BIOCHEMISTRY

Give definitions of each word or phrase:

absorption
amino acid
carbohydrates
content
deamination
decarboxylation
deficiency
derivative
digestion
disorder
enzyme
coenzyme
essential
non-essential
glucose level
inhibitor
to inhibit
injury (damage)
lipids
liver cirrhosis
low-density
high-density
nucleic acid
oxidation
oxidative
precursor
proteins

putrefaction
respiratory chain
(ir)reversible
to increase
to decrease
to maintain
to occur
urea
uric acid
urine

Task 1. Fill in the missing letters.

1. C__rr__os__s _____
2. __oenz__m__ _____
3. D__f__c__enc__ _____
4. C__n__e__t _____
5. In__ib__t__r _____
6. P__tr__f__ct__o__ _____
7. C__rb__h__dr__tes _____

Task 2. Unscramble the following words.

1. i-i-p-d-s-l _____
2. u-c-c-r-o _____
3. s-t-o-i-n-e-r-p _____
4. c-i-d-a _____
5. y-n-z-m-e-e _____
6. e-u-r-i-n _____
7. a-t-i-o-n-o-x-i-d _____

Task 3. Match the words from column A with ones from column B to make a word combination.

Column A	Column B
1 respiratory	a) acid
2 protein	b) density
3 nucleic	c) digestion
4 low-	d) chain
5 non-	e) level
6 amino	f) essential
7 glucose	g) acid

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Task 4. Fill in the gaps using the words from the box.

carbohydrates	*oxidation*	*decarboxylation*	
enzyme	*uric*	*digestion*	*essential*

1. It can result in deficiency of the following _____.
2. _____ is a chemical reaction that removes a carboxyl group and releases carbon dioxide.
3. Protein _____ in the stomach is carried out by pepsin secreted in form of an inactive pepsinogen.
4. _____ are the sugars, starches and fibers found in fruits, grains, vegetables and milk products.
5. What component prevents the _____ of the vitamin?
6. A balanced diet is _____ for being healthy.
7. Analysis of a patient's urine showed a big concentration of the _____ acid.

Task 5. Read the text

BIOCHEMISTRY

Biochemistry is the area in the life sciences, which offers insight into the continuous changes that occur in organisms. To our knowledge, biochemistry, sometimes called biological chemistry, is the study of chemical processes within and relating to living organisms. By controlling information flow through biochemical signaling and the flow of chemical energy through metabolism, biochemical processes give rise to the complexity of life. Over the last decades of the 20th century, biochemistry has become so successful at explaining living processes that now almost all areas of the life sciences from botany to medicine to genetics are engaged in biochemical research. Today, the main focus of pure biochemistry is on understanding how biological molecules give rise to the processes that occur within living cells, which in turn relates greatly to the study and understanding of tissues, organs, and whole organisms—that is, all of biology.

It is a well-known fact that biochemistry is closely related to molecular biology, the study of the molecular mechanisms by which genetic information encoded in DNA is able to result in the processes of life. Depending on the exact definition of the terms used, molecular biology can be thought of as a branch of biochemistry, or biochemistry as a tool with which to investigate and study molecular biology.

It is common knowledge that much of biochemistry deals with the structures, functions and interactions of biological macromolecules, such as proteins, nucleic acids, carbohydrates and lipids, which provide the structure of cells and perform many of the functions associated with life. The chemistry of the cell also depends on the reactions of smaller molecules and ions. These can be inorganic, for example water and metal ions, or organic, for example the amino acids, which are used to synthesize proteins. The mechanisms by which cells harness energy from their environment via chemical reactions are known as metabolism. The findings of biochemistry are applied primarily in medicine, nutrition, and agriculture. In medicine, biochemists investigate the causes and cures of diseases. In nutrition, they study how to maintain health wellness and study the effects of nutritional deficiencies. In agriculture,

biochemists investigate soil and fertilizers, and try to discover ways to improve crop cultivation, crop storage and pest control.

Considering everything, we have to point out that biochemistry asks how the remarkable properties of living organisms arise from the thousands of different lifeless biomolecules. When these molecules are isolated and examined individually, they conform to all the physical and chemical laws that describe the behavior of inanimate matter – as do all the processes occurring in living organisms. The study of biochemistry shows how the collections of inanimate molecules that constitute living organisms interact to maintain and perpetuate life animated only by the physical and chemical laws that govern the nonliving universe.

To conclude, you have to realize the fact that, although, biochemistry provides important insights and practical applications in medicine, agriculture, nutrition, and industry, its ultimate concern is with the wonder of life itself.

Task 6. Answer the questions:

1. What does biochemistry study?
2. How do biochemical processes give rise to the complexity of life?
3. What is the main focus of pure biochemistry nowadays?
4. What is metabolism?
5. What does biochemistry deal with?
6. What sciences is biochemistry closely related to?

Task 7. Which of the following statements are true and which are false?

1. The study of biochemistry shows how the collections of inanimate molecules interact to maintain life animated only by the physical and chemical laws.
2. It is common knowledge that biochemistry is not closely related to biology.
3. The chemistry of the cell also depends on the reactions of smaller molecules and ions.

Task 8. Match the words from column A with synonyms from column B.

Column A	Column B
1 to maintain	a) parasite
2 complexity	b) to happen
3 to occur	c) without life; dead
4 lifeless	d) complication
5 to investigate	e) interplay
6 interaction	f) to study
7 via	g) to keep an activity continue in the same way
8 to isolate	h) to separate from
9 pest	i) with the help

Task 9. Complete the sentences choosing the correct option a, b or c:

1. We have to point out that biochemistry asks how the remarkable properties of living organisms arise from the thousands of _____.

a) similar lifeless biomolecules.
b) different lifeless biomolecules.
c) different living biomolecules.

2. Molecular biology is the study of _____

a) the molecular mechanisms by which genetic information encoded in DNA is able to result in the processes of life.
b) biological processes which occur in organisms.
c) molecular interactions by which genetic information is coded in DNA.

3. In medicine, biochemists investigate _____

a) the reactions of our organism.
b) the origin of diseases.
c) the causes and cures of diseases.

Task 10. Imaging that you are making a report for a big company. Why do people say that biochemistry is the future of our planet? Comment on the following ideas:

"Biochemistry is the science of life. All our life processes – walking, talking, moving, feeding – are essentially chemical reactions. So biochemistry is actually the chemistry of life, and it's supremely interesting,"- Aaron Ciechanover.

PHARMACEUTICAL BOTANY

Give definitions of each word or phrase:

bark
bud
bulb
cambium
conductive bundle
conductive tissue
covering tissue
cyme inflorescence
diagnostic features
drupe
germination
glome (head)
growth
cavity
leaf blade(lamina)
lipoid substance
meristem
panicle
pollen
primary meristem
rhizome
root
secretary cells
seed
spike
sprout

starch
stem

stoma apparatus
stomata
suction
tuber
umbel
bast fibers

Task 1.Fill in the missing letters.

1. Ca_b_um_____
2. S_o_a_a_____
3. S_r_ut _____
4. C_v_ty_____
5. M_ri_t_m _____
6. T_b_r_____
7. R_iz_me _____

Task 2. Unscramble the following words.

1. n-s-u-t-c-i-o_____
2. m-e-g-o-l_____
3. e-d-e-s _____
4. d-e-p-u-r _____
5. e-a-n-c-l-p-i _____
6. e-s-k-i-p_____
7. u-b-l-e-m _____

Task 3. Match the words from column A with ones from column B to make a word combination.

Column A	Column B
1 cyme	a) meristem
2 stoma	b) tissue
3 covering	c) substance
4 lipoid	d) apparatus

5 primary	e) cells
6 secretary	f) features
7 diagnostic	g) inflorescence

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Task 4. Fill in the gaps using the words from the box.

buds	*root*	*bulb*	*stem*
bark	*pollen*	*germination*	

1. _____ is an underground radially symmetric axial organ.
2. _____ are short embryonic stems.
3. _____ has strongly shortened and fleshy scale leaves.
4. _____ is the central part of a plant above the ground, from which the leaves grow.
5. _____ is yellow dust on the male part of a flower that courses other flowers to produce seeds when it is carried to them.
6. _____ is the process by which an organism forms from a seed.
7. _____ is the strong outer covering of a tree.

Task 5. Read the text.

There are close to 250,000 species of flowering plants, second in abundance only to insects. All have three basic organs (roots, stems, and leaves) and represent the most abundant and advanced terrestrial plants, which include trees, herbaceous plants, herbs, shrubs, all grasses, and some aquatic plants. Angiosperms are the source of most of the food on which human beings and other mammals rely and of many raw materials and natural products that provide the infrastructure for modern civilizations.

Angiosperms are divided into two large groups.The dicotyledonea, or dicotyledons (also called magnoliopsida),the larger of the two groups, includes trees and shurbs and herbaceous plants. Dicots have two seed leaves (cotyledons) in the embryo. The smaller of the two groups is the monocotyledoneae, or monocotyledons (also called liliopsida), that include rice, corn, palms, bananas, coconuts, grasses, lilies, orchids, andgarden plants. Monocots have a single seed leaf in the embryo.

The life cycles of the angiosperms have several advantages over those of conifers, or gymnosperms, the only other group of seed-bearing plants, and from which scientists believe the angiosperms evolved during the Cretaceous era some 145 million years ago. They reproduce via flowers instead of cones; their ovules are embedded in

female sporophylls instead of being exposed on a bare ground surface (e.g., apple); the gametophyte is reduced; and seeds are enclosed in fruits that develop from the ovary or related structures.

Angiosperms have a true flower that is either a highly modified shoot with modified stem and leaves or a condensed and reduced compound strobilus (conelike structure) or inflorescence (flower cluster). Floral parts are in the form of sepals, petals, stamens, and carpels,while the ovules—the structure that develops in the plant ovary and contains the female gametophyte—are contained within the megasporophylls that are sealed in most angiosperm families. Pollination is facilitated by wind, water, or many animals. Self-pollination as well as parthenogenesis, a process by which embryonic development is initiated directly from an unfertilized cell, are common. Double fertilization occurs in all members of the phylum to produce the unusual stored food tissue called endosperm. Sexual reproduction in flowering plants occurs by this process of double fertilization in which one fertilization event forms an embryo, and a second fertilization event produces endosperm, a polyploid embryo-nourishing tissue found only in the angiosperms. Seeds are dispersed through a variety of forms such as fruits, follicles, capsules, berries, drupes, samaras, nuts, and achenes.

Task 6. Answer the questions:

1. What are angiosperms?
2. What do monocots have?
3. How many seed leaves do dicots have?
4. What do angiosperms have?
5. What is pollination facilitated by?
6. What is the structure of the floral parts?

Task 7. Match the words from column A with synonyms from column B.

Column A	Column B
1 raw material	a) contain
2 natural	b) public
3 to occur	c) to think
4 common	d) to generate
5 to believe	e) mixture

6 to reproduce	f) to shut
7 combination	g) inculcate
8 to close	h) to take place
9 to include	i) innate
10 to embed	j) raw produce

Task 8. Choose the phrase which completes each sentence:

1. Self-pollination as well as parthenogenesis, a process by which embryonic development is initiated directly from an unfertilized cell, are _____.

a) false
b) true
c) common

2. Seeds are dispersed through a variety of forms such as _____.

a) stems and leaves.
b) fruits, capsules, etc.
c) roots and rhizomes.

3. Flowering plants have_____and represent the most abundant and advanced terrestrial plants.

a) three basic organs
b) ten basic organs
c) two basic organs

4. Monocots have _____in the embryo.

a) a single seed leaf
b) a pair of leaves
c) a flower

Task 9. Put the words in the correct order to make up a sentence:

1. There /to /are/off /lowering /250,000 / close / species.

_____

_____

2. instead /cones / flowers / of /They / via /reproduce

_____

_____

3. the /advantages/have several/ The /cycles /those /of/ angiosperms/ over / conifers/ gymnosperms /life

_____

_____

4. The / groups /is / the /smaller /the /monocotyledoneae/ of /two

_____

_____

5. endosperm /occurs in /to produce/stored called / of the phylum fertilization / Double/ all members /the unusual / food tissue

_____

_____

Task 10. Comment on the following:

"Botany is the eldest daughter of medicine", – Johann Hermann Baas