
	INDIAN SCHOOL AL WADI AL KABIR	
Class: XI	Department: SCIENCE 2023-24 SUBJECT: BIOLOGY	Date of submission: 21.05.2023
Worksheet 1 with answers	CHAPTER: Biomolecules	Note: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

Long Answers Type Questions

Q1. Explain Watson and Crick's model of DNA structure. (3 marks)

Q2. Give reasons: (3 marks each)

- a) Starch gives a blue-black colour with an iodine solution.
- b) Amino acid is called substituted methane.

Q3. Assertion Reason-based questions: (1 Mark each)

- a) Assertion and reason both are correct statements and reason explains the assertion.
- b) Both assertion and reason are wrong statements.
- c) Assertion is correct statement and reason is wrong is wrong statement.
- d) Assertion is wrong statement and reason is correct statement.

Assertion: Glycosides are hydrolysed in acidic conditions.

Reason: Glycosides are acetal.

Assertion: Proteins are the polymers of amino acids.

Reason: Only an amino acid can form peptide bonds.

Assertion: Two strands of DNA are complementary to each other.

Reason: They are linked by Disulphide bonds.

Assertion: Vitamins are an essential part of the dietary system of our body.

Reason: Our body can also synthesize almost all vitamins.

Objective Type Answers (1 Mark each)

Q4. Which of the following carbohydrate is stored in liver?

- a) Cellulose
- b) Glucose
- c) Glycogen
- d) Maltose

Q5. The helical structure of a protein is stabilized by:

- a) Peptide Band
- b) Dipeptide band
- c) Hydrogen band
- d) Vander Waal's forces

Q6. Which of the following is a vitamin?

- a) Acetic Acid
- b) Ascorbic acid
- c) Palmitic acid
- d) Saccharic acid

Q7. Which of the following is true for protein synthesis?

- a) Amino acids are directly recognized by m-RNA.
- b) The third base of the codon is less specific.
- c) Only one codon codes for an amino acid.
- d) Every t-RNA has more than one amino acid attachment.

Q8. The number of chiral carbons in beta-D (+) glucose is:

- a) five
- b) six
- c) three
- d) four

Short Answers Type Question (2 Marks each)

Q9. Proteins are polymers of amino acids. Name the bond which links two amino acids.

Q10. Why is cellulose considered to be a homopolymer?

Q11. Why do amino acids change their structures at different pHs?

Q12. Represent the zwitterion form of amino acids.

Q13. What is the primary structure of proteins?

Q14. Expand DNA and RNA.

Q15. What is the energy currency in the living systems?

Very long Answer Type Questions (5 Marks each)

Q16. Describe the important properties of enzymes.

Q17. Describe the functions of polysaccharides in living organisms.

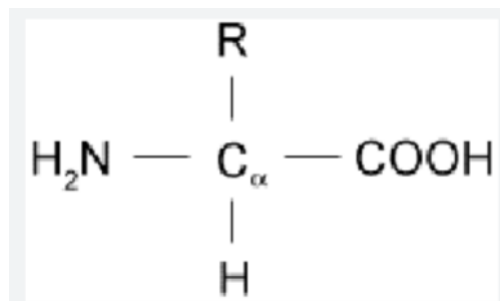
Q18. Explain the tertiary structure of proteins.

ANSWERS

1. This model says that DNA exists as a double helix. The strands of polynucleotides are antiparallel i.e. that they run in the opposite direction. The backbone is formed by the sugar-phosphate-sugar chain. The nitrogen bases are projected more or less perpendicular to this backbone but face inside. A and G of one strand compulsorily base pairs with T and C of the other strand.

2. a. The principle behind this test is iodine is a brown colour liquid. When it reacts with starch, it forms a starch(amylose)-iodide complex which is responsible for the blue-black colouration.

b. Because they have four substituent groups: hydrogen, carboxyl group, amino group and variable group.



3. Answer: A

b. Answer: A

c. Answer: C

d. Answer: B

4. Answer: B
5. Answer: C
6. Answer: B
7. Answer: B
8. Answer: A
9. Peptide bonds
10. Since cellulose is made of only one type of monomer(glucose), it is called a homopolymer.
11. Because both the -NH₂ and -COOH groups are ionisable.
12. Refer to NCERT, page 144.
13. The sequence of the amino acids.
14. Deoxyribonucleic Acid and Ribonucleic Acid
15. ATP (Adenosine triphosphate)
16. -catalyse metabolic reactions
 -every enzyme has an optimum pH and temperature for its action.
 -they do not initiate but only accelerate the reaction.
 -each is specific for a substrate and the reaction
 -enzyme function by reducing the activation energy.
- 17.-storing food. ex : starch and glycogen
 starch : formed as a result of photosynthesis. found in rice, wheat, potato and bananas.
 glycogen : found in the muscles and liver of mammals and stores energy.
 -structural polysaccharides: Ex- cellulose and chitin. take part in the formation of the organism.
 cellulose: plant product. forms cell wall. High tensile strength. Wood and cotton have large quantities of cellulose.
 chitin: Soft, leathery impregnated with calcium carbonate or certain proteins. Strengthening the structure of organisms.
18. -the tertiary structure of proteins: Many amino acid units form polypeptides. The peptide bonds holding the amino acids together in a particular way constitute the primary structure of the protein. Through the formation of H-bonds, peptide chains assume a secondary structure. Secondary protein may be in the form of a twisted helix or pleated sheet.
 When the secondary structure of a protein is further extensively coiled and folded into sphere-like shapes with the H-bonds between amino and carboxyl groups and various other kinds of bonds cross-linking to one another they form tertiary structure.

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