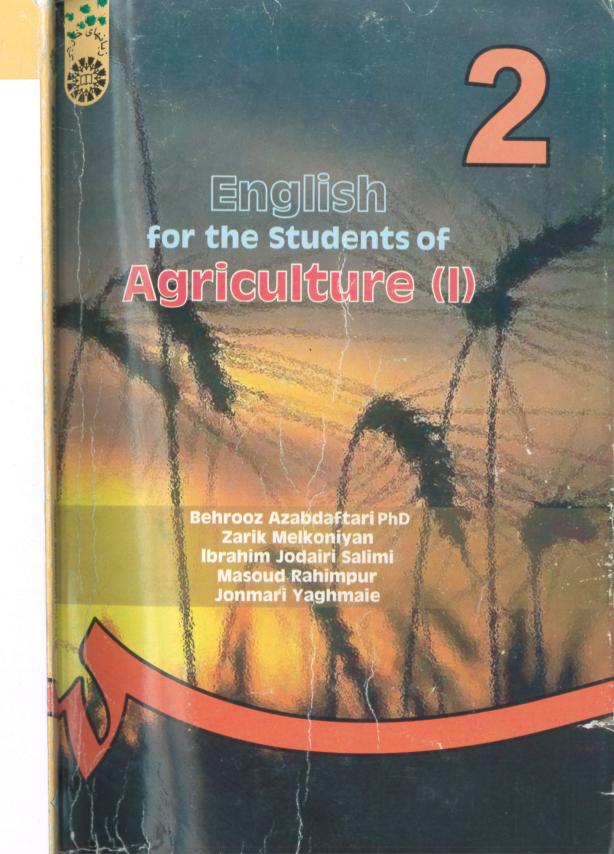
دانشکده فنی و کشاوری مراغه جزوه زبان تخصصی

گروه علوم باغی

نيمسال دوم سال تحصيلي 99-84

مدرس سهراب سليماني



FREE READING

Read this passage and then circle a, b, c, or d which best completes the following item.

A few characteristics can generally be used to distinguish plants from animals. The first difference is that most animals move about freely, but the majority of plants stay in one place. Also, the cell walls of plants are much harder than the walls of most animal cells. The third important difference is that plants usually make their own food by photosynthesis, while animals keep themselves alive from the things they eat. Since almost all living things can be classified as either plants or animals, the science of biology is divided into two main branches: botany and zoology. The study of plants is referred to as botany, and the study of animals is called zoology.

The main idea of this passage is

- a. the ways in which plants and animals get food
- b. the cell walls of plants and animals
- c. the ways in which plants and animals differ
- d. the various branches of biology

Translate the following passage into Persian.

Viruses have a number of distinctive characteristics. In order to reproduce, a virus usually needs living cells, such as those of bacteria or of the tissues of higher forms of life, including man. The organism in which the virus grows is called the host. In making use of a host cell, the virus often damages or destroys it; no organism is known to be completely safe from viruses. Despite the obvious harm viruses do, they are extremely difficult to see because of their very small size. They are much smaller than bacteria, and, with few exceptions, they are too small to be seen with an ordinary microscope. The first virus became visible when the electron microscope was developed in 1940.

Copy the technical terms and expressions used in this lesson. Then find the Persian equivalents of those terms and expressions and write them.

Lesson 3

PRONUNCIATION PRACTICE

community /kə'mju:nəti/
obtain /əb'tein/
adequate /'ædikwət/
habitat /'hæbitæt/
manufacture /mænjʊ'fækt ʃə(r)/
decompose /di:kəm'pəʊz/
photosynthesis /fəʊtəʊ'sinθəsis/
carbohydrate /kɑ:bəʊ'haidreit/
carbon dioxide /kɑ:bən dai'nksaid/
primary /'praiməri/
herbivore /'hɜ:bivɔ:(r)/

secondary /'sekəndrı/
camivore /'kɑ:nıvɔ:(r)/
predator /'predətə(r)/
parasite /'pærəsaɪt/
host /həʊst/
tiny /'taɪnɪ/
fungus /'fʌŋgəs/
fungi /'fʌŋgaɪ/
ecological /i:kə'lɒdɜɪkl/
release /rɪ'li:s/
available /ə'veɪləbl/
generation /dɜenə'reɪʃn/

WORD STUDY

community group of members of a species living in one place

obtain get

adequate sufficient

habitat place for living

manufacture making; production

polar related to the North or the South Pole

decompose break down

carbohydrate any of the substances composed of carbon, hydrogen, and

oxygen

feed on use as food herbivore plant-eater

livestock farm animals kept for use, such as sheep

secondary second in order or importance

carnivore meat-eater

predator animal which catches and kills other animals

often harmful organism that lives on or in a different organism parasite

and gets its food from it

organism which feeds a parasite host

mostly largely

of different kinds various

plant without leaves or flowers, growing on other plants fun gus

related to ecology, the branch of biology that studies the ecological

relation of organisms to the environment

WORDS IN CONTEXT

according to in agreement with

Species are classified in groups according to their characteris-

tics.

eat or use up consume

Animals consume other living beings or their own products.

first in order or importance primary

Agriculture is man's primary source of food.

set free release

Chemical materials in the remains of dead plants and animals

are released by bacteria.

able to be used or obtained available

Organisms live where sources of food are readily available.

READING FOR COMPREHENSION

Food

The place where an organism can live and grow depends greatly on its source of food. In natural communities, plants and animals exist only in places where they can produce or obtain an adequate supply of food. Green Plants, for example, are rarely found in deep-water habitats because they must receive sunlight for their food manufacture. Another example can be seen in animals such as polar bears which eat only fish and must, therefore, live near the sea.

Living organisms can be classified according to their food behavior into three groups: producers, consumers, and decomposers.

Producers. Producers are the green plants that make their own food; by means of photosynthesis, they build up carbohydrates from carbon dioxide and water. In a forest, for example, the trees are the main producers.

Consumers. Consumers are the organisms that eat other organisms or their products. Although a very few plants eat insects and are therefore classified as consumers, most consumers are animals. Animals that feed on plants are primary consumers; they are called herbivores. For example, most animals which are raised as livestock are herbivores. Animals that feed on other animals are known as secondary consumers or carnivores. The animal which is eaten is usually smaller than its predator. This is not, however, always true; a large deer may be killed and eaten by a group of small wolves.

Some consumers obtain their food not by consuming whole organisms but by becoming parasites. Parasites, which may be plants or animals, fasten upon the body of a larger plant or animal and feed on it. The organism that feeds the parasite is called the host.

Decomposers. Decomposers are largely tiny organisms such as bacteria and various fungi. They obtain their food, in part, at least, from the dead bodies or waste products of other organisms. At the same time, in fact, many decomposers serve a very useful purpose in the ecological community because they release the chemical material in the remains of dead plants and animals and make it available for a new generation of plants.

A. Read each statement and decide whether it is true or false. Write 'T' for true and 'F' for false statements.

E.... 1. Herbivores are the animals that feed on other animals.

...... 2. Sunlight is needed for the manufacture of food in green plants.

...... 3. Parasites obtain their food by eating whole organisms.

..... 4. Some parasites are plants and others are animals.

B. Circle a, b, c, or d which best completes the following items.

1. In line 1, the word its refers to a. an organism

b. food

c. the source

d. the place

2. In line 5, the word their refers to

a. communities

b. deep-water habitats

c. green plants

d. places

3. In line 22, the word it refers to

a. the parasite

b. the larger plant or animal

C. food

d. a predator

4. In line 29, the word it refers to

a. the ecological community

c. a purpose

d. the chemical material

5. Green plants in deep-water	habitats	5. The animal w	hich is eaten is us	sually larger than	its predator.
a. are very rare	(b. produce their own food easily				
c. grow quickly	d. contain an adequate supply of food				
6. Producers are the green plan	nts that	E. Give answers to	the following que	estions.	
a make their own food	b. are only found in forests	1. Why do organ	nisms live and gro	w in different pl	aces?
c. consume other organisms	d. must live near the seab	2. What is the d	ifference between	producers and	consumers?
7. Almost all consumers are	III. Largegra in exchange the services of	3. How do plant	s and animals get	their food?	
a. plants	(b. bacteria	4. What is mean	t by decomposers	?	
c. animals	d. fungi				
8. Decomposers serve a useful	purpose because they	VOCABULARY PR	RACTICE		
a. obtain their food from wa		A. Fill in the blan	k spaces with th	e appropriate v	words from the following
b. are very tiny organisms	deolegit bolleden av sam den a	table.			
c. release dead plants from t	heir habitats				
d provide chemical material		Verb	Noun O	Adjective	Adverb
	the entertain suffer to anothern answer.	-0	availability	available 0	7,12 (0)
C. Match the sentence halves in	Column I with their appropriate halves in	organitize &	parasite (e)	parasitic_(parasitically
Column II. Insert the letters a	b, c in the parentheses provided. There			primary	primarily sol
are more sentence halves in Co		produce produce	production	productive	productively
Column I	Column II	011;		1223	(1)
1. Polar bears		1, The o	f different kinds	of pesticides h	as greatly improved the
2. Most livestock	a. are examples of decomposers.	fertility of the	e soil.		
3. Bacteria and fungi Q	b. is essential for green plants.	2. Insects usually	y particular	species of crops	Chean .
4. Insects	() c. are eaten by only a few plants.	3. A depe	nds on its host fo	r food.	
	d. make their own food.	4. We depend	on plants for	our food.	
5. Sunlight b	() e. are primary consumers.	5. Farmers' worl	k consists of the	of food.	/
	f. largely determines an organism's	6. Fish are alway	ys in habita	ts near the sea.	00
	habitat.	7. Farmers	food for the pec	ople who live in	cities.
	g. are carnivores.	%8. Disease is oft	en caused by	organisms.	
the state of the state of the		9. Good crops a	re obtained from	land.	
	at make each statement false, and write the	10. Very dry land	d cannot be farme	d	
word or words that make each		11. Agriculture is	s man's sou	rce of food.	
1. Green plants are often found	in deep-water habitats.	12. Certain insec	ts live on co	ertain species of	crops.
2. Polar bears live near the sea	because they need only water.				ngs provided. Put a check
		mark (√) next	to the choice wh	ich has the clos	est meaning to the word
3. Animals build up carbohydra	tes from carbon dioxide and water.	given.			
		1. obtain	put	get	cut
4. Most livestock feed on anima	ils.	2. adequate	much	less	enough
	· · · · · · · · · · · · · · · · · · ·	3. release	hold	free	search
		1 -0115			

4. consume find (eat) add	4. Which word refers to chemical materials?
5. various different same opposite	a. photosynthesis b. manufacture
and the second s	c. carbon dioxide d. carbohydrates
C. Fill in the blanks with the appropriate words from the following list.	e. decomposers
1010 (C)	5. Which word has to do with numbers?
carnivores obtain herbivores	a. multi- b. release
decomposing consume parasites	c. secondary d. primary
Animals have different teeth arrangements according to the type of food	e. predator
they, which eat meat, need strong teeth; their teeth are much	
sharper than those of, which eat plants. Some organisms, such as	F. Match the words in Column I with their appropriate equivalents in
and other tiny organisms, do not have teeth. They can food through	Column II. Insert the letters a, b, c in the parentheses provided. There
feeding on or by other organisms.	are more options in Column II than required.
	Column II Column II
D. Match the prefixes in Column I with their meanings in Column II. Insert	1. manufacture () a. place for living
the letters a, b, c in the parentheses provided.	2. consume d () b. use as food
Column II	3. primary h () c. able to be used or obtained
1. bio- () a. earth	4. feed on () d. use up
2. ec- = eco- C () b. water	5. habitat e. making
3. zoo- 0/ () c. place	6. available () f. sufficient
4. geo- () d. animal	g. get
5. hydro- b	h. first
6. patho- 9 () f. nature	Combine sections by seals where. While your scharge an tre spec-
7. physio- C g. disease	G. Fill in each blank with the appropriate form of the word given in
SANTORES AND SANTO	parentheses. Spolie
E. Circle the letter which gives the best answer to each of the following ques-	Animals which are not (supply) with enough food will soon die. A lo
tions. There may be more than one correct answer for each question.	of (consume) which depend farge) on their ecology
1. Which word has to do with animals only?	conditions cannot live in various (vary) habitats. Their existence
a. carnivores b. parasites	(primary) depends on the (supply) of food.
c. organisms d. livestock	The state of the s
e. predators	STRUCTURE STUDY
2. Which word has to do with plants only?	A. Singular and Plural Forms
a. herbivores b. insects	NOTICE: NOTICE:
c. fungi	Most nouns make their plurals with -s or -es:
e. consumers	plant plants branch branches
3. Which word refers to areas where organisms live?	Sometimes there is a change in spelling:
a. deep-water b. fungi	body bodies life lives
c. polar d. habitat	Some nouns have irregular plurals:
e. parasite	fungus fungi phenomenon phenomena

Some nouns have the same form for singular a	and plural:
deer deer sheep	sneep
Some nouns are only plural and cannot be sin	gular:
trousers livestock remains	
EXERCISE:	
1. Write the plural forms for the following no	uns in the spaces provided.
W/ 1 process + 05	
2. wolf	
2 species	
A bacterium bactelia	
5. virus	
6. organism + 5	
7. phenomenon phenomena	
8 sheen	
6,0	
2. Write the singular forms, if possible, for	the following nouns in the
enaces provided.	
1	livestock Calabs
2heary	theories
3	fish
4. Egway 4 5	fungi
5	communities
6	remains
	lives
7. 11 Fe	deer
6	pi srouje/eformation/
B. Relative Clauses with 'that'	
Study these sentences:	
The organism is called the host.	
The organism feeds the parasite.	
The organism which feeds the parasite is ca	lled the host.
The organism that feeds the parasite is called	ed the host.
NOTICE:	
The word that can often be used in place o	f which in a relative clause.
EXERCISE:	
Combine each pair by using 'that'. Writ	e your sentence in the space
	Some nouns have members
provided.	

The animals feed on plants.
2. The animals are known as secondary consumers. The animals feed on animals or their products.
3. Most animals are herbivores. The animals are raised as livestock.
4. Producers are the green plants. The green plants make their own food.
5. Cells are organized into groups. The groups form tissues with different functions.
Bon Store Than 18 and 1
Relative Clauses with 'where'
Study these sentences:
Plants can exist only in places.
They can produce a supply of food there.
Plants can exist only in places where they can produce a supply of food. XERCISE:
Combine each pair by using 'where'. Write your sentence in the space provided.
Animals can exist only in places. They can obtain a supply of food there.
2. Green plants cannot grow in places. There is no sunlight there.
3. Predators usually live in places. Thy can easily find animals to kill and eat there.

FREE READING

Read this passage and then circle a, b, c, or d which best completes the following item.

Animals differ widely in their food habits. Some insects feed on the tissue

1. The animals are primary consumers.

or juices of a single species of plant or the blood of one kind of animal, but most animals obtain several or many kinds of food. Cows, sheep, deer, and other plant-eaters are said to be herbivorous; dogs, cats, wolves, and other flesh-eaters are called carnivorous; and man, bears, and other organisms that eat both plant and animal materials are called general feeders, or omnivorous. Because plants are more readily available than animals as food, there are more herbivorous types of consumers than there are other types. However, food from plant sources usually has less usable organic material than the same amount of food from animal sources: thus, herbivores generally eat larger amounts and eat more often than carnivores.

Omnivorous feeders eat

- a. animal material
- b. a single species
- c. both plant and animal food
- d. food from plant sources only

Translate the following passage into Persian.

Ecological communities are studied by describing the habitats and kinds of organisms living in them as well as the feeding habits of the animals. Healthy communities are basically stable because they support many kinds of green plants, many kinds of herbivores, and many kinds of carnivores. Thus, there are various paths available for the cycling of materials and the flow of energy. If one species of plant disappears, there are other green plants still manufacturing food. If one species of herbivore dies out, there are other herbivores still eating plants. Likewise if a species of carnivore is removed, there are others remaining to continue the cycling of materials and energy through the community.

Copy the technical terms and expressions used in this lesson. Then find the Persian equivalents of those terms and expressions and write them.

Lesson 4

PRONUNCIATION PRACTICE taxon om v /tæk 'spnamı/ phyla /'failə/ aspect / æspekt/ genus /'dai:nas/ nomen clature / novmonkleit fo(r)/4 / 6 genera / dzenara/ kingdom / kindəm/ category / kætigəri / US: / -gɔ:ri/ primitive / primitiv/ italicize /1'tælisaiz/ establish /1'stæbli [/ generic /d31 nerik/ borderline /bo:dəlain/ abbreviate /ə'bri:vieit/ basis / beisis/ wides pread / waidspred/ 601 phylum / failam/ universally /'ju:n1'v3:səl1/ 011

WORD STUDY

apricot

taxonomy	study of the general principles of scientific classification
nomen clature	names: system of naming
kingdom	main division
phylum	highest division in the animal kingdom
order	group of closely-related plants or animals forming a sub-
	division of a class and itself further subdivided into families
category	division or class in a system of grouping
Latin	language of ancient Rome
Latinize	change into a latin form
italicize	write or print with the letters slanting to the right to emphasize a word, phrase, sentence, etc.
plum	(tree having) soft, round, smooth-skinned fruit with a stone-
	like seed
peach	(tree with) juicy, round fruit with yellowish-red skin and a rough stone-like seed

stone-like seed

(tree with) round, orange-yellow or orange-red fruit and a

text

written material

widespread

accepted to a large extent; recognized widely

universally

worldwide; extending to the entire world

WORDS IN CONTEXT

aspect

particular way in which something appears or may be

considered

We try to study every aspect of plant growth.

establish

set up

A third kingdom has been established for the one-celled

organisms that are neither animals nor plants.

borderline

falling between two classifications

Some borderline organisms do not clearly belong to either the

plant kingdom or the animal kingdom.

basis

foundation on which something is established

There is no factual basis for this theory.

genus

division of organisms which is further subdivided into species

Similar species are grouped into a genus, and similar genera

make up a family.

alike

very similar

Some animals are very much alike in their life styles.

state

say; express; declare

The principles of science can often be stated in very simple

words.

abbreviate

make a word shorter

In botany and zoology, long Latin words are sometimes

abbreviated.

READING FOR COMPREHENSION

The Classification of Organisms

The science of plant and animal classification is known as taxonomy. Taxonomy has two aspects: the grouping of organisms to show relationships, and the naming, or nomenclature, of each kind of organism.

There are two kingdoms into which all living things are divided: the animal kingdom and the plant kingdom. Certain primitive, one-celled organisms do not seem to fit exactly into either the plant or the animal kingdom: they have

الماري دوسا د كفائق بالمهروي و يون الماري و الماريد و ال

KINGDOM: Animal







wolf

fox

lion

horse

fish

PHYLUM: Chordata













CLASS: Mammalia







lion



ORDER: Carnivora







fox

lion

FAMILY: Canidae







GENUS: Canis



wolf

SPECIES: Familiaris



A Dog in the Classification System

شاعد مان مرا ما الله والماعدة عنواله والماعدة عنواله والماعدة المعرفة

both animallike and plantlike characteristics. Some scientists believe that a third kingdom should be established for these borderline types.

On the basis of certain physical characteristics, the organisms in each kingdom are divided into several phyla, or divisions. Each phylum, or division, is further divided into classes, each class into orders, each order into families, each family into genera, and each genus into species. From kingdom to species, the categories of classification grow smaller and smaller in size. The smallest basic unit-the species-consists of organisms that are sufficiently alike to have come from the same kind of parents.

The scientific name of an organism is formed by stating its genus and species, which are always given in Latin or in a Latinized form of Greek. The genus name begins with a capital letter, but the species name with a small letter, both names are italicized or underlined. The name for the common plum tree, for example, is Prunus domestica. Often, the scientific name reflects the origin, shape, color, or other characteristics of the organism. The peach, for example, is named Prunus persica, and the scientific name of the apricot is Prunus armeniaca. When the scientific name of an organism is used several times in a paragraph or a text, after the first time, the generic name may be abbreviated by using only the first letter. Thus, for Prunus domestica, we may write P. domestica. The use of such scientific names is widespread because they are universally recognized and accepted.

A. Read each statement and decide	whether	it is	true	or	false.	Write	T	for
true and 'F' for false statements.								

- 1. Plants and animals are classified by their physical characteristics.
- 2. The organisms in each group are related to one another.
- 3. The organisms with both plantlike and animallike characteristics are multicellular.
- 4. From species to kingdom, the categories of classification get smaller.
- 5. The scientific name of the peach shows its origin.

B. Circle a, b, c, or d which best completes the following items.

- 1. In line 8, the phrase these borderline types refers to
 - a. the characteristics of plants and animals
 - b. the organisms similar to both plants and animals
 - c. the types of names that are given
 - d. the two main kingdoms of living things

2. In line 16, the word its re	efers to
a. the name	b. the same kind of parents
c. scientific classification	d. organism
3 one-celled organism	ns have both animallike and plantlike character-
istics.	
a. All	b. Some primitive
c. All primitive	d. Most
4. Each phylum is divided in	nto several
a. kingdoms	b. orders
c. classes	d. families
5. The scientific name of an	organism is formed by stating its
a. kingdom and phylum	b. order and family
c. phylum and class	d. genus and species
6. The plum, peach, and app	ricot belong to the same
a. organism	b. species
c. borderline	d. genus
7. The scientific name of an	organism is given in Latin because Latin
a. is easily understood	
b. is universally accepted	
c. reflects the origin of th	e organism
d. words can be abbreviat	ed

C. Match the sentence halves in Column I with their appropriate halves in Column II. Insert the letters a, b, c ... in the parentheses provided. There

are more sentence halves in C	column	ı II	than required.
Column I			Column II
1. Taxonomy	()	a. is used for the generic name of
2. The animal kingdom	()	animals and plants.
and the plant kingdom			b. are the two aspects of taxonomy
3. Latin	()	c. have both animallike and plant-
4. Grouping and naming	()	like characteristics.
5. Scientific names	()	d. reflects the origin of the apricot.
6. The name Prunus	()	e. is the science of putting things
armeniaca			in categories.
Naborgar and to assume on a			f. are sometimes written in italics.
			g. are the two divisions of the
			natural world.

word or words the state of the largest of the large	at make each st	classification of orga	t false, and write the blank. nisms is the species.
parents.			m different kinds of
		.,	
2. On what bas3. How are livi	e scientists want	to establish a third k divide organisms? ed?	ingdom?
VOCABULARY P A. Fill in the bla table.	RACTICE nk spaces with	the appropriate wor	ds from the following
Verb	Noun	Adjective	Adverb
base	basis	basic	basically

Verb	Noun	Adjective	Adverb
base	basis	basic	basically
categorize	category		
	genus	generic	generically
Arrest Court Co	universe	universal	universally

- 1. The plum and apricot belong to the same
- 2. The first part of the scientific name in botany and zoology is the name.
- 3. Plants with flowers are different from plants without flowers.
- 4. Scientists organisms on the basis of their appearance.
- 5. Scientists theorize about relationships in the
- 6. The peach and apricot are similar.
- 7. Scientific names are accepted.
- 8. Each of organisms may consist of several parts.
- 9. We our classification on the appearance of the reproductive organs.
- 10. This system of nomenclature has acceptance.

1	1.	Flowers	serve	as	a	0	f	classi	fica	tion.

12	The	presence	of	flowers	is	a	difference	in	classification.
J. dear to	7 110	DICHOITEC	0 1						OTH DDITTOR CTO II.

B	. In	eac	h of	the	followin	ng	items,	put a	che	ck	ma	rk	(1)	nex	t to	the	word	or
	wo	rds	who	se m	nean in g	is	most	nearly	the	sai	me	as	that	of	the	word	prin	ted
	in	bolo	l typ	e.														

1. Scientists have agreed to use Latin and Greek **nomenclature** in their writings.

a. letters c. categories
b. names d. signs

2. It is often difficult to make classifications in the animal kingdom.

a. skin c. division b. hair d. habitat

3. Organisms which are alike usually belong to the same species.

a. classified c. one-celled

b. similar d. on the borderline

4. In botany, abbreviated words are sometimes used instead of whole words.

a. shortenedb. dividedc. establishedd. classified

5. Students of botanical sciences should make themselves familiar with all aspects of plant growth.

a. causes c. species b. results d. phases

C. For each word on the left, there are three meanings provided. Put a check mark (<) next to the choice which has the closest meaning to the word given.

class order 1. category phylum expression division classification 2. taxon omy 3. abbreviate shorten supply establish 4. universally closely finally generally increasing 5. stating finding expressing

D. Fill in the blanks with the appropriate words from the following list.

genera phylum families
orders classes

Each division or is divided into The themselves are

33

further divided into composed of various		are divided into, which are	2. The plum is Prunus domestica. 3. A validated theory is a principle.
	, b, c in the p	eir appropriate meanings in Column arentheses provided. There are more	 4. Reproduction by vegetative parts is as asexual reproduction. 5. The total of all chemical processes in an organism is metabolism. 6. The biologist who first established the system of classification and of binomial nomenclature was Linnaeus.
 widespread genus text physical category 		a. written material b. express c. recognized widely d. division in a family e. class in a system of grouping f. bodily g. shorten	B. Providing Synonyms by Using 'or' With Commas Study these sentences: The second aspect of taxonomy is the naming of each kind of organism. The second aspect of taxonomy is the nomenclature of each kind of organism. The second aspect of taxonomy is the naming, or nomenclature, of each
	; -ize to the follo	or adjectives by adding -ize to them. owing nouns and adjectives and write	kind of organism. NOTICE: Synonyms may be provided by using or together with commas. EXERCISE: 1. Circle a, b, c, or which best completes the following item. The organisms in each kingdom are divided into phyla, or divisions. This sentence tells us that phyla are
			Minuferophylic on house arts of the second
The smallest basic un The peach is named I NOTICE: These verbs are used The words called and especially for proper EXERCISE:	and animal class it is called the s Prunus persica. to specify the n known as have names. ', or 'named' ap	ification is known as taxonomy. species. ame of something. the same meaning, but named is used propriately in each blank.	 Read each statement and decide whether the two items printed in bold type are the same or different in meaning. Write S for the same and D for different in the blank spaces provided. 1. Animals that eat animals are called secondary consumers, or carnivores. 2. Most decomposers are bacteria or fungi. 3. Each phylum, or division, is divided into classes. 4. Most livestock animals are primary consumers, or herbivores. 5. Reproduction maybe either sexual or asexual. 6. Some animals obtain their food from dead bodies or waste products. 7. Scientists observe natural events, or phenomena.

FREE READING

Read this passage and then circle a, b, c, or d which best completes the following item.

There are many ways in which plants can be classified. One way of classifying plants is in accordance with their use as food, fuel, feed for live-tock, and so on. Or, they might be categorized by their habitat, whether they live in the sea, in the forest, in the desert, etc. Another kind of classification could be according to the general appearance, size, and shape of plants. In everyday speech, we often group plants by considering both their appearance and use; we may call them vegetables, fruits, medicines, and so on. However, people in different places may use plants in different ways. Therefore, the universally-accepted classifications are based only on appearance, especially the appearance of the reproductive organs, or flowers, because these parts of the plant change the least in response to changes in the general environment.

The most widely-accepted plant classifications are based on

- a. the place where the plant lives
- b. the way the plant is used
- c. the general size of the plant
- d. the form of the flower

Translate the following passage into Persian.

The scientific name of a dog is Can is familiaris. This means that the dog belongs to the species familiaris within the genus Can is, which includes wolves and similar animals. The animals in this genus are categorized with certain other animals, such as the fox, in the family Canidae. This family joins the family of cats, lions, and tigers to make up the order of flesh-eating animals, called Carnivora. The Carnivora and other orders, such as that of horses, produce milk for their young and thus compose the class of Mammalia, or mammals. Mammals and fish are alike in one important aspect—having a backbone—so they and similar animals belong to the phylum chordata. Finally, the phylum chordata combines with other phyla, such as that of insects, to make up the animal kingdom.

Copy the technical terms and expressions used in this lesson. Then find the Persian equivalents of those terms and expressions and write them.

Lesson 5

define /dı'faın/
capacity /kə'pæsətı/
derive /dı'raıv/

ray /reı/

solar /'səʊlə(r)/
warmth /wɔ:mθ/
essential /ı'sen ʃl/
photosynthesis /fəʊtəʊ'sınθəsıs/

PRONUNCIATION PRACTICE

transform /træns'fɔ:m/

fuel /'fju:əl/

vegetation /ved3i'teifn/
aid /eid/
petroleum /pi'trəʊliəm/
remains /ri'meinz/
electrical /i'lektrikl/
evaporate /i'væpəreit/
vapor /'veipə(r)/
condense /kən'dens/
cooling /'ku:liŋ/
windmill /'windmil/
uneven /ʌn'i:vn/
source /sɔ:s/

WORD STUDY

derive obtain warmth heat chlorophyll-

bearing having chlorophyll

serve as be used as; be satisfactory for a need or purpose vegetation plants in general; all the plants in a given area

aid help

cool make or become less warm

windmill machinery for grinding grain that runs on the energy of wind

uneven unequal; not uniform heat make or become hot absence not being present

WORDS IN CONTEXT

define state the exact meaning of

The new technical words were defined by our science professor.

capacity ability to receive something; ability to do something

Living things have the capacity to grow.

ray narrow beam of radiation

The sun's rays are a major source of energy

transform change

A steam engine transforms heat into energy.

radiant coming in rays from a source; emitting heat or light

Radiant energy from the sun is changed into chemical energy in

organisms.

vapor steam; gaseous form of a liquid or solid substance

Water vapor in the atmosphere changes into rain or snow when

it is cooled.

evaporate change into a vapor

Heat causes water to evaporate.

codense form a liquid from a vapor

Steam condenses to water when it touches a cold surface.

generate produce

The energy generated by sunlight is used in the process of

photosynthesis.

READING FOR COMPREHENSION

William Energy From the Sun

Energy is defined as the ability or capacity to do work. Nearly all the energy used by man is derived from the sun, either directly or indirectly, in the form of heat rays or light rays.

plant life upon the earth. The sun's light is essential in the process of photosynthesis, in which chlorophyll-bearing cells transform radiant energy from the sun into the chemical energy of carbohydrates. These carbohydrates serve as the basic substance in the food materials of plants and also the animals which consume plants.

The light and heat energy derived from fuel also comes indirectly from the sun. Coal was made by the pressure of rocks on vegetation which died millions of years ago. That vegetation grew with the aid of sunlight, from which carbohydrates were formed. Petroleum is another form of stored solar energy. Plants, together with the animals which fed on them, died millions of

The way of the way of

years ago, and their remains were pressed under the roks in the earth. These dead animal and vegetable remains formed petroleum, from which gasoline and oil are now obtained.

Electrical energy is also obtained indirectly from solar energy; for example, it can be derived from the power of water falling down a mountainside. The sun's heat first causes water to evaporate from the surface of the earth. This water vapor rises, condenses on cooling, and falls upon mountains in the form of rain or snow, which later flows down the mountainsides in rivers. The electrical energy generated by windmills is also derived from the sun because all winds result from the unexen heating of different parts of the earth's surface by the sun.

Thus, it can be said that the sun is the source of nearly all our energy and that in the absence of the sun's heat and light, no life could exist on the earth.

A. Read each statement and decide whether it is true or false. Write 'T' for true and 'F' for false statements.

...... 3. Plants and animals cannot exist on the earth without solar energy.

...... 4.In the process of photosynthesis, radiant energy is changed into chemical energy.

...... 5. Radiant energy from the sun is transformed into chlorophyll.

B. Circle a, b, c, or d which best completes the following items.

1. In line 6, the word which refers to

a. the sun's light

b. animal and plant life

c. the process of photosynthesis

d. chlorophyll-bearing cells

2. In line 16, the word which refers to

a. dead animals

b. earth

c. vegetable remains

d. petroleum

3. In line 19, the word it refers to

a. petroleum

b. an example

c. solar energy

d. electrical energy

4. Cells containing chlorophyll

a. provide light and warmth for plants

b. transform chemical energy into radiant energy

c. serve as the basic substance in the food materials of plants

d. form carbohydrates by using radiant energy

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5. The remains of vegetation which died millions of years ago	3. Petroleum is obtained from gasoline.
a. were pressed under the rocks to form coal	
b. grew without the aid of sunlight	4 september 1 sept
c. formed carbohydrates	E. Give answers to the following questions.
d. made the rocks of the earth	1. What kinds of energy are obtained indirectly from solar energy?
6. The sun's heat	2. How is the energy of the wind derived from solar energy?
a. condenses the water on the surface of the earth	3. How is the sun's energy used by man?
a. condenses the water on the surface of the earth	4. How has the sun's energy helped to make fuel?
b. evaporates water from the surface of the earth	4. How has the sun's energy helped to make fuel.
c. warms the earth surface evenly	VOCADULADY DDACTICE
d. causes rain to fall upon the mountains	VOCABULARY PRACTICE
7. Animal and plant life would disappear from the earth if did not exist.	A. Fill in the blank spaces with the appropriate words from the following table.
a. solar energy b. chemical energy	
c. electrical energy d. light energy	Verb Noun Adjective Adverb definitely definitely
C. Match the sentence halves in Column I with their appropriate halves in	evaporate evaporation evaporation
Column II. Insert the letters a, b, c in the parentheses provided. There	exist @ Dexistence existent & Poly
are more sentence halves in Column II than required.	radiate (4) Pradiation 2 radiant
Column II	place to the
1. Rain () a. are different kinds of fuel.	1. Our depends on sunlight.
2. A windmill \(\) b. are used as the basic substance	2. Life on the earth depends on the of light from the sun.
3. Coal, oil, and gasoline () in plant food.	3. Each part of the body has a function.
4. Electrical energy () c. is the result of the condensed	4. The solutions to some of his problems are non
5. Heat () vapor in the air.	5. Scientists energy as the ability to do work.
6. Carbohydrates () d. were pressed by rocks to form	6. The sun is known to light of different wavelengths.
petroleum.	7. Man cannot without sunlight.
e. evaporates water	8. In botany and zoology, the of a consumer is 'an organism that
f. works by the action of the wind. g. can be obtained from mountain-	eats other organisms or their products'.
side rivers.	9. Heat causes water to
h. comes in rays from the sun.	10. Cells transform energy into chemical energy.
	11. The of water from the soil increases the need for irrigation.
D. Cross out the word or words that make each statement false, and write	12. The sun is the most important source of our energy.
the word or words that make each statement true in the blank.	autremphilips et d'un de la control de la co
1. Electrical energy provides the light and warmth necessary for all animal	B. For each word on the left, there are three meanings provided. Put a check
and plant life upon the earth.	mark (1) next to the choice which has the closest meaning to the word
and plant the upon the caren.	given.
2. Petroleum was formed from the remains of dead animals and rocks.	1. warmth heat sunlight hotness
2. Petroleum was formed from the remains of dead arithus and cooks.	2. ray heat radiation beam of light energy

3. consume	use	state	prevent
4. un even	unused	unknown	unequal
5 generate	define	produce	decide

C. Fill in the blanks with the appropriate items from the following list.

transforms	heat	evaporate
windmill	condenses	serve as
to the earth as rain or	snow, forming rive	e vapor in clouds and falls ars which may a source of rical energy is the, which y.

D. Match the words in Column I with their appropriate meanings in Column II. Insert the letters a, b, c ... in the parentheses provided. There are more options in Column II than required.

Column I		Column II
1. define	()	a. obtained
2. absence 9	()	b. unequal
3. evaporate W	()	c. help
4. derived	()	d. be used as
5. serve as	()	e. state the meaning of
6. aid	()	f. making hot
o. ard		g. not being present
		h. change into vapor

E. Circle a, b, c, or d which best completes the following items.

	ave to form caroon, arms
a. the energy	b. the capacity
	d. the necessity
2 Clouds are formed by	of water from the surface of the earth.
(a.) the evaporation	b. the condensation
c. the generation	d. the derivation
3. Most cities depend on t	he electrical energy by various power
stations.	
a. derived	b. formed
c. generated	d. caused

F. Many verbs, especially those ending in -ate, form nouns by adding the suffix -ation to them.

NOTICE:

Omit the final 'e' in all verbs; in verbs ending in -ate, add only -ion after omitting the 'e'.

Examples:

form	formation
separate	separation

Form nouns by adding -ation to the following verbs and write them in the spaces provided.

T I	
1. transform ort of	transfru (more)
2. radiate	X. Adia Tiap
3. condense	Conden Sation
4. vegetate	Negetation
5. evaporate	
6. observe	
7. combine	SayoV eldstammell.lime.mid.com.
8. generate	Toley bas astro
9. form	
10. derive	

STRUCTURE STUDY

A. Shortened Relative Clauses

Study these sentences:

The energy which is used by man is derived from the sun.

The energy used by man is derived from the sun.

NOTICE:

When a relative clause begins with which+ be, the clause can be shortened by omitting which+ be.

EXERCISE:

1. Underline the shortened relative clauses in this paragraph.

The science known as taxonomy has two aspects: grouping and naming. All organisms are classified into a system of categories established by natural scientists. Each organism is classified by its kingdom, phylum, class, order, family, genus, and species. The organisms grouped into a species are those which can have the same kind of parents; the scientific name used for each species consists of two words given in Latin or a Latinized form of Greek. For example, the tree named **Prunus domestica** is just the common tree called the plum in English.

Shorten the 'which+ be', a	nd write	the sho	rtened	sen ter	n ces ir	the	spac	es pi	rovio	itti led.	n g

2. Carbohydrates serve as the basic substance in the food materials which are needed by plants.

3. The light and heat energy which is derived from fuel also comes indirectly from the sun.

4. The electrical energy which is generated by windmills is also derived from the sun.

5. Some fuels which are obtained from petroleum are gasoline and oil.

B. Countable and Uncountable Nouns

Many nouns have singular and plural forms. They are used for countable things. For example:

a plant plants bodies a body a fungus fungi

sheep a sheep

Some nouns are neither singular nor plural. They are used for uncountable things. For example:

water

sunlight

knowledge

EXERCISE:

Write C for countable and U for uncountable nouns in the spaces provided.

V.... 1. snow

...... 3. heat

........ 4. windmill 6. deer

....... 5. coal

8. carbon dioxide

...... 9. insect

...... 10. rain

FREE READING

Read this passage and then circle a, b, c, or d which best completes the following item.

Energy occurs in two basic forms, potential and kinetic. Potential energy is

the ability to perform work because of the position or condition of atoms, molecules, or large bodies. Fuel, before it is burned, and objects raised to high places are examples of potential energy. Kinetic energy is the active energy of a body which is moving. When a raised object, for example, begins to move downward, its potential energy is transformed into kinetic energy.

The study of various forms of energy and of the transformation of one kind of energy into another has led to a very important principle, known as the law of conservation of energy; energy cannot be created or destroyed. It can only he transformed into other kinds of energy. This law is one of the basic principles of physical science.

The law of conservation of energy states that

- a, it is difficult to create energy
- b. when fuel is burned, energy is destroyed
- c. energy may only be changed into other kinds of energy
- d. energy is found in potential and kinetic forms

Translate the following passage into Persian.

The soil derives its heat almost entirely directly from the sun. It receives the greatest possible heat from sunlight only when the atmosphere is clear. If clouds cover the sky, a large part of the sun's rays are reflected back into space and add very little to the warmth of the soil. There are other factors which determine how much of the sun's heat is kept or lost by the earth. For example, when the sky is clear by day but cloud-covered by night, there is a cumulative warming effect because the night clouds allow very little radiation from the black body of the warm earth back into space. However, when the sky is cloud-covered by day but clear at night, a noticeable cooling occurs.

Copy the technical terms and expressions used in this lesson. Then find the Persian equivalents of those terms and expressions and write them.

Lesson 6

PRONUNCIATION PRACTICE

wander /'wpndə(r)/
attempt /ə'tempt/
permanent /'pɜ:mənənt/
frequently /'fri:kwəntlı/
society /sə'saıətı/
location /ləʊ'keıʃn/
establish /ı'stæblıʃ/
instrument /'ınstrument/
beast /bi:st/

plentiful / plentifol/

lack /læk/

foundation /favn'deisn/

grain /grein/
event /i'vent/

advance /ədva:ns / US: / - væns/

printing /'printin/
industry /'indestri/

atom / ætəm/

generation /dsens'reifn/

enable /1'neibl/

associated /ə'səʊʃieitid/

turning point /'ta:nin point/

historian /h1'sto:r1on/

Fertile Crescent /f3:tail kresnt/

US: /-t1/

Tigris / taigras/

Euphrates /ju: freiti:z/

evidence /'evidons/
indicate /'indikeit/

and the same same same

WORD STUDY

Euphrates

measure of comparison for quantitative or qualitative value standard beast animal small, hard seed of food plants such as rice and wheat grain produce a book, picture, etc. print period of time during which some special events occur age one who goes after wild animals for food or sport hunter make able enable area in Asia and Africa from Libya in the west to Pakistan in Middle East the east

river flowing from East Turkey through Syria and Iraq joining

the Tigris to empty into the Persian Gulf

Tigris river flowing from Southeast Turkey joining the Euphrates to

empty into the Persian Gulf

indicate show; point out

crescent figure of the moon in the first quarter; something shaped

like this figure

Fertile

Crescent land between the Tigris and Euphrates Rivers

WORDS IN CONTEXT

location place

This is a good location for a fruit garden

plentiful in large quantities; abundant

Rice was plentiful in that area.

lack absence; be entirely without or have very little of

Early man lacked scientific knowledge.

foundation basis

The collection of observations made by early scientists forms

the foundation of science.

advance moving forward; progress

The use of agricultural machinery is an important advance in

agriculture.

industry manufacturing; production and sale of goods

The milk industry supplies us with cheese, butter, and

yoghurt.

found establish

The College of Agriculture in this university was founded in

1955.

associate join or connect in a relationship, often in the mind

We associate Latin with scientific names.

turning point important point in time

The time when man stopped moving around and began farm-

ing his land is a turning point in history.

fertile producing a lot; productive

The soil of Dasht-e-Moghan is fertile enough to grow good

and plentiful crops.

evidence data on which a judgment can be based

A scientist must produce evidence in support of his theories.

READING FOR COMPREHENSION

The Origin of Agriculture

Early man wandered the land in search of meat and fruit. He never attempted to build a permanent community. Since he moved frequently from place to place, he could not progress toward a complex society or a higher standard of living. Before man could become a social human being, he had to remain in one location long enough to establish a community life.

Through the years, man developed tools and instruments in order to kill wild beasts and to gather food. The supply of food, plants, or animals kept groups of people in one place until the supply was gone. A sort of early community life occurred when people stayed at one place for some time before moving to another area where food was more plentiful. But this kind of community life lacked the time necessary to build the foundations of a society.

The rise of social man can be dated from the time when man remained year after year in a single community where he raised his own grain and cared for his own animals. At that time, he became a farmer. This event, the birth of farming, is the most important advance which has ever been taken by man. It is greater than the invention of writing or printing and more important than the ages of industry and the atom.

History shows that after man settled down to farming, he advanced much more rapidly than he had before. He developed better systems of educating young people and of preserving knowledge for future generations. As a farmer rather than a hunter, man founded a permanent community, and this enabled him to establish the life which is associated with social people.

This turning point in history was so important that modern historians and scientists began to search for the exact location where farming first began. For many reasons, it was thought that the birth of agriculture occurred in the Middle East, in the Fertile Crescent, between the Tigris and Euphrates Rivers. Scientists searched the area for facts about man's change from hunter to farmer; the evidence strongly indicates that the great Fertile Crescent was the area of man's first farming communities.

A. Read each statement and decide whether it is true or false. Write 'T' for true and 'F' for false statements.

...... 1. Early man was unable to progress toward an organized society because he did not stay at the same place all the time.

2. Early man moved to differnt places when he needed food.
3. Man's social life started from the time when he began to move from
place to place to raise grain.
4. Only a short time was required for early man to build the founda-
tions of his society.
5. The birth of farming is dated from the time when man raised his
own grain in a permanent location.
3. Circle a, b, c, or d which best completes the following items.
1. In line 16, the word It refers to
a. a single community b. the grain that man raised
c. the birth of farming d. man's supply of food
2. In line 24, This turning point refers to
a. man's change from hunter to farmer
b. the area where farming started
c. preserving knowledge
d. educating young people
3. To establish a community life, man had to
a. progress toward a higher of living
b. remain in one place for a long time
c. wander the land in search of meat and fruit
d. move to another area
4. The most important advance which man has ever taken is
a. the discovery of the atom
b. the development of industry
c. the invention of writing or printing
d. the birth of farming
C. Match the sentence halves in Column I with their appropriate halves in
Column II. Insert the letters a, b, c in the parentheses provided. There
are more sentence halves in Column II than required.

Column I		Column II
1. The establishment of a	()	a. is less important than the birth
permanent community		of farming.
2. Tools and instruments	()	b. caused early man to move
3. The Fertile Crescent	()	frequently
4. The earliest sort of	()	c. was not permanent.
community life		d. led to a more advanced

5. The need for food () social life. e. were used by early man to k wild animals. f. was found to be the area whe	
farming began.	
g. could become a social hum	an
being	
O. Cross out the word or words that make each statement false, and write t	he
word or words that make each statement true in the blank. 1. As a hunter rather than a farmer, man established a social life.	
2. Man developed more organized systems of educating young peo- before he settled down to farming.	ple
3. In a permanent community, man preserved knowledge for past gene tions.	
ev had men cald vitation in a drifting all.	
Remarks to the more important and against the contribute his contribute and the	
E. Give answers to the following questions.	oin!
1. What did man need in order to establish the life associated with so people?	
2. Why did historians and scientists try to find out where farming began?	tirst
2 II did the high of farming change man's way of life?	

VOCABULARY PRACTICE

4. Where did farming begin?

A. Fill in the blank spaces with the appropriate words from the following table.

Verb	Noun	Adjective	Adverb
fertilize	fertility	fertile	red es <u>abustar</u> ado
found	foundation	fundamental	fundamentally
lack	lack	110000000000000000000000000000000000000	HAT PARTY STATE AND ASSESSED.
locate location		local	locally

1. Most of our food is produced

2. Th	ie	of	the	agricultural	revolution	was	made	by	the	industrial
re	volution.									

- 3. Scientists tried to the areas where farming began.
- 4. The government plans to a new college of agriculture in this area.
- 5. We depend largely on crops.
- 6. Farmers try to improve the of their land.
- 7. The law of conservation of energy is one of the principles of science.
- 8. Farmers have to choose the best for each type of tree.
- 9. The of water may cause plants to die.
- 10. Soil which is produces good crops.
- 11. Some types of soil the ability to hold water.
- 12. Some farmers use chemicals to their soil.
- 13. Sexual reproduction and asexual reproduction are different.

B. Circle S for the pairs with the same meaning and D for the pairs with different meanings.

0				
1. beast	anima1		S	D
2. print	paint		S	D
3. hunter	driver		S	D
4. plen tiful	a lot		S	D
5. atom	energy		S	D

C. Fill in the blanks with the appropriate words from the following list.

lacked	evidence	advanced
indicated	standard	established

Scientists found that the great Fertile Crescent was an area where early farming communities were Their discoveries that the people in that area into a more complex society and started toward a better of living although they the tools which later farmers developed.

D. Circle a, b, c, or d which best completes the following items.

- 1. At first, early man instruments to harvest grain.
 - a. indicated

b. lacked

c. associated

d. enabled

2. The discovery of fire was point in the history of mankind. a. a breaking b. a founding c. a turning d. a rising 3. Discoveries in many places that early man killed and ate wild animals. a. indicate b. advance c. develop d. found	He developed tools and instruments. He killed wild beasts gathered food. Man developed tools and instruments in order to kill gather food. NOTICE: We may use to+ infinitive or in order to+ infinitive to sho main verb. EXERCISE:
E. Fill in each blank with the appropriate form of the word given in parentheses. 1. The (establish) of communities took a very long time. 2. There is clearly an (associate) between farming and social life. 3. Man's early (settle) were not permanent. 4. Since man wandered from place to place, he was unable to make the	Decide which sentence, a or b, shows the purpose by putt (*/) in the blank before it. Then combine each pair with 'and write your sentence in the space provided. 1
(found) of a complex society.	a. Biologists distinguish between living and non-li b. Biologists look for distinctive characteristics.
F. Some nouns are formed by adding the suffix -ment to a verb which does	3 a. One-celled organisms reproduce.
not take -ation or -ion. Example: establish establishment	b. One-celled organisms divide.
Form nouns by adding -ment to the following verbs and write them in the spaces provided.	4 a. Polar bears obtain a supply of food b. Polar bears live near the sea.
1. develop	es line et grinnilmoinannilminminmanman
2. require	5 a. They lacked the time necessary.
3. measure	b. They could not build the foundations of a soci
4. improve	a consistence of the second states and the second s
5. state	6 a. Protoplasm is broken down.
6. move	b. Protoplasm supplies energy to the organism.
7. settle 8. argue	bde steek sext. Atta. Ekiloning de textrira injulieus innuit.
o. argue	B. Shortened Relative Clauses
STRUCTURE STUDY	Study these sentences:
A. The Infinitive of Purpose	This event, which is the birth of farming, is the most i
Study these sentences:	which has ever been taken by man.
Each scientist has added more knowledge.	This event, the birth of farming, is the most important a
He has built on the knowledge of the past.	by man.
Each scientist has added more knowledge to build on the knowledge of the	They lacked the time which was necessary to build the for

an developed tools and instruments in order to kill wild beasts and gather food.

ICE:

e may use to+ infinitive or in order to+ infinitive to show purpose of the ain verb.

RCISE:

ecide which sentence, a or b, shows the purpose by putting a check mark) in the blank before it. Then combine each pair with 'to' or 'in order to'

and write	your sentence in the space provided.
1 a.	Scientists test their theories.
b.	Scientists do experiments.
2 a.	Biologists distinguish between living and non-living things.
b.	Biologists look for distinctive characteristics.
	EREE: READING
3 a.	One-celled organisms reproduce.
b.	One-celled organisms divide.

b. Polar	bears live near the	e sea.	
thread griming		a.yaayi.laayi.aayaa	

 a.	They	lacked	the	time	nec	essary.	
 b.	They	could	not	build	the	foundations of a society.	

6.	 a.	Protoplasm	is broken down.	
	 b.	Protoplasm	supplies energy to the organism.	

hortened Relative Clauses

tudy these sentences:

his event, which is the birth of farming, is the most important advance which has ever been taken by man.

his event, the birth of farming, is the most important advance ever taken

hey lacked the time which was necessary to build the foundations.

They lacked the time necessary to build the foundations.

EXERCISE:

Shorten the relative clauses in the following sentences by omitting 'which+ be' and write the shortened sentences in the spaces provided.

- 1. Solar energy provides the light and warmth which is necessary for all animal and plant life.
- 2. The smallest basic unit, which is the species, consists of very similar organisms.
- 3. The foundation of a permanent community enabled man to establish the life which is necessary for social man.
- 4. Prunus armeniaca, which is the apricot, had its origin in the Middle East.

FREE READING

Read this passage and then circle a, b, c, or d which best completes the following item.

Farming is the complex and scientific business of producing both plant and animal products needed by man. It is the oldest occupation in the world, and although there are now a great many other occupations, farming is still as important as ever. Because agricultural products determine the physical means of human existence to a great extent, they have had great influence on the development of civilization. Thus, every nation needs a strong foundation in agriculture if it wishes to progress. Although many advances have been made in industry in the modern age, we should always remember that we are still just as dependent upon plants for survival as primitive man was years and years ago.

The main idea of this passage is that

- a. farmers have helped develop civilizations
- b. the importance of farming is still very great
- c. farming is now only one of many occupations
- d. many modern advances have been made in farming

Translate the following passage into Persian.

Research in archeology and in many other fields indicates that farming had

its beginnings in the fertile valleys of the Tigris, Euphrates, and Nile rivers. There is also a great deal of evidence that the high civilizations which arose in the Fertile Crescent and in Egypt were based on agriculture; in other words, since people who live in cities are consumers, it was the people's success in agriculture that made the building of large cities possible. During the period of the early historic communities, as well as the prehistoric period, most of the food produced and consumed was derived from two types of grain, wheat and barley, and two types of livestock, sheep and goats.

Copy the technical terms and expressions used in this lesson. Then find the Persian equivalents of those terms and expressions and write them.

Lesson 7

PRONUNCIATION PRACTICE

wild / warld/
favourable /'fervorabl/
successfully /sək'sesfəli/

imitate /'imiteit/ Civilia

shelter /' feltə(r)/

diet /'daiet/

diet /'daiət/

healthy /helθι/
introduce /intro'dju:s/ Conjugation

undesirable /Andi'zanərəbl/

colony /'kplani/

scatter /'skætə(r)/

disease /di'zi:z/ 4,%

restrict /ri'strikt/

sugar beet /' ʃugə(r)bi:t/

hectare /'hekteə(r)/

circumstance /'ss:kəmstəns/

exceedingly /ik'si:diŋli/

satisfactory /'sætəs 'fæktrı/

output /'avtpvt/ alter /'o:ltə(r)/

limitation /limi'teifn/

WORD STUDY

state condition

readily easily; without difficulty

undesirable unwanted

colony group of the same kind of animals or plants living or growing

together

pest destructive plant or animal restrict limit; keep within limits

beet plant with a sweet root used as a vegetable or a source of sugar

hectare metric unit of area equal to 10,000 square meters

cricum-

stance condition

exceedingly extremely; extraordinarily

within inside

output amount produced

limitation condition that limits; restrictions

WORDS IN CONTEXT

favorable helpful

The weather is not always favorable for farm work.

imitate copy the behavior of

To protect wild animals, one has to imitate the conditions in

which they live in the wild.

domesticate adapt to human living conditions; tame

Man had to domesticate the horse before he used it.

suitable right for the purpose

These areas are very suitable for growing rice.

healthy having good health

Good gardening practices have aided the farmer to keep his fruit

trees in a healthy condition.

scatter spread at random over a surface or through a space or substance

Plants in the wild are usually scattered here and there.

satisfactory acceptable

Some developing countries have made satisfactory progress

toward increasing crop output.

alter change

Many villagers have altered their methods of crop production in

the last fifty years.

READING FOR COMPREHENSION

The Farming Environment

The environment refers to the surroundings in which animals or plants grow. In the wild state, plants are found in certain habitats where the environment is favorable to their growth. A farmer who wishes to grow these plants successfully must imitate, or even improve upon, the conditions which are found around a plant in the wild state. Similarly, wild animals live in places where their natural food and shelter are readily available, but domesticated animals require suitable protection and a carefully selected diet in order to grow well and remain healthy.

Farming introduces changes into the natural environment, and these changes may cause undesirable effects as well as desirable ones. In their natural conditions, plants and animals are found in small colonies scattered throughout the countryside. The natural pests and diseases of a plant or an animal are limited to these scattered colonies and, as a result, are restricted in

المامة المحاورة

21. Decineacioletaid both tombe

57

their growth and spread. On farms, however, plants are gathered together in small spaces. As many as 75,000 sugar beet plants are grown on a hectare of land. Under circumstances like these, the natural pests and diseases of a plant or an animal may build up exceedingly rapidly.

Successful agricultural production depends upon controlling the environment within the limits of possibility for satisfactory growth. A careful study of the environment helps the farmer to know better what can be done to improve output. It also helps him to realize that there are many things in the air and soil which he cannot alter and must therefore accept as natural limitations.

A. Read each statement and decide whether it is true or false. Write 'T' for true and 'F' for false statements.

- 1. Plants naturally grow in places where the environment is suitable to their growth.
- 2. Wild plants and animals live together in small spaces.
- 3. In the wild state, natural pests and diseases grow rapidly because they obtain enough food.
- 4. There are many characteristics of a farming environment which a farmer cannot change.

B. Circle a, b, c, or d which best completes the following items.

- 1. In line 3, the word their refers to
 - a. habitats

b. plants

c. animals

- d. surroundings
- 2. In line 14, the word their refers to
 - a. pests and diseases

b. natural conditions

- c. plants and animals
- d. small colonies
- 3. In line 21, the word It refers to
 - a. controlling the environment
 - b. successful production
 - c. the possibility for satisfactory growth
 - d. a study of the environment
- 4. Wild animals live in places where
 - a. pests are limited
 - b. a selected diet is readily obtained
 - c. the environment is undesirable
 - d. natural food and shelter are available

5 A	study	of th	ie e	nviron	ment	helps	the	farmer		
-----	-------	-------	------	--------	------	-------	-----	--------	--	--

- a. to alter aspects of the air and soil
- b. to know the natural limitations
- c. to domesticate natural pests and diseases
- d. to realize the importance of the output
- 6. On farms, plants are
 - a. grown in a natural environment
- b. spread out in small groups
- c. gathered together in small spaces
- d. safe from pests and diseases

C. Match the sentence halves in Column I with their appropriate halves in Column II. Insert the letters a, b, c ... in the parentheses provided. There are more sentence halves in Column II than required.

Column I		Column II
1. Wild plants () a.	helps to improve output.
2. Wild animals () b.	cannot be altered.
3. A natural shelter () c.	damage crop plants.
4. Pests) d.	find food in their environment.
5. A study of the environment) e.	keeps wild animals safe from danger.
	f.	are safe from pests than farm plants are.
	g.	accept them as natural limitations.

D. Cross out the word or words that make each statement false, and write the word or words that make each statement true in the blank.

1.	Th	e	na	tu	ral	p	es	ts	a	nd	1	di	se	as	se	S	of	8	f	aı	rn	1]	pl	ar	nt	0	r	ar	iir	na	ıl	bı	ui	d	u	p	S	lo	W	ly.	
																					. , .																				
2.	In	th	ne	wi	ld	st	ate	e.	pl	lar	nt	S	aı	re	f	oi	ın	d	ir	1	al		ha	b	ita	ats	S.														

E. Give answers to the following questions.

- 1. What kind of environment do wild plants and animals need for their growth?
- 2. Why can't domesticated animals live in the same environment where wild animals do?
- 3. How is a farm different from a natural environment?
- 4. How does a study of the environment help the farmer?

VOCABULARY PRACTICE

A. Fill in the blank spaces with the appropriate words from the following table.

Verb	Noun	Adjective	Adverb
domesticate	domestication	domesticated	The state of the
produce	production	productive	productively
succeed	success	successful	successfully
suit		suitable	suitably

- 1. To grow plants, the farmer may imitate the conditions of the plant in the wild state.
- 2. Most farmers rice in this area.
- 3. Early man managed to cows and sheep by keeping them on farms.
- 4. This land has proved to be suitable for field crops.
- 5. Sheep and cows are animals.
- 6. A crop is one with a good output.
- 7. The environmental conditions must the plant's natural capacity for growth.
- 8. Plants which are selected can grow within the existing natural limitations.
- 9. When primitive man saved the seeds of some wild plants, the process of plant began.
- 10. Barley ranks below wheat, corn, rice, and probably oats in total world
- 11. Some deserts are now agriculturally
- 12. Careful imitation of the natural environment will usually bring great
- 13. If there are too many pests, crop plants cannot in growing well.
- 14. If the environmental conditions are not, the plant will not grow well.
- B. In each of the following items, put a check mark (✓) next to the word whose meaning is most nearly the same as that of the word printed in bold type.
 - 1. The farmer scattered seeds on the ground.
 - a. gathered

b. spread

c. harvested

d. watched

- 2. Under these circumstances, we cannot grow wheat here.
- a. controls

b. conditions

c. colonies

- d. combinations
- 3. Older methods of crop production have been altered.
- a. changed

b. desired

c. followed

- d. required
- 4. On farms, plants are gathered within a small area.
 - a. around

b. inside

c. toward

- d. about
- 5. Farming possibilities in some areas are exceedingly limited.
 - a. favorably

b. extremely

c. satisfactorily

d. rapidly

C. Circle S	for	the	pairs	with	the	same	meaning	and	D	for	the	pairs	with
different	mea	n in	gs.										

1. pest	insect	S	D
2. imitate	сору	S	D
3. output	production	S	D
4. colony	environment	S	D
5. scatter	spread	S	D

D. Circle the letter which gives the best answer to each of the following questions. There may be more than one correct answer for each question.

- 1. Which word refers to animals?
 - a. domesticated

b. desirable

c. hectare

d. pest

- e. beast
- 2. Which word refers to plants?
 - a. limit

b. sugar

c. beet

d. suitable

- e. grain
- 3. Which word refers to the environment?
 - a. countryside

b. product

c. output

d. habitat

e. alter

E. Fill in each blank with the appropriate form of the word given in parentheses.

1. Pests usually have (desire) effects on agricultural production.

- 2. A farmer may find the growth of some plants (satisfy) in one area but (satisfy) in another one.
- 3. Animals cannot grow well or remain healthy in (suit) environments.

F. Four of the five words given on each line have similar meanings or have something in common. Cross out the one which is different.

- 1. circumstances, conditions, output, state, environment
- 2. pest, disease, illness, shelter, sickness
- 3. requirement, colony, need, wish, necessity
- 4. restricted, limited, altered, surrounded, controlled
- 5. favorable, desirable, acceptable, suitable, available

G. Some adjectives are formed from other adjectives or adjectivals by adding the prefix un- to them. The prefix un- gives a negative meaning to the word.

Example:

desirable

undesirable

Form adjectives by adding un- to the following words and write them in the spaces provided.

T .	
1. favorable	
2. healthy	
3 limited	A Circle the letter, which gives the
4. restricted	Laurations, There way be more than
5. satisfactory	
6. suitable	as domestically and a second
7. available	The strings of a
0 1	

STRUCTURE STUDY

A. 'as many as' vs. 'as much as'

Study these sentences:

As many as 75,000 sugar beet plants are grown on a hectare of land.

1. As many as is used to show that the largest possible number is surprisingly large. Most people would not expect the number to be so large.

As much as one-half of a plant's tissue may be underground.

2. As much as is used to show that the largest possible amount is surprisingly large.

EXERCISE:

Write 'as many as' or 'as much as' appropriately in each blank.

- 1. 95% of all the water taken in by plants is lost in the form of water vapor.
- 2. There are 250,000 different species of flowering plants.

B. Past Participles as Adjectives

Study these sentences:

Wild plants are found in colonies.

The colonies are scattered.

Wild plants are found in scattered colonies.

Animals require protection.

The animals are domesticated.

Domesticated animals require protection.

NOTICE:

A past participle which shows a permanent condition is often used as an adjective.

EXERCISE:

1. Underline the past participles which are used as adjectives in this paragraph.

Domesticated animals cannot survive in the wild; they require a sheltered environment. If they are not carefully sheltered, they may be attacked by wolves or other predators. In sheep farming, trained dogs are used to protect the sheep and to warn the shepherd of danger. Such dogs are highly valued by all experienced sheep-farmers.

- 2. Combine each pair by using a past participle as an adjective. Write your sentence in the space provided.
 - 1. Plants are grown in spaces.
 The spaces are restricted.

2. Petroleum is another form of energy.

The energy has been stored.

3. A form of Greek is used for some scientific names.

The form is Latinized.

4. Science is a cumulative body of knowledge.

The knowledge has been organized.

FREE READING

Read this passage and then circle a, b, c, or d which best completes the following item.

When a plant is domesticated, gradual changes appear in its physical characteristics. The cause of these changes is not simply the fact that the seeds are planted by people instead of being scattered by nature. There are three main explanations for these changes: (1) seeds are moved from their original habitats to new environments where they may meet and interbreed with other varieties. (2) plants grown in a protected field do not have to compete with other plants, so they survive more easily than they would in the wild, and (3) the varieties which are planted are selected for their suitable characteristics, although the same characteristics would not be suitable for wild plants. As a result of these three factors, modern crop plants are usually very different from both their ancestors and their wild relatives.

The main idea of the passage is to explain

- a. how plants are selected as crop plants
- b. why domestication changes a plant's characteristics
- c. the ways in which crop plants differ from wild plants
- d. the effects of new habitats on a plant's physical characteristics

Translate the following passage into Persian.

Agriculture is the world's largest occupation. However, only 8 to 9 percent of the total land surface of the earth is under cultivation-a little over a thousand million hectares. Large areas of the earth are exceedingly unsuitable for crop production, and probably no more than one-half to two-thirds of the available land is used for agriculture during any one year. Although no one knows how much more cropland can be added to that which exists, there is agreement that we have not yet reached the limit. Advances in agricultural technology are required to make satisfactory use of great areas in the tropics and deserts that are now agriculturally unproductive.

Copy the technical terms and expressions used in this lesson. Then find the Persian equivalents of those terms and expressions and write them.

Lesson 8

PRONUNCIATION PRACTICE

experience /ik'spiorions/ aware /ə'weə(r)/ value /'vælju:/ operation /'ppa'rei[n/

plow /plau/ artificial /'a:t1'f1f1/ appreciate /ə'pri: [1e1t/ instrument /'instrument/

cloud formation /'klaud fo:mei[n/

indicate /'indikeit/ reasonably /'ri:znəbli/ weather forecaster /'weðə fɔ:ka:stə(r)/ behaviour /b1/he1v19(r)/

irrigation /111'ge1fn/ awareness /a'weanas/ equipment /1'kwipment/ consult /kən'salt/ essential /1'sen [1/ thermometer /0ə'mpmitə(r)/ temperature /'temprat fa(r)/ barometer /bə'rpmitə(r)/ hygrometer /hai'grpmitə(r)/ humidity /hju: 'midəti/ rain gauge /'reingeid3/ wind vane /'wind vein/ an em ometer /æni 'mpmitə(r)/ respectively /r1'spektivli/

duration /djug reifn/

profitable /'profitabl/

WORD STUDY

wind vane

completely fully

carry out do; put into practice

cut down reduce

artificial not natural; made by man

rain fall shower of rain; amount of rain falling within an area in a

definite time

thermometer instrument for measuring temperature

barometer instrument for measuring atmospheric pressure hygrometer instrument for measuring atmospheric humidity

gauge measuring instrument

> pointer on the top of a building, turned by the wind so as to facility and a selected makes

show its direction

anemometer

instrument for measuring wind force and speed

duration

time during which something continues

locality

geographical place

profitable

bringing profit; useful; advantageous

WORDS IN CONTEXT

aware

conscious; alert

Farmers need to be aware of the danger of pests which might

damage their crops.

forecast

predict the weather; say in advance what is going to happen

Rain has been forecasted for the weekend.

irrigation

supplying water to land or crops by artificial means

Crops can be grown on dry land if farmers use irrigation.

record

write down the account of facts and events

Some farmers record each year's rainy and sunny days.

respectively

in the order mentioned

Atmospheric humidity and pressure are measured by the

hygrometer and barometer, respectively.

plant

put in the ground to grow

The gardener has planted beautiful flowers in the front garden.

READING FOR COMPREHENSION

Weather for Farming

Experienced farmers are fully aware of the importance of the weather in their work. Rain is highly valued for its effects on plant growth, but many farming operations, such as plowing, should be carried out when the weather is dry. Harvesting in warm, dry weather cuts down the need for artificial drying, which can be expensive. The farmer, therefore, appreciates any help which he can receive from instruments or cloud formations that might indicate changes in the weather.

In fact, farmers themselves are usually reasonably good weather forecasters. This ability comes from long experience of local signs, the behavior of animals, birds and insects, and the movement of clouds. The widespread use of irrigation has led to a close watch on rainfall; an awareness of irrigation need helps a farmer to plan the most effective use of the equipment available.

To obtain the complete picture of the weather conditions at any time before or during a growing season, several instruments must be consulted and recordings must be taken. The four most essential weather instruments are: (1) the thermometer, which measures temperature, (2) the barometer, which measures air pressure, (3) the hygrometer, which measures humidity, and (4) the rain gauge, which measures rainfall. Wind direction and speed are measured by the wind vane and anemometer, respectively. Other measurements which are of great value to the farmer are records of evaporation, sunshine duration, and cloud cover. An examination of the complete weather records for his locality in previous years will help a farmer to select the most profitable crops and to determine the best possible dates for the operations of plowing, planting, irrigation, and harvesting.

A. Read each statement and decide whether it is true or false. Write 'T' for true and 'F' for false statements.

- 1. Plowing and harvesting should be done when the weather is dry.
- 2. A farmer may learn about changes in the weather from instruments or cloud formations.
- 3. Farmers forecast the weather from their experience of local signs, animal behavior, and cloud formation.
- 4. The anemometer measures wind direction.

B. Circle a, b, c, or d which best completes the following items.

- 1. In line 5, the word which refers to
 - a. harvesting

b. plowing

c. artificial drying

- d. farming operations
- 2. In line 9, the phrase This ability refers to
 - a. the use of instruments b. weather recording
- c. the use of local signs d. weather forecasting
- 3. Harvesting in warm, dry weather
 - a. increases the need for artificial drying
- b. cuts down the need for natural drying
- c. increases the need for natural drying
- d. reduces the need for artificial drying
- 4. Farmers pay special attention to rainfall because they
 - a. want to obtain a picture of the weather conditions
 - b. want to know when irrigation is necessary
 - c. need to measure the amount of rainfall
 - d. should carry out plowing and planting

	b. atmospheric pressure d. sunshine duration
a. benefit from his own agricultb. examine the weather records	ting and harvesting, a farmer must
c. select the most profitable cro d. buy several weather instrume	
Column II. Insert the letters a, b	olumn I with their appropriate halves in o, c, in the parentheses provided. There imn II than required.
Column I	Column II
 Crops Plowing Supplying crops with water A thermometer Good weather forecasting 	 () a. are made after consulting () various instruments. () b. is called irrigation. () c. shows how hot or cold the () weather is. () d. measures atmospheric pressure.
	() e. are usually gathered in dry weather. f. needs long years of experience. g. should be done in dry weather. h. is shown by a vane. i. is water.
D. Cross out the word or words that	t make each statement false, and write the
word or words that make each st	
 Experienced farmers are rarely their work. 	aware of the importance of the weather in
	its down the need for artificial drying.
E. Give answers to the following qu	estions.
1. Where does the farmer's ability	to forecast weather conditions come from?
2. Why should a farmer keep a c	close watch on rainfall?
3. Why is the weather of great in4. What instruments are used in	nportance to farmers? studying the weather?

VOCABULARY PRACTICE

A. Fill in the blank spaces with the appropriate words from the following table.

Verb	Noun	Adjective	Adverb
	aware	awareness	/
form	formation	formative	3/ 5 1 2 91
profit	profit	profitable	profitably
value	value	valuable	- mornianh

- 1. Rain at suitable times is very in plant growth.
- 2. It would be more to grow wheat than corn in this field.
- 3. The of clouds may indicate that it is going to rain.
- 4. When plants growing together a close group, they usually compete for water.
- 6. Modern equipment can be used to finish harvesting quickly.
- 7. Farmers can more by growing crops such as wheat and rice.
- 8. Plants in their early stages must be kept warm.
- 9. An of weather conditions helps farmers to use their equipment profitably.
- 10. Farmers their records of weather.
- 11. Farmers must be of the best methods of planting.
- 12. The available water is used to obtain the greatest possible

B. Circle S for the pairs with the same meaning and D for the pairs with different meanings.

1. instruments	equipment	S	D
2. recording	forecast	S	D
3. weather	climate	S	D
4. widespread	locality	S	D
5. awareness	knowledge	S	D

C. Fill in the blanks with the appropriate words from the following list.

indicate	harvest	measuring
temperature	hygrometer	humidity

Relative is the amount of water held by the air, stated as a	STRUCTURE STUDY
percentage of the maximum which it could hold at a particular An	A. 'Respectively'
instrument for the moisture in the air is called a/an This	Study these sentences:
instrument is used not only to the moisture content of the air, but	Wind direction is measured by the wind vane.
	Wind speed is measured by the anemometer.
also to show the humidity of grain after the	NOTICE:
	We can combine the above sentences by using respectively, as follows:
O. Circle a, b, c, or d which best completes the following items.	Wind direction and speed are measured by the wind vane and anemometer,
1. With correct of the weather, farmers can plan their work better.	respectively.
a. duration b. formation	EXERCISE:
c. forecasts d. operations	Combine each pair by using 'respectively'. Write your sentence in the space
2. Most farming operations cannot be in winter.	provided.
a. watched b. irrigated	1. The thermometer measures temperature.
c. dried out d. carried out	The barmometer measures air pressure.
3. Enough rainfall the need for irrigation.	Meaning string and arrivers as exceptions on the second strings and arrivers
a. brings up b. makes up	2. Primary consumers are known as herbivores.
c. breaks down d. cuts down	Secondary consumers are known as carnivores.
	has been established by the Warid Meteorological Operation As always and
E. Match the sentence halves in Column I with their appropriate halves in	and the state of t
Column II. Insert the letters a, b, c in the parentheses provided.	B. In finitives after the Verbs 'help' and 'enable'
Column II Column II	Study these sentences:
1. A hygrometer () a. measures wind speed.	A farmer selects the most suitable crops.
2. An anemometer () b. measures wind direction.	The weather records will help him. The weather records will help a farmer to select the most suitable crops.
3. A thermometer () c. measures temperature.	Farmers forecast the weather.
4. A barometer () d. measures humidity.	
5. A rain gauge () e. measures air pressure.	Long experience makes this possible. Long experience enables farmers to forecast the weather.
6. A wind vane () f. measures rainfall.	EXERCISE:
6. A wind valle	Combine each pair by using an infinitive. Write your sentence in the space
The second house we can be a proper at the control of the control	provided.
F. The suffix -meter, meaning instrument.	1. A farmer plans the most effective use of his equipment.
Examples: barometer hygrometer	An awareness of irrigation need makes this possible.
anemometer thermometer	
de la la la granda de la companya d	2. A farmer improves output.
Match the combining forms on the left with their root meanings on the	A study of the environment helps him.
right by inserting a, b, c in the parentheses provided.	A study of the environment helps min.
1. baro-	3. A farmer saves money.
2. anemo- () b. pressure	Dry weather at harvest time helps him.
3. hygro-	Dry weather at harvest time neips min.
4. thermo-	1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2

4.	Man built a permanent community.
	Farming made this possible.
5.	Man advanced more rapidly than he had before.
	A permanent community made this possible.

FREE READING

Read this passage and then circle a, b, c, or d which best completes the following item.

A weather forecast is the result of the work of many observers working at weather stations all over the world. Most of the stations are on land, usually at airports; stationary ships at sea and satellites in space are also used. Each weather station reports its observations on air temperature, barometric pressure, cloud formations, and other meteorological conditions to its central weather station. The report is written in a special international code which has been established by the World Meteorological Organization. At the central weather stations, the reports are carefully studied, and a weather forecast is prepared for each locality. Nevertheless, in areas where there is no weather station, the local people themselves forecast the weather on the basis of their long years of experience.

According to this passage, local weather stations send their weather reports to

- a. space satellites
- b. the World Meteorological Organization
- c. central weather stations
- d. weather stations at airports

Translate the following passage into Persian.

On the basis of the average yearly precipitation, including rainfall and other precipitation, the land surface of Iran can be divided into 5 moisture regions:

1. Arid (less than 100 mm)

Areas of the Kavir region, Dasht-i-Kavir, and Dasht-i-Lut About 13% of the total surface

2. Semi-arid (100-250 mm)

Areas of Khorasan, Azarbaijan, central Iran, and the Persian Gulf coast

About 61% of the total surface

3. Dry subhumid (250-500 mm)

Areas of the Elburz and Zagros mountains

About 17% of the total surface

4. Moist subhumid (500-1000 mm)

The highest mountains and part of the eastern Caspian coast About 8% of the total surface

5. Humid (1000-2000 mm)

The southern Caspian coast About 1% of the total surface

Copy the technical terms and expressions used in the lesson. Then find the Persian equivalents of those terms and expressions and write them.

Lesson 9

PRONUNCIATION PRACTICE

crust /krast/ solution /sə'lu: fn/

chemical /'kemikl/ lime /laim/
biological /baiə'lbd3ikl/ layer /'leiə(r)/
process /'prəwses / US: / 'proses/ beneath /bi'ni:0/

mineral /'minorol/ burrow /'bʌrəʊ/
expand /ik'spænd/ organic /ɔ:gænik/

contract /kənˈtrækt/ horizontal /horizontal / US: / hɔ:r-/

similarly /'similali/
provided /pro'vaidid/
available /o'veilabl/
decay /di'kei/

horizon /hə'raizn/
extend /ik'stend/
solid /'solid/
profile /'praufail/

particle /'pɑ:tɪkl/ typical /'tɪpɪkl/

mature/mo'tjvo(r)/

WORD STUDY

root usually underground part of a plant that absorbs and stores

food

go on continue

hardy capable of surviving severe cold, drought and other hard

conditions

provided that if

decay decompose; rot

lime white substance used in making cement; calcium oxide

force press strongly; move something against resistance

beneath below; in a lower place

earthworm round-bodied boneless animal that burrows into soil

mole small animal with silky fur living in tunnels which it makes in

the ground

burrow a hole or tunnel in the ground made by an animal

horizon Layer of soil identified by physical characteristics, particular

fossils, etc.

subsoil layer lying between the soil above and the bed-rock below

topsoil surface soil in which plants grow

profile side view of something

WORDS IN CONTEXT

weathering chemical or mechanical processes by which rocks exposed to

the weather decay to soil

Rocks turn into soil in the process of weathering.

contract make or become smaller or shorter by drawing together

Metals contract as they become cool.

solution state of being dissolved

This liquid contains salt in solution.

layer thickness of material, especially one of several, spread over a

surface

Several layers of soil have been formed beside the river.

organic relating to organs, organisms, or chemical substances contain-

ing carbon compounds

The study of chemistry has two branches: organic chemistry

and inorganic chemistry.

extend spread; stretch to greater length

This farm extends from here to the river.

READING FOR COMPREHENSION

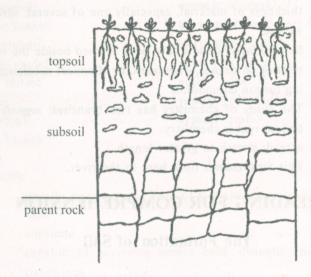
The Formation of Soil

The soil which now covers the outer part of the earth's crust was not present when the earth was young. The surface of the earth at that time was either rock or water, but physical, chemical, and biological processes led to the formation of soil.

The mineral matter which forms the greater part of all soils has come from the breaking down of the rocks of the earth. This process, which is called weathering, occurs in several different ways. As rocks expand in hot weather and contract in cold weather, small pieces may be broken off. Sometimes, empty spaces in rocks are filled by water, which later freezes. Freezing causes

the water to expand, and this may also break the rocks. Similarly, the roots of trees may grow into the spaces in rocks and create pressure which causes the rocks to break. In these and other ways, the weathering of rock into soil has been going on for thousands of years and is still continuing.

Hardy plants soon take root on any broken-up rock waste provided that moisture and air are available. When the plants die, the decayed remains mix with the rock particles, and the result is the beginning of a mature soil. Rain brings various salts in solution and carries away certain chemicals, such as lime. Animals and plants enable air to enter the soil: plants help air to enter the soil because of their roots, which force themselves down into lower layers of the soil and even into the rock beneath; and animals, such as the earthworm and the mole, enable air to enter the soil because of their burrowing habits. The dead bodies of all living things, together with their waste products, add more organic material to the soil.



A Soil Profile

As soil is formed, horizontal layers, called horizons, are developed. At the surface, there is a layer of soil in which plants grow. This horizon may extend downwards about 15-30 centimeters in a mature soil. The second layer is known as the subsoil; it is lighter in color than the topsoil and contains a large number of stones. The third layer consists of solid rock, which is usually the parent material of the soil above. These three horizons make up the profile of a typical fully-developed soil.

	whether it is true or false. Write T' for
true and 'F' for false statements.	
	soil is formed by the weathering of rock.
	ants which take root on a rock waste help
to form a mature soil.	
3. Rain adds certain chemical	
4. Hardy plants can take root	t on any broken-up rock waste.
c. Circle a, b, c, or d which best com	upletes the following items.
	to
a. cold weather	b. expanding on freezing
c. filling the rocks with water	d. the empty space
2. In line 22, the word their refers	
a. dead bodies	b. burrowing animals
	d. lower layers
3. Weathering is the process of	b. repeated expansion and contraction
a. making a soil mature	
	d. the breaking down of rocks
4. Weathering occurs in	Lan what ways does weathering occur.
	b. two different ways
c. cold weather	d. hot weather
	oil because of their burrowing habits.
a. Plants	b. Physical processes
c. Some animals	d. Rocks
a. with the largest number of st	tones
b. which is light in color	
c. in which plants grow	
d. that begins 15-30 cm. below	the surface
C. Match the sentence halves in Co	olumn I with their appropriate halves in
Column II. Insert the letters a, b	o, c in the parentheses provided. There
are more sentence halves in Colu	mn II than required.
Column I	Column II

Column I		Column II
1. Earthworms	()	a. is the part of a plant inside the
2. Mineral matter	()	soil dosen yedt nott A
3. Rocks		b. are weathered by several
4. A mole	()	processes.

6. empty	() f. downward	STRUCTURE STUDY		
7. organic () g. mineral		A. In finitives after the Verb 'cause'		
7. 0.8	h. extend	Study these sentences:		
and the state of the first of the state of t		Water expands. Freezing causes this.		
examples for each one.		EXERCISE:		
Combining Form	F	Combine each pair by using an	in finitive. Write your sentence in the space	
circum-	around	provided.		
col-; com-; con-	together with	1. Rocks contract.		
de-	down or opposite	Cold weather causes this.		
e-; ex-	out from	THE ROLL OF THE PROPERTY OF TH		
re- back or again		2. Water evaporates from the surface of the earth.		
sub- under		The sun's heat causes this.		
Now write the following words as examples in the appropriate blanks above.		caemica chimese can anks minio		
		3. The water vapor condenses.		
		Cooling causes this.		
reflect	expand transform contract		no factorioù asoliek en ous et i et en eve	
subsoil	collect decay respond			
extend combine reproduce circumstances		B. Countable and Uncountable Nouns		
evaporate decompose condense		Most nouns are either countable or uncountable. However, there are some		
Cvaporare	Miles of the Account	nouns which are both count	able and uncountable but with different	
F Many nouns ha	ve related adjectives ending in -al or -ical.	meanings.		
Examples: nature natural natural		EXERCISE:		
chemistry chemical		Write the Persian meanings of the following countable and uncountable		
Some salts are found .c.i.e. in drinking water.		nouns in the spaces provided.		
Form adjectives b	y adding -al or -ical to the following nouns and write them	Coun table		
in the spaces prov	vided. Make the necessary spelling changes if required.	a light light	ghts	
1. horizon		a paper not lead to be pa	apers	
2. physics	and not estimate a state disc. I manufar 2 to almost off the fold. Co.	a glass glass gl	asses	
3. theory	e exact habitons assumented sub- a - a d a marks	a generation ge	enerations	
4. mine	And the state of t	Un coun table		
5. type	Bamplo3.	light about large said the party	exidence that the topsail has been formed.	
6. agriculture	heave-1	paper	nambers such as the material carried a	
7. biology	Ask Carrier China to the second China	glass glass glass glass glass	Accounted by placing In agriculture, a sandy	
8. ecology	Aleaned A Aleaned A	generation	Milliamuth tram a sandy soil with a diff	
9. industry	avoda b ()			
10. mathematics		Some nouns, especially the n	ames of substances, are both countable and	