

Biomolecules

I. Select the correct answer from the following questions:

Question 1.

Glucose is a

- (a) Ketose hexose sugar
- (b) Pyronose pentose sugar
- (c) Aldose hexose sugar
- (d) Furanose pentose sugar.

▼ [Answer](#)

Answer: (c) Aldose hexose sugar.

Question 2.

Lactose molecule is composed of

- (a) Fructose+Fructose
- (b) Glucose+Fructose
- (c) Glucose+Glucose
- (d) Glucose+Galactose.

▼ [Answer](#)

Answer: (d) Glucose+ Galactose.

Question 3.

Which group contains all polysaccharides?

- (a) Glycogen, sucrose and maltose
- (b) Maltose, lactose and sucrose
- (c) Glycogen, glucose and sucrose
- (d) Glycogen, cellulose and starch.

▼ [Answer](#)

Answer: (d) Glycogen, cellulose and starch.

Question 4.

Amino acids are formed from

- (a) Proteins
- (b) Fatty acids
- (c) Volatile acid
- (d) α - keto acids.

▼ [Answer](#)

Answer: (d) α - keto acids.

Question 5.

A nucleoside is formed of

- (a) Phosphate and nitrogen base
- (b) Pentose sugar and phosphate
- (c) Pentose sugar, phosphate and nitrogen base
- (d) Pentose sugar and nitrogen base.

▼ [Answer](#)

Answer: (d) Pentose sugar and nitrogen base.

Question 6.

The most abundant component of a cell is

- (a) Lipid
- (b) Protein
- (c) Water
- (d) Cellulose

▼ [Answer](#)

Answer: (c) Water.

Question 7.

Maximum amount of iron occurs in

- (a) Proteins
- (b) Bone cells

- (c) Leucocytes
- (d) Erythrocytes.

▼ [Answer](#)

Answer: (d) Erythrocytes.

Question 8.
Calcium is required for
(a) Blood clotting
(b) Bone formation
(c) Muscle contraction
(d) All of these.

▼ [Answer](#)

Answer: (d) All of these

Question 9.
Immediate source of energy is
(a) ATP
(b) Glucose
(c) NADH
(d) Pyruvic acid.

▼ [Answer](#)

Answer: (a) ATP.

Question 10.
An amino acid without an asymmetrical carbon atoms
(a) Glycine
(b) Threonine.
(c) Proline
(d) Histidine.

▼ [Answer](#)

Answer: (a) Glycine.

Question 11.
The most abundant protein is
(a) Glycine
(b) Valine
(c) Arginine
(d) Collagen

▼ [Answer](#)

Answer: (d) Collagen.

Question 12.
Basic unit of nucleic acid is
(a) Pentose sugar
(b) Nucleotide
(c) Phosphoric acid
(d) Nitrogen base.

▼ [Answer](#)

Answer: (b) Nucleotide.

Question 13.
The amino acids which are not synthesized in our body are called
(a) Deaminated
(b) Non-essential
(c) Essential
(d) Proteinaceous.

▼ [Answer](#)

Answer: (c) Essential.

Question 14.
Which of the following is a non-reducing sugar?

- (a) Lactose
- (b) Glucose
- (c) Maltose
- (d) Sucrose.

▼ [Answer](#)

Answer: (d) Sucrose.

Question 15.

The primary structure of a protein is due to

- (a) ionic bonds
- (b) hydrogen
- (c) Peptide bonds
- (d) S-S linkage

▼ [Answer](#)

Answer: (c) Peptide bonds.

Question 16.

A source of maximum energy in a cell is

- (a) proteins
- (b) Vitamins
- (c) Fats
- (d) Carbohydrates.

▼ [Answer](#)

Answer: (d) Carbohydrates.

Question 17.

Starch is a polymer of a basic unit of starch is

- (a) Maltose
- (b) Sucrose
- (c) Glucose
- (d) Fructose.

▼ [Answer](#)

Answer: (c) Glucose.

Question 18.

Glycogen is a polymer of

- (a) Galactose
- (b) Glucose
- (c) Sucrose
- (d) Fructose.

▼ [Answer](#)

Answer: (b) Glucose.

Question 19.

Cellulose occurs in

- (a) Cell wall
- (b) Cell membrane
- (c) Cell interior
- (d) Tunicates.

▼ [Answer](#)

Answer: (a) Cell wall.

Question 20.

Protein/enzyme is formed by chemically bonding together of

- (a) Lipases
- (b) Carbohydrates
- (c) Amino acids
- (d) CO₂

▼ [Answer](#)

Answer: (c) Amino acids.

Question 21.

The most diverse molecules in a cell are

- (a) Carbohydrates
- (b) Proteins
- (c) Lipids
- (d) Mineral salts.

▼ [Answer](#)

Answer: (b) Proteins.

Question 22.

Besides having, C,H,O which of the following also contains S and P?

- (a) Fats
- (b) Vitamins
- (c) Carbohydrates
- (d) Proteins.

▼ [Answer](#)

Answer: (d) Proteins.

Question 23.

Natural silk fibre is

- (a) Polyester
- (b) Polysaccharide
- (c) Polyamide
- (d) Polyacid.

▼ [Answer](#)

Answer: (c) Polyamide.

Question 24.

The enzymes having slightly different molecular structure but similar catalytic reaction are called

- (a) Coenzyme
- (b) Holoenzyme
- (c) Proenzyme
- (d) Isoenzyme.

▼ [Answer](#)

Answer: (d) Isoenzyme.

Question 25.

Enzyme that functions at pH = 2.0 is

- (a) Lipase
- (b) Ptyalin
- (c) Pepsin
- (d) Trypsin.

▼ [Answer](#)

Answer: (c) Pepsin.

Question 26.

Enzymes are polymers of

- (a) Fatty acids
- (b) Chromosomes
- (c) Amino acids
- (d) Nucleus and ribosomes.

▼ [Answer](#)

Answer: (c) Amino acids.

II. Fill in the blanks:

Question 1.

All the elements present in a sample of are also present in a sample of living tissue.

▼ [Answer](#)

Answer: earth's crust

Question 2.

One is called the filtrate or more technically, the acid soluble, peol, and the second, the retentate or the acid insoluble

▼ [Answer](#)

Answer: fraction.

Question 3.

One and a compound.

▼ [Answer](#)

Answer: isolates, purifies

Question 4.

Amino acids are containing an amino group and an acidic group as substituents on the some carbon i.e., the α -carbon

▼ [Answer](#)

Answer: organic compounds

Question 5.

The and properties of amino acids are essentially of the amino, carboxyl and the 'R' functional groups.

▼ [Answer](#)

Answer: chemical, physical

Question 6.

..... are generally water insoluble.

▼ [Answer](#)

Answer: Lipids

Question 7.

Some lipids have and a organic compound in them.

▼ [Answer](#)

Answer: Phosphorous, Phosphorylated

Question 8.

When found attached to a sugar, they are called

▼ [Answer](#)

Answer: nucleosides.

Question 9.

..... are not strictly macromolecules.

▼ [Answer](#)

Answer: Lipids

Question 10.

Proteins are

▼ [Answer](#)

Answer: polypeptides

Question 11.

..... are long chains of sugars.

▼ [Answer](#)

Answer: Polysaccharides

Question 12.

....., is a polymer of fructose.

▼ [Answer](#)

Answer: Insulin

Question 13.
Almost all are positive.

▼ [Answer](#)

Answer: enzymes

Question 14.
The most important form of energy currency in living systems is the bond energy in a chemical called

▼ [Answer](#)

Answer: adenosine triphosphate(ATP)

Question 15.
The living state is a steady state to be able to perform work.

▼ [Answer](#)

Answer: non-equilibrium

III. Mark the statement true (T) or false (F)

Question 1.
Biomacromolecules are polymers. They are made of building blocks which are different.

▼ [Answer](#)

Answer: True.

Question 2.
Proteins are heteropolymers made of starch acids.

▼ [Answer](#)

Answer: False

Question 3.
Nucleic acids (RNA and DNA) are composed of nucleotides.

▼ [Answer](#)

Answer: True.

Question 4.
Enzyme, are composed of one or several polypeptide chains.

▼ [Answer](#)

Answer: True.

Question 5.
When the binding of the chemical shuts off enzyme activity, the process is called inhibition and the chemical is called an inhibitor.

▼ [Answer](#)

Answer: True.

Question 6.
When the inhibitor closely resembles the substrate in its molecular structure and inhibits the activity of the enzyme, it is known as competitive inhibitor.

▼ [Answer](#)

Answer: True.

Question 7.
Almost all enzymes are proteins. There are some nucleic acids that behave like enzymes. These are called ribozymes.

▼ [Answer](#)

Answer: True.

Question 8.
The latter constitute degradation and hence are called catabolic pathways.

▼ Answer

Answer: True.

Question 9.
The most important form of energy currency in living systems is the bond energy in a chemical called adenosine triphosphate (ATP).

▼ Answer

Answer: True.

Question 10.
Together all these chemical reactions are called metabolism.

▼ Answer

Answer: True

Question 11.
The pitch would be $34\text{\AA}$. The rise per base pair would be $3.4\text{\AA}$. This form of DNA with the above mentioned salient features is called B-DNA.

▼ Answer

Answer: True

Question 12.
In a polysaccharide the individual mono saccharides are linked by a glycosidic bond. This bond is also formed by dehydration.

▼ Answer

Answer: True

Question 13.
In addition, the long protein chain is also folded upon itself like a hollow wollen ball, giving rise to the secondary structure.

▼ Answer

Answer: False

Question 14.
Other regions of the protein thread are folded into other forms in what is called the tertiary structure.

▼ Answer

Answer: False

Question 15.
We can take any living tissue (a vegetable or a piece of liver etc.) and grind it in trichloroacetic acid (Cl_3CCOOH) using a mortar and a pestle.

▼ Answer

Answer: True

IV. Match the items of column I with the items of column II

Column I	Column II
(a) Trichloroacetic acid	1. Consist of nucleotides only.
(b) Inorganic compounds like	2. Uridine and cytidine are nucleotides.
(c) Inorganic elements like	3. Polypeptides.
(d) Nucleic acid like DNA and RNA	4. $\text{Cl}_{13}\text{CCOOH}$
(e) Adenosine, guanosine, thymidine	5. Cellulose
(f) In addition, the long protein chain is also folded upon itself like a hollow	6. Wollen ball, giving rise to the tertiary structure.
(g) Together all these chemical reactions are called	7. is the bond energy in a chemical called adenosine triphosphate (ATP).
(h) Proteins are	8. sulphate, phosphate.
(i) Plant cell walls are made of	9. calcium, magnesium.
(j) Cotton fibre is	10. Includes all enzymes catalysing inter-conversion of optical, geometric or positional isomers.

(k) The most important form of energy currency in living systems	11. molecular structure and inhibits the activity of the enzyme, it is known as competitive inhibitor.
(l) Adult human haemoglobin	12. metabolism
(m) The chemical which is	13. Cellulose.
(n) Isomeres	14. Consists of 4 subunits.
(o) When the inhibitor closely resembles the substrate in its	15. converted into a product called a 'substrate'

▼ Answer

Answer:

Column I	Column II
(a) Trichloroacetic acid	4. Cl_3CCOOH
(b) Inorganic compounds like	8. sulphate, phosphate.
(c) Inorganic elements like	9. calcium, magnesium.
(d) Nucleic acid like DNA and RNA	1. Consist of nucleotides only.
(e) Adenosine, guanosine, thymidine	2. Uridine and cytidine are nucleotides.
(f) In addition, the long protein chain is also folded upon itself like a hollow	6. Wollen ball, giving rise to the tertiary structure.
(g) Together all these chemical reactions are called	12. metabolism
(h) Proteins are	3. Polypeptides.
(i) Plant cell walls are made of	5. Cellulose
(j) Cotton fibre is	13. Cellulose.
(k) The most important form of energy currency in living systems	7. is the bond energy in a chemical called adenosine triphosphate (ATP).
(l) Adult human haemoglobin	14. Consists of 4 subunits.
(m) The chemical which is	15. converted into a product called a 'substrate'
(n) Isomeres	10. Includes all enzymes catalysing inter-conversion of optical, geometric or positional isomers.
(o) When the inhibitor closely resembles the substrate in its	11. molecular structure and inhibits the activity of the enzyme, it is known as competitive inhibitor.