

BIOMOLECULES

1. If one strand of a DNA has the sequence ATGCTTCA, sequence of the bases in complementary strand is:

- (1) CATTAGCT (2) TACGAAGT
 (3) GTACTTAC (4) ATGCGACT

2. Match List I with List II.

LIST-I		LIST-II	
A.	Glucose/ NaHCO_3/Δ	I.	Gluconic acid
B.	Glucose/ HNO_3	II.	No reaction
C.	Glucose/ HI/Δ	III.	n-hexane
D.	Glucose/Bromine water	IV.	Saccharic acid

Choose the correct answer from the options given below:

- (1) A-IV, B-I, C-III, D-II
 (2) A-II, B-IV, C-III, D-I
 (3) A-III, B-II, C-I, D-IV
 (4) A-I, B-IV, C-III, D-II

3. From the vitamins A, B₁, B₆, B₁₂, C, D, E and K, the number vitamins that can be stored in our body is _____.

4. The total number of correct statements, regarding the nucleic acids is _____.

A. RNA is regarded as the reserve of genetic information.

B. DNA molecule self-duplicates during cell division

C. DNA synthesizes proteins in the cell.

D. The message for the synthesis of particular proteins is present in DNA

E. Identical DNA strands are transferred to daughter cells.

5. Type of amino acids obtained by hydrolysis of proteins is :

- (1) β (2) α
 (3) δ (4) γ

6. Number of compounds among the following which contain sulphur as heteroatom is _____.

Furan, Thiophene, Pyridine, Pyrrole, Cysteine, Tyrosine

7. Match List I with List II.

List-I (Bio Polymer)		List-II (Monomer)	
A.	Starch	I.	nucleotide
B.	Cellulose	II.	α -glucose
C.	Nucleic acid	III.	β -glucose
D.	Protein	IV.	α -amino acid

Choose the correct answer from the options given below :-

- (1) A-II, B-I, C-III, D-IV
 (2) A-IV, B-II, C-I, D-III
 (3) A-I, B-III, C-IV, D-II
 (4) A-II, B-III, C-I, D-IV

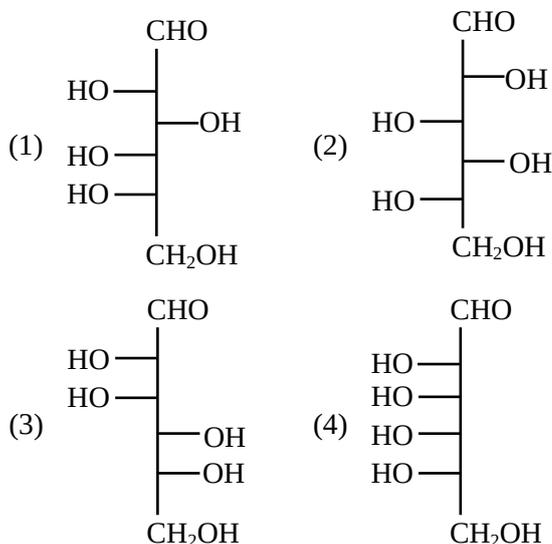
8. Two nucleotides are joined together by a linkage known as :

- (1) Phosphodiester linkage
 (2) Glycosidic linkage
 (3) Disulphide linkage
 (4) Peptide linkage

9. Which structure of protein remains intact after coagulation of egg white on boiling?

- (1) Primary (2) Tertiary
 (3) Secondary (4) Quaternary

10. Which of the following is the correct structure of L-Glucose ?



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11. Match List I with List II.

	LIST I		LIST II
A.	α - Glucose and α -Galactose	I.	Functional isomers
B.	α - Glucose and β -Glucose	II.	Homologous
C.	α - Glucose and α -Fructose	III.	Anomers
D.	α - Glucose and α -Ribose	IV.	Epimers

 Choose the **correct** answer from the options given below:

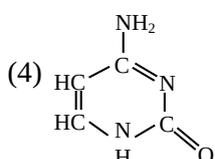
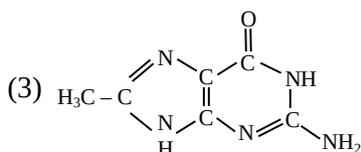
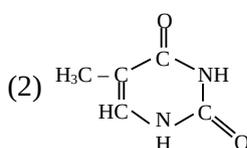
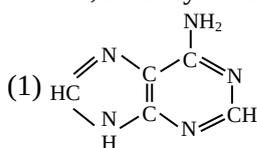
- (1) A-III, B-IV, C-II, D-I
 (2) A-III, B-IV, C-I, D-II
 (3) A-IV, B-III, C-I, D-II
 (4) A-IV, B-III, C-II, D-I

12. Which of the following gives a positive test with ninhydrin ?

- (1) Cellulose (2) Starch
 (3) Polyvinyl chloride (4) Egg albumin

13. Coagulation of egg, on heating is because of :

- (1) Denaturation of protein occurs
 (2) The secondary structure of protein remains unchanged
 (3) Breaking of the peptide linkage in the primary structure of protein occurs
 (4) Biological property of protein remains unchanged

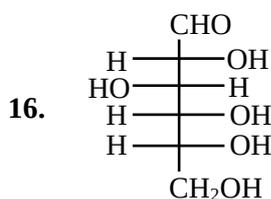
 14. DNA molecule contains 4 bases whose structure are shown below. One of the structure is not correct, identify the **incorrect** base structure.


15. The incorrect statements regarding enzymes are:

- (A) Enzymes are biocatalysts.
 (B) Enzymes are non-specific and can catalyse different kinds of reactions.
 (C) Most Enzymes are globular proteins.
 (D) Enzyme - oxidase catalyses the hydrolysis of maltose into glucose.

Choose the correct answer from the option given below:

- (1) (B) and (C) (2) (B), (C) and (D)
 (3) (B) and (D) (4) (A), (B) and (C)


 The **incorrect** statement regarding the given structure is

- (1) Can be oxidized to a dicarboxylic acid with Br_2 water
 (2) despite the presence of $-\text{CHO}$ does not give Schiff's test
 (3) has 4-asymmetric carbon atom
 (4) will coexist in equilibrium with 2 other cyclic structure

17. The total number of carbon atoms present in tyrosine, an amino acid, is _____.

18. Total number of essential amino acid among the given list of amino acids is _____.

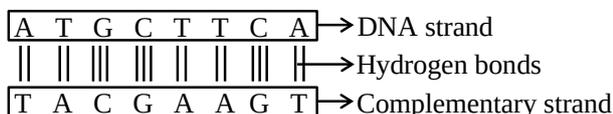
Arginine, Phenylalanine, Aspartic acid, Cysteine, Histidine, Valine, Proline

 19. The **incorrect** statement about Glucose is :

- (1) Glucose is soluble in water because of having aldehyde functional group
 (2) Glucose remains in multiple isomeric form in its aqueous solution
 (3) Glucose is an aldohexose
 (4) Glucose is one of the monomer unit in sucrose

SOLUTIONS
1. Ans. (2)

Sol. Adenine base pairs with thymine with 2 hydrogen bonds and cytosine base pairs with guanine with 3 hydrogen bonds.


2. Ans. (2)

Sol. Glucose $\xrightarrow[\Delta]{\text{NaHCO}_3}$ no reaction

Glucose $\xrightarrow[\Delta]{\text{HNO}_3}$ saccharic acid

Glucose $\xrightarrow[\Delta]{\text{HI}}$ n-hexane

Glucose $\xrightarrow[\Delta]{\text{Br}_2}$ Gluconic acid

3. Ans. (5)

Sol. Vitamins A, D, E, K and B₁₂ are stored in liver and adipose tissue.

4. Ans. (3)

Sol. A. RNA is regarded as the reserve of genetic information. (False)

B. DNA molecule self-duplicates during cell division. (True)

C. DNA synthesizes proteins in the cell. (False)

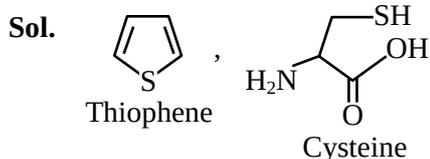
D. The message for the synthesis of particular proteins is present in DNA. (True)

E. Identical DNA strands are transferred to daughter cells. (True)

5. Ans. (2)

Sol. Proteins are natural polymers composed of α -amino acids which are connected by peptide linkages.

Hence proteins upon acidic hydrolysis produce α -amino acids.

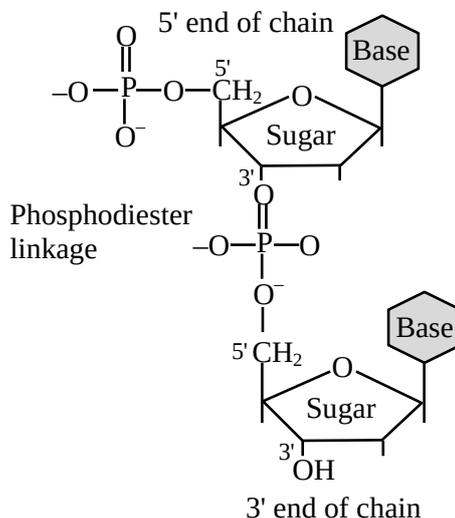
6. Ans. (2)

7. Ans. (4)

Sol. A-II, B-III, C-I, D-IV

Fact based.

8. Ans. (1)

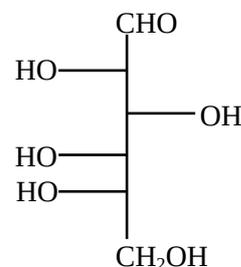
Sol. Phosphodiester linkage


9. Ans. (1)

Sol. Boiling an egg causes denaturation of its protein resulting in loss of its quaternary, tertiary and secondary structures.

10. Ans. (1)

Sol. Structure of L-Glucose is


11. Ans. (3)

Sol. Based on biomolecules theory and structure of these named compounds –

(A) α -Glucose and α -Galactose (IV) Epimers.

(B) α -Glucose and β -Glucose (III) Anomers

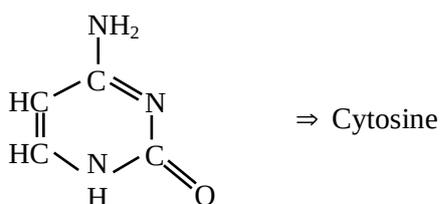
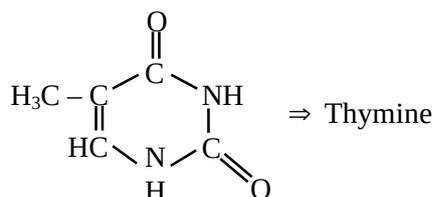
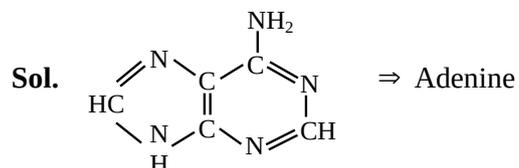
(C) α -Glucose and α -Fructose (I) Functional isomers

(D) α -Glucose and α -Ribose (II) Homologous

12. Ans. (4)

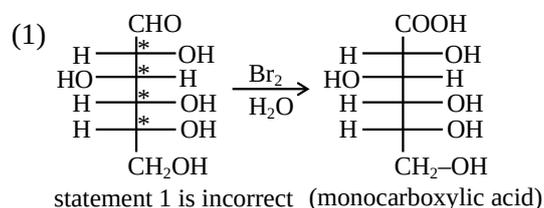
Sol. Ninhydrin test is a test of amino acids. Egg albumin contains protein which is a natural polymer of amino acids which will show positive ninhydrin test

BIOMOLECULES
13. Ans. (1)
Sol. Coagulation of egg give primary structure of protein, which is known as denaturation of protein

14. Ans. (3)


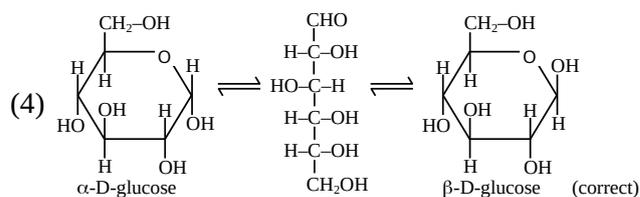
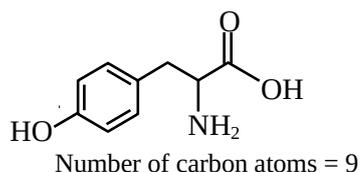
Are bases of DNA molecule. As DNA contain four bases, which are adenine, guanine, cytosine and thymine.

15. Ans. (3)
Sol. Direct NCERT Based

16. Ans. (1)
Sol.


(2) correct

(3) c.c. is 4 (correct)


17. Ans. (9)
Sol. Tyrosine

18. Ans. (4)
Sol. Essential Amino acids :-

Arginine, Phenylalanine, Histidine, Valine

19. Ans. (1)
Sol. Glucose is soluble in water due to presence of alcohol functional group and extensive hydrogen bonding.

Glucose exist is open chain as well as cyclic forms in its aqueous solution.

Glucose having 6C atoms so it is hexose and having aldehyde functional group so it is aldose.

Thus, aldohexose.

Glucose is monomer unit in sucrose with fructose.