

Conducted in Massachusetts medical checkups found that employees, which is working at the PC over 7 hours a day, have greater for 72% case rate asthenopia (eyes get tired easily) and inflammation than employees, which spend a less time at the computer.

One of the famous firm Microsoft directors multi-millionaire Bill Gates seriously damaged his eyesight and taken difficult blood disease.

People, which earn with the work on a computer, have the greatest part of health complaints on muscles and joints diseases.

According to Donetsk Medical University scientists' information, PC operators have early reduced efficiency and tiredness on the few hours before the work time ending. 48% inspected workers of computer centers have neurotic disorders: memory worsening, weakness, tachycardia, negative dysfunctions, inattention, and neurasthenia.

Foreign experts assert, that women, which work at the monitor for 2-6 hours a day, have functional violations of central nervous system on average on 4.6 times more often, than other professions women, cardiovascular system diseases – on 2, respiratory tract – on 1.9, motor system – on 3.1 times. On 2-3 times more often they have pathology of pregnancy.

Computer radiation spectrum consists of X-rays, ultra-violet and infra-red fields of spectrum, and also wide range of electromagnetic waves other frequencies. Conducted experiments by physicians prove that this may have stimulative oncological disease.

Last year's observations and investigations found expedient of cactus pots placing near the computer displays. Their presence decrease harmful influence intensity of display electromagnetic radiation.

Harmful computer influence on a man health can be greatly reduced or avoided with following the simple rules of their using. It is very important to make a right choose of a computer.

b) Match the words from (a) with the words from (b) according to the text.

1) give an irreparable	a) worsening
2) working at the computer is not	b) natural for human eyesight
3) eyes have	c) exceed 50% of the working time
4) neurotic	d) disorders
5) the work at the monitor should not	e) harmful influence
6) decrease	f) in the eyes
7) sharp pain	g) harm
8) memory	h) to re-form
9) conducted	i) make us healthier
10) computers don't	j) experiments

3. Complete the following statements using the information from the text.

- 1) Cactus pots decrease
- 2) Conducted experiments by physicians....
- 3) Foreign experts assert, that women,.....
- 4) The last researches showed.....
- 5) 48% inspected workers....
- 6) The work at the monitor should not.....
- 7) A lot of complaints come.....
- 8) Computer operator work is...
- 9) Our eyes have to....

4. Match these two halves of these sentences and translate them. Put the sentences in the right order and retell the received text.

1) Computers don't make us	a) of a country is impossible to avoid.
2) Permanent imitation of	b) consists of X-rays, ultra-violet and infra-red fields of spectrum.
3) Harmful computer influence	c) eye device.
4) The full computerization	d) on a man health can be greatly reduced or avoided with following the simple rules of their using.
5) A lot of complaints	e) prescribed rules.
6) It relaxes muscle	f) healthier and with the wrong use can give an irreparable harm.
7) In all computer countries it is	g) common practice that the computer operator work is one of the most intensive and tiring.
8) We must keep	h) come from the computer operators about sharp pain in the eyes, blurring, the common eyesight worsening.
9) Computer radiation spectrum	i) the "look into the distance" occurs.

5. Make up sentences putting the words in the correct order beginning from the first word.

- 1) **The simple**, influence, can, greatly, a man, harmful, rules, computer, on, health, reduced.
- 2) **Cactus**, harmful, display, influence, intensity, decrease, of, electromagnetic, pots, radiation.
- 3) **Computer**, of, electromagnetic, spectrum, different, consists, of, range, radiation, waves, frequencies, wide.
- 4) **Working**, human, the, not, eyesight, computer, is, at, natural, for.
- 5) **Medical checkups**, over 7 hours, that, inflammation, a day, operators, found, working, have, asthenopia, and, computer.
- 6) **Man**, horizontally, used, to deal, lied, gets, with, the, of, the, paper leaf.
- 7) **Re-forming**, a, influence, eyesight, negative, the, has, on.
- 8) **Computer**, is, one, of, operator, tiring, the, most, work, intensive, and.

6. Read the rules for computer ergonomics and name the main rules.

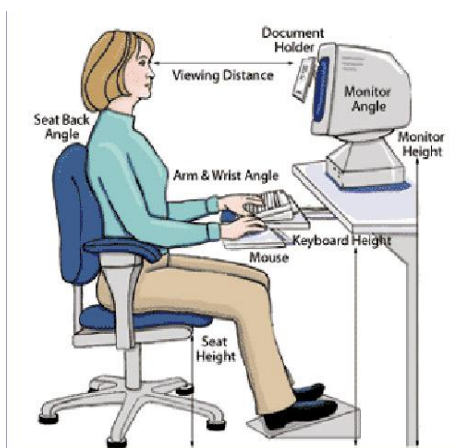
The Rules for Computer Ergonomics

The following are some rules for computer ergonomics to help you maintain the safest positions while working at or using a computer:

Working position. If you are working at a computer, the way you sit and align(вирівнювати) your body will affect you. The ideal situation and set up would include:

- a) The top of the monitor should be situated at or below eye level.
- b) Head and neck are balanced and in line with the torso, so you are sitting up straight in your chair and not hunched (згинатися) over the keyboard.
- c) The elbows are supported and close to the body, with the wrists and hands in line with the forearms (передпліччя).
- d) Lower back should be supported in an ergonomic chair or with a pillow. Stools should be avoided when sitting at a computer.
- e) The feet should be flat on the floor.

Placement of components. Where the components of your desk and computer are placed is also important to your overall health.



Computer monitor. Ideally, your monitor should be situated so you don't have to strain(розтягувати) your neck and lean forward to look at it. You don't want to have it too close or too far from you, as this can result in blurred vision. In addition, it should be placed in an area where there is sufficient lighting and reduced glare.



Key board: The placement and support of the keyboard are also important, as continual typing puts you at increased risk for carpal tunnel syndrome (тунельний синдром зап'ястя). Your keyboard should be placed so that your arms are parallel with the floor.

Computer mouse: The mouse should be placed so that it allows for a straight, neutral wrist position. You can use a mouse pad with a special wrist support so you can keep this neutral position.



Desk: Your desk should have sufficient space for your computer, mouse, phone, documents, and anything else so you are not cramped or overcrowded. The desk should also be made so a chair can fit comfortably under it, and your knees are not hitting drawers or supportive structures for the desk.



Chair: Your chair should allow you to be level with the computer screen while at the same time providing sufficient support for your back.

Computer ergonomics allow you to work with a computer more comfortably. The above rules will help you to follow computer ergonomic guidelines so you will have the least amount of stress on your eyes and joints as possible

Signs

(Compulsively checking e-mails; failing to use the computer less, even when you make an effort to cut back; ignoring family and work obligations, and even personal hygiene and health; devoting more time to cyber friends than real friends and family; and hiding how much time you spend on the computer from loved ones are just a few of the signs of computer addiction.)



7. Talking points.

- 1) Describe the ideal conditions of work for computer operator. Do you think that it is a task of safety engineer to check the working conditions of the computer operators?

- 2) While reading this unit did you change your opinion about the safety of computers?
- 3) According to the scientific investigation these signs show you addiction to computer. Do you agree with them? Why?

TEST YOURSELF

- 1) The presence of cactus pots ... harmful influence intensity of display electromagnetic radiation.
 - a) decrease
 - b) increase
 - c) conduct
 - d) avoid
- 2) Computer radiation spectrum consists of wide range of electromagnetic waves other...
 - a) ultra-violet
 - b) frequencies
 - c) infra-red fields
 - d) X-rays
- 3) The sign of... are memory worsening, weakness, tachycardia, negative dysfunctions, inattention, neurasthenia.
 - a) disease
 - b) illness
 - c) sick
 - d) neurotic disorders
- 4) Employees, which are working at the PC over 7 hours a day, have...
 - a) work
 - b) efficiency
 - c) inflammation
 - d) nervous system
- 5) A lot of ...come from the computer operators about sharp pain in the eyes, blurring, the common eyesight worsening.
 - a) complaints
 - b) disease
 - c) inflammation
 - d) neurotic disorders
- 6) Computer... allows you to work with a computer more comfortably.
 - a) place
 - b) area
 - c) ergonomics
 - d) rules
- 7) Your... should have sufficient space for your computer, mouse, phone, documents.
 - a) computer
 - b) desk
 - c) chair
 - d) space
- 8) Your... should be placed so that your arms are parallel with the floor.
 - a) keyboard
 - b) computer mouse
 - c) desk
 - d) chair

9) Your...should be situated so you don't have to strain your neck and lean forward to look at it.

- | | |
|-------------------|---------------|
| a) computer mouse | b) ergonomics |
| c) monitor | d) desk |

10) Computers don't make us...and with the wrong use can give an irreparable harm.

- | | |
|----------------|------------|
| a) healthier | b) health |
| c) overcrowded | d) cramped |

For Fun

Read these jokes about computers. Do you know any jokes about computers?

Male or female?

Did you know that computers are females? The theory is based on the following principles:

- 1) No one can understand their logic apart from the Creator;
- 2) The language they use among themselves it is impossible to be understood;
- 3) It is difficult to understand any of their messages;
- 4) After purchasing a computer you'll spend half of your salary in accessories.

Damaged car

Four engineers were traveling in the car when it fails. Each engineer gave his suggestion:

Mechanical Engineer: - "I am sure the gearbox must be broken."

Chemical engineer: - "I do not agree. The issue is in the composition of the fuel."

Electrical engineer: - "You are both wrong! The battery is exhausted."

Computer Engineer: - "What if we get out of the car and then enter again!?"

A programmer had been missing from work for over a week when finally someone noticed and called the cops.

They went round to his flat and broke the door down. They found him dead in the still running shower with an empty bottle of shampoo next to his body. Apparently he'd been washing his hair.

The instructions on the bottle said:

- * Wet hair
- * Apply shampoo
- * Wait 2 minutes
- * Rinse
- * Repeat

Unit 11

Mobile Phone Radiation and Health

Vocabulary list

reception	сприймання
to assume	вважати, припускати
customer	споживач
device	технічний пристрій
brain	мозок
handset	телефонна трубка
receptivity	сприйнятливість
irradiation	опромінення

1. Answer the questions using the words in the box and in the vocabulary list.

- 1) How often do you use mobile telephone?
- 2) How long do you speak over the phone?
- 3) How often do you use your phone for entertainments? What do you do?
- 4) How long is it safe to call?
- 5) What do you know about the influence of mobile phone on your health?
- 6) Do you agree that it harms to your health? Why?
- 7) Which diseases dealing with using of mobile phones do you know?
- 8) What are the positive and negative aspects of mobile phones?

often	play games	splitting headache
rarely	use Internet	bad eyesight
sometimes	watch clips	tiredness
effect mobile phone radiation	listen to music	sleepiness
look through photos	harmful effect	concentration difficulties
memory disturbances	heart rate	twitter

2. To learn more about mobile phone radiation and health read and translate the text.

Mobile phone radiation and health

By Eldar Murtasin

For the last years the telephone has turned to a usual working tool that is used practically by everybody. That's why the effect mobile phone radiation has on human health is the subject of recent interest and study.

The main question is whether the cellular telephone is so safe that we think.

The results of the inquiry carried out in 2019 (151 persons took part) about safety of cellular telephones showed the answers the question:

Do you consider the usage of a cellular telephone harmful to health?

- Yes- 39 % (60 persons)
- No- 32 % (49 persons)
- Harmful but I use the telephone not so often -27 % (42 persons)

There are some reasons why people think so. For example, part of the radio waves emitted by a mobile telephone handset is absorbed by the human head.

One well-understood effect of microwave radiation is dielectric heating, in which any dielectric material (such as living tissue) is heated by rotations of polar molecules induced by the electromagnetic field. In the case of a person using a cell phone, most of the heating effect will occur at the surface of the head, causing its temperature to increase by a fraction of a degree. But the brain's blood circulation is capable of disposing of excess heat by increasing local blood flow.

The International Journal of Epidemiology asserts that there is no increase in risk of cancer with use of mobile phones. But it is necessary to keep some rules:

- to limit the call time,
- to make calls where reception is good
- use hands-free to decrease the radiation to the head.
- keep the mobile phone away from the body.
- do not use telephone in a car without an external antenna.

As for the hands-free the British researchers proved that miniature earphones (hand's free) for cellular telephones are harmful. Many people use such earphones assuming that they reduce harmful effect of the antenna cellular telephone, but all turns out just on the contrary. As researches of the British association of customers have shown these devices

operate as original antenna and the level of electric waves coming into brain of a user three times exceeds the level of a usual telephone in a handset.



The research which has been carried out among 11.000 users of cellular communication by the order of Norwegian Radiation Protection Board, National Institute 'Working Life" (Sweden) found out the greater receptivity to influence of radiation for the young people. The research has shown that people who use the telephone less than 2 minutes per day complained on discomfort and outside effects. The problems with health increase if to use the telephone longer. Those who use the telephone about 30 minutes daily increase the probability loss of memory almost in 2 times in comparison with those who do it 2 minutes per day. Half of questioned users have signaled that at usage of cellular telephones they feel unpleasant warming up in the part of the head around the ear. The young people go through the greatest risk. Those who are under 30 fall under outside effects 3-4 times more often.

Summing up all above-stated it is necessary to mark that for today it is impossible to tell exactly if the usage of a cellular telephone is harmful or safe. The researches in the given area are carried out but their results are ambiguous.

3. Read the list given below. Which of the following would be considered acceptable normal behavior when using mobile phone?

- 1) It is not necessary to avoid calling when the signal is weak.
- 2) It is necessary to keep the mobile phone away from the body.
- 3) It is not harmful to use earplugs every day for hours.
- 4) It is harmful to carry an active mobile phone in a pocket or clipped to the belt.
- 5) It is not necessary, to use a hands-free set in the car.
- 6) You must turn off the phone whenever possible.

4. Complete the following statements using the information from the text.

- 1) Waves emitted by a mobile telephone handset....
- 2) Earplugs operate as original....
- 3) People who use the telephone less....
- 4) The young people go.....
- 5) One well-understood effect of microwave...
- 6) The main question is....
- 7) The problems with health....

5. Make up sentences putting the words in the correct order beginning from the first word.

- 1) Minimize, the irradiation, the intensity of.
- 2) Hold, from, as far, away, while, as, the phone, possible, the head, calling.
- 3) Avoid, the, signal, weak, when, is, calling.
- 4) It, an active, harmful, is, to, in a pocket, clipped to, carry, mobile phone, or the belt.
- 5) Radio, human, absorbed, by, are, waves, the head.

- 6) One, effect, dielectric, of, microwave, radiation, well-understood, is, heating.
- 7) You, whenever, possible, turn, off, the, must, phone.

6. Read the summary of Physicians and Scientists for Responsible Application of Science and Technology (PSRAST) which present the latest investigations of mobile phone and do the task.

Here you can see text 1 and text 2. Divide the class into two groups: text 1 is for the first group and text 2 is for the second group.

1. Read these texts.

- a) Make a list of the most dangerous consequences of phones use. (for the first group).
- b) Make a list of rules when speaking over the phone (for the second group)

2. Listen to each other and then discuss:

- 1) What do you think about the truth of these investigations?
- 2) Are you going to change your attitude to mobile phone?
- 3) From your point of view which of these rules are the most suitable for you?
- 4) Which rules do you practice?
- 5) Which rules are new for you?

Text 1.

How long is it safe to call?

Three major kinds of hazards arouse especially great concern:

DNA damage.

It is well established that the DNA is damaged by mobile phone radiation: the stronger the intensity the greater the damage. DNA damage increases the risk for cancer.

Effect of exposure time: The risk for a harmful effect is small with a short call and increases over time. So if you want to minimize DNA irradiation damage, never make long calls. For safety, to minimize the damage to your DNA, the shorter calls, the better. Every second increases the risk.

Blood-Brain-Barrier damage.

A Swedish research team lead by professor Leif Salford, neurosurgeon, found that this barrier, which protects the brain from inflow of harmful substances from the bloodstream, was disrupted by mobile phone microwaves at levels occurring during normal calls. It is known that this barrier is damaged in Parkinsons disease and in Alzheimers dementia. So there is a risk that disruption of this protection barrier may damage the brain.

Effect of exposure time: This disruption occurred within 2 minutes, in some cases even sooner. The effect was greater, the greater the intensity of the radiation and it probably affects all people.

A general disturbance of the physiology including brain function and heart function.

Depressions, sleep disturbances, concentration difficulties, memory disturbances, heart rate irregularities have been reported. Stress burnout may be a consequence.

Effect of exposure time: The longer the call the greater the impact, beginning immediately and building up cumulatively.

Text 2.

Advice

- 1) Make only brief calls - seconds, not minutes - at minimum radiation.
- 2) Turn off the phone whenever possible.
- 3) Minimize stand-by time to situations only when you must be immediately accessible.
- 4) Keep it away from the body when on stand-by. This is because the body absorbs the harmful microwaves much better than the skull. Therefore don't carry an active mobile phone in a pocket or clipped to the belt. Professor Olle Johanson had a case that developed cancer in the body exactly beneath the place where the mobile phone was clipped on to the belt.

Explanation:

- 1) Minimize the time you speak. This is because the risk for damage increases the longer you speak. Preferably use the mobile only for very short messages, of a few seconds length, never for several minutes.
- 2) Minimize the intensity of the irradiation. This is because the risk for harmful damage increases the stronger the intensity. Minimize the exposure of the body to irradiation. Switch off the mobile phone when you don't call.



- 3) Avoid calling when the signal is weak (as indicated on the phone screen), because then your mobile will irradiate maximally in order to be able to reach the station.
- 4) Avoid speaking in elevators and other confined places, because there the irradiation is especially strong (the metal walls reflect the microwaves and also a much stronger signal from the mobile phone is needed so as to reach out through the shaft).
- 5) Avoid speaking in busses, trains, trams, subway/underground vehicles etc. A Japanese study found a considerable increase of radiation in trains because the radiation was reflected inside the space due to the metal walls. The same goes for all vehicles.
- 6) Hold the phone as far away as possible from the head while calling. The intensity of the radiation decreases rapidly with distance (with the square of the distance). Use a loudspeaker phone, as your headset may not always be available.
- 7) In the car, use a hands-free set that enables you to put the mobile phone as far away from the body as possible and most preferably uses an antenna mounted on the outside of the car.

7. Role Play.

- 1) Make a dialogue between parents and child. As a father/mother explain your child the harmless of mobile phone. As a child proves that you do not believe to these facts and you cannot live without phone.
- 2) Make a dialogue between customer and seller. Choose the most suitable model for you paying attention to safety.

TEST YOURSELF

- 1) Part of the radio waves ... by a mobile telephone handset is absorbed by the human head.

a) emitted	b) absorbed
c) considered	d) turned
- 2) Most of the heating effect will at the surface of the head.

a) cause	b) keep
c) occur	d) need

- 3) It is necessary to make calls where ... is good.
- | | |
|----------|----------------|
| a) head | b) irradiation |
| c) brain | d) reception |
- 4) It is necessary... the call time.
- | | |
|------------|--------------|
| a) to use | b) to limit |
| c) to keep | d) to assume |
- 5) It is necessary to use hands-free... the radiation to the head.
- | | |
|----------------|----------------|
| a) to decrease | b) to increase |
| c) to worse | d) to improve |
- 6) Many people use earphones...that they reduce harmful effect of the antenna cellular telephone.
- | | |
|-------------|---------------|
| a) keeping | b) assuming |
| c) avoiding | d) increasing |
- 7) As researches of the British association of...have shown these...operate as original antenna.
- | | |
|--------------------|-----------------------|
| a) workers, chairs | b) engineers, engines |
| c) traders, goods | d) customers, devices |
- 8) The risk for a harmful effect is small with a... and increases over time.
- | | |
|---------------|--------------|
| a) short call | b) long call |
| c) use | d) head |
- 9) It is necessary to...the phone whenever possible.
- | | |
|-------------|------------|
| a) turn on | b) use |
| c) turn off | d) to have |
- 10) ...speaking in elevators and other confined places, because there the irradiation is especially strong.
- | | |
|-------------|------------|
| a) avoid | b) use |
| c) turn off | d) to have |

Keys to the tests and quizzes

Unit 1. Learning styles

What Your Score Means

If most of your answers are a,	then your modelity strength is visual. In other words, you learn through seeing things and you like the words to be written down on the paper. In a classroom, having notes and the use of visual aids will help you.
If most of your answers are b,	your modelity strength is auditory. In other words, you learn through listening. In a classroom you will want to hear the new language, and listening to music could well be helpful.
If most of your answers are c	your modelity strength is kinesthetic. In other words, you learn on the move or through movement. Sitting passively in a classroom is unlikely to appeal to you but you'll probably respond well to the use of games and role play.

Unit 2. Multiple intelligences checklist

SCORING SHEET

Count the number of items (not points) in which you assigned the rating of 2. Record this number in the proper categories. Those areas of intelligence in which you identify the highest number of items represent Multiple Intelligence most characteristic of you.

Інтерпретація результатів анкети	
Linguistic Intelligence	Ти краще оволодіваєш мовою, якщо читаєш цікаві книжки, розгадуєш кросворди, слухаєш аудіозаписи, використовуєш комп'ютерні технології, береш участь у бесідах та дискусіях.
Logical-Mathematical Intelligence	Ти здатен виконувати більшість завдань за допомогою логіки. Для тебе є сприятливими стратегії групування, класифікації мовних одиниць, знаходження логічних зв'язків між словами, словосполученнями, граматичними

	формами. Оскільки складання пазлів є твоєю сильною стороною, то виріши, як скористатися цим у процесі оволодіння мовою
Spatial Intelligence	Цей тип інтелекту наділяє тебе здатністю до креативного мислення, творчості. Завдання, які потребують використання активного залучення уяви, маніпуляцій ментальними образами, є сприятливими для тебе. Характерним є сприймання середовища візуально, що проявляється в умінні спостерігати за мовними явищами (сполучуваністю слів тощо).
Bodily-Kinesthetic Intelligence	Ти можеш краще проявити себе у видах діяльності, які потребують фізичних дій, таких як рольові ігри, драматизація діалогів, текстів. Створення карток з лексичного і граматичного матеріалу та маніпуляції з ними є сприятливими в оволодінні мовою.
Musical I Intelligence	Ти добре сприймаєш мову на слух, тому частіше слухай аудіозаписи на іноземній мові та використовуй можливості поспілкуватися з носіями мови. Сприятливими є стратегії римування, ритмізації, мелодизації.
Interpersonal Intelligence	Цей тип інтелекту наділяє тебе здатністю до співпраці з друзями у процесі виконання завдання. Ти краще вивчаєш мову, якщо береш участь у дискусіях, рольових іграх, драматизації будь-яких текстів. Сприятливим є створення кооперативних проєктів.
Intrapersonal Intelligence	Важливим є внутрішній світ твоїх емоцій, тому плідними для тебе є види діяльності, що потребують уяви - написання творів, есе. Сприятливим є створення незалежних проєктів. У процесі навчання тобі потрібен затишний куточок для рефлексії.
Naturalist Intelligence	Важливим є співвідношення вивчення мови із природою: виконувати завдання на свіжому повітрі, описувати явища природи, флору, фауну тощо. Сприятливим у вивченні лексики та граматики є створення карт пам'яті з використанням різних кольорів, спостереження за відмінностями у мовних явищах.

Unit 4. Environment Quiz

Environmentally Friendly Answer	
1C	Local Agenda for the 21st Century. Rio Summit in June 1992 it is what local governments are doing to educate and encourage people locally to think about their environment.
2B	The recycling logo consists of three arrows forming a circle. It's known as a 'mobius logo'. If the logo is displayed on a dark background, it means the product or packaging is made from recycled material. If it's on a light background, the material can be recycled.
3B	Big advances have been made in the recycling of paper, recycled paper goods are no longer the ¹ <i>coarse, harsh</i> or low quality products they once were. Recycled toilet paper, for example is now just as soft as other varieties.
4A	Don't leave water running while cleaning your teeth. Leaving a tap running can use 10 - 14 litres of water per minute. (Environment Agency - Water Wise)
5 C	By leaving appliances on standby, you will still be using up to 20% energy.
6B	Recycle - Recycling is becoming increasingly more important, and local authorities will have to provide more and more recycling points. The variety of recyclable materials is also growing fast. Plastics, wood, paper, tyres, glass, tins and cans, even clothes and shoes can be recycled. All Levi Strauss new stationery is made from recycled denim ² <i>off-cuts</i> .
7A	When you or your family grows out of old clothes/books/furniture take them to the charity shop. Other people will benefit and we again are reducing the amount going to ³ <i>landfill</i> and the charges of ⁴ <i>disposing of waste</i> .
8C	Protective filter that protects us from the harmful ultraviolet rays coming from the sun. When these rays get through the atmosphere they damage crops, destroy living cells and cause skin cancer. CFC causes ozone layer depletion. Most countries have stopped industry using these in aerosols, but they are still used in other products.
9C	By taking a shower you use only a third of the water you would use for a bath. (DEFRA)
10B	After use at parties, plastic or polystyrene plates and cups tend to go to landfill, where unfortunately they take about 500 years to degrade. (The little book of Living Green - Mark Hegarty)

¹*coarse, harsh –грубий та неприємний*

²*off-cuts-обрізки*

³*landfill- звалища*

⁴*disposing of waste –розташування відходів*

Unit 5 Smart Quiz

1. The correct answer is:	open the refrigerator, put in the giraffe, and close the door. This question tests whether you tend to do simple things in an overly complicated way.
2. The correct answer is:	open the refrigerator, take out the giraffe, put in the elephant and close the door. This tests your ability to think through the repercussions of your previous actions.
3. The correct answer is:	The Elephant. The elephant is in the refrigerator. You just put him in there. This tests your memory.
4. The correct answer is:	You jump into the river and swim across. Have you not been listening? All the crocodiles are attending the Animal Meeting. This tests whether you learn quickly from your mistakes.

Unit 6. Task 8

If you're in a stadium or theatre,	stay in your seat and protect your head with your arms. Do not try to leave until the shaking is over. Then leave in a calm, orderly manner. Avoid rushing toward exits.
If you are not in a safe place,	you can continue driving, moving slowly toward the nearest safe place. Be careful not to stop in an unsafe place, like on or under an overpass, a bridge or anything that could collapse. Once you're in a safe place, turn your car off and turn on your emergency lights. Engage the parking brake. After you've done all this, keep your eyes out for any flying or falling objects that could harm you.
If you're in a HIGH-RISE BUILDING,	and you are not near a desk or table, move against an interior wall, and protect your head with your arms. Do not use the elevators. Do not be surprised if the alarm or sprinkler systems come on. Stay indoors, glass windows can dislodge during the quake and sail for hundreds of feet.

Unit 6. Earthquake Challenge

1b, 2a, 3d, 4d, 5b, 6b, 7a, 8d, 9b, 10a, 11c, 12b, 13d

Unit 7. Preparing for Emergencies

1c, 2c, 3b, 4b, 5b, 6a, 7d, 8b, 9b, 10c, 11b, 12a, 13a, 14c

Unit 8. Stress in a workplace.

Check your score.

1. Yes-0	No-1	11. Yes-0	No-1	21. Yes-1	No-0
2. Yes-0	No-1	12. Yes-0	No-1	22. Yes-1	No-0
3. Yes-0	No-1	13. Yes-1	No-0	23. Yes-1	No-0
4. Yes-0	No-1	14. Yes-1	No-0	24. Yes-1	No-0
5. Yes-0	No-1	15. Yes-1	No-0	25. Yes-1	No-0
6. Yes-0	No-1	16. Yes-0	No-1	26. Yes-1	No-0
7. Yes-0	No-1	17. Yes-1	No-0	27. Yes-1	No-0
8. Yes-1	No-0	18. Yes-1	No-0	28. Yes-1	No-0
9. Yes-0	No-1	19. Yes-1	No-0	29. Yes-1	No-0
10. Yes-0	No-1	20. Yes-1	No-0	30. Yes-1	No-0

Total = ...

If you scored between 17 and 30, your attitude towards your emotions is a healthy one. You aren't sorry to let your emotions show periodically, and you will certainly be much healthier because of this attitude.

If you scored between 8 and 16, you know how to let your emotions show but you still find it difficult to do so as often as you should. You should be prepared to let your emotions out more often. When you feel sad, let yourself cry. When you feel angry, let your anger show. When you feel happy, allow let a mile to cross your face. Allowing your emotions out in this way will do wonders miracles for your physical and mental/ intellectual health.

If you scored 7 or less, you are very nervous. You really do need to let your emotions be expressed a little. There really isn't anything wrong in allowing people to know how you feel. The more you want to retain your natural impulses, the more likely it is that those impulses will damage your health [Spratt M., Taylor L.B. 1997:117-118].

Keys to the TEST YOURSELF

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
1 a,b	1 a	1 a	1 a	1 a	1 b	1 c	1 c	1 a	1 a	1 a
2 a	2 b	2 c	2 b	2 c	2 c	2 a	2 a	2 b	2 b	2 c
3 a	3 a	3 d	3 d	3 b	3 b	3 b	3 d	3 d	3 d	3 d
4 b	4 c,d	4 b	4 a	4 d	4 d	4 d	4 b	4 a	4 c	4 b
5 c	5 a	5 a	5 c	5 c	5 a	5 a	5 a	5 c	5 a	5 a
6 b	6 d	6 d	6 d	6 a	6 b	6 b	6 a	6 b	6 c	6 b
7d	7 a	7 c	7 a	7 d	7 d	7 c	7 c	7 d	7 b	7 d
8 a	8 c	8 a	8 b	8 a	8 c	8 a	8 d	8 a	8 a	8 a
9 b	9 b	9 b	9 c	9 b	9 b	9 c	9 b	9 c	9 c	9 c
10 c	10 a	10 a	10 d	10 a	10 a	10 d	10 a	10 c	10 a	10 a

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