CHEMISTRY

BOOKS - U-LIKE CHEMISTRY (HINGLISH)

BIOMOLECULES

Ncert Intext Questions

1. Glucose or sucrose are soluble in water but cyclohexane or benzene (simple six membered ring compounds) are insoluble in water. Explain.

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2. What are the expected products of hydrolysis of lactose ?

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3. How do you explain the absence of aldehyde group in the pentaacetate of D-glucose ?

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4. The melting points and solubility in water of amino acids are generally higher than that of the corresponding halo acids. Explain.

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5. Where does the water present in the egg go after boiling the egg?

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6. Why cannot vitamin C be stored in our body?

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7. What products would be formed when a nucleotide from DNA containing thymine is hydrolysed?

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8. When RNA is hydrolysed, there is no relationship among the quantities of different bases obtained. What does this fact suggest about the structure of RNA ?

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Ncert Textbook Exercises

1. What are monosaccharides?

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2. What are reducing sugars ?

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3. Write two main functions of carbohydrates in plants.

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4. Classify the following into monosaccharides and disaccharides :

Ribose, 2-deoxyribose, maltose, galactose, fructose and lactose.

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5. What do you understand by the term glycosidic linkage ?

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6. What is glycogen ? How is it different from starch?

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7. What are the hydrolysis products of .

(i) sucrose and (ii) lactose ?

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8. What is the basic structural difference between starch and cellulose ?

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9. What happens when D-glucose is treated with the following reagents ?

(i) HI (ii) Bromine water (iii) HNO_3

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10. Enumerate the reactions of D-glucose which cannot be explained by its open chain structure.

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11. What are essential and non-essential amino acids ? Give two examples of each type.

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12. Define the following as related to proteins:

(i) Peptide linkage (i) Primary structure (iii) Denaturation.

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13. What are the common types of secondary structure of proteins?

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14. What type of bonding helps in stabilising the a-helix structure of proteins?

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15. Differentiate between globular and fibrous proteins.

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16. How do you explain the amphoteric behaviour of amino acids ?

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17. What are enzymes ?

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18. What is the effect of denaturation on the structure of proteins?

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19. How are vitamins classified ? Name the vitamin responsible for the coagulation of blood ?

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20. Why are vitamin A and vitamin C essential to us? Give their important sources.

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21. What are nucleic acids ? Mention their two important functions.

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22. What is the difference between a nucleoside and a nucleotide ?

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23. The two strands in DNA are not identical but are complementary.

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24. Write the important structural and functional differences between DNA and RNA.

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25. What are the different types of RNA found in the cell ?

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Case Based Source Based Integrated Questions

1. Read the given passage and answer questions number 1 to 5 that follow :

Carbohydrates are primarily produced by plants and form a very large group of naturally occurring organic compounds. Some common examples of carbohydrates are cane sugar, glucose, starch, etc. Most of them have a general formula, $C_x(H_2O)_y$ and were considered as hydrates of carbon from where the name carbohydrate was derived. For example, the molecular formula of glucose $(C_6H_{12}O_6)$ fits into this general formula, $C_6(H_2O)_2$. But all the compounds which fit into this formula may not be classified as

carbohydrates. For example, acetic acid (CH_3COOH) fits into this general formula, $C_2(H_2O)_2$ but is not a carbohydrate. Similarly, rhamnose, $C_6H_{12}O_5$is a carbohydrate but does not fit in this definition. A large number of their reactions have shown that they contain specific functional groups. Chemically, the carbohydrates may be defined as optically active polyhydroxy aldehydes or ketones or the compounds which produce such units on hydrolysis. Some of the carbohydrates, which are sweet in taste, are also called sugars. The most common sugar, used in our homes is named as sucrose whereas the sugar present in milk is known as lactose. Carbohydrates

are also called saccharides.

Give some examples of carbohydrates.

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2. Read the given passage and answer questions number 1 to 5 that follow :

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Most of the carbohydrates fit into a general formula. What is that?

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3. Read the given passage and answer questions number 1 to 5 that follow :

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How do you define a carbohydrate chemically ?

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4. Read the given passage and answer questions number 1 to 5 that follow :

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Write the molecular formula for cane sugar.

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Name the carbohydrate present in milk.

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6. Read the given passage ans answer question number 1 to 5 that follow :

Amino acids are classified as acidic, baisc or neutral depending unpon the relative number of makes it neutral , more number of amino than carboxyl groups makes it basic and more carboxyl groups are compared to amino groups makes it acidic . The amino acids , which can be synthesised in the body and must be obtained through diet , are known as essential amino acids. Amino acids are usually colourless, crystalline solids . These are water -solute , high melting solids and behave like salts rather than simple amines or carboxylic acids

. This behaviour is due to the presence of both acidic (carboxyl group) and basic (amino group) in the same mlecule . In aqueous solution , the carboxyl group can lose a proton and amino group can accept a proton , giving rise to a dipolar ion known as zwitter ion. This is neutral but contains both positive and negative charges. In zwitter ionic , form amino acids show amphoteric behaviour as they react both with acids and bases.

What are the different classes of amino acids ?

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What is zwitter ion?

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11. Read the given passage and answer question number 1 to 5 that follow :

Hormones are molecules that act as intercellular messengers . These are produced by endocrine glands in the body and are poured directly in the blood stream which transports them to the site of action .

In terms of chemical nature , some of these steriod ,e.g., estrogens and androgens, some other are amino acid derivatives such as epinephrine and norepinephrine.

Hormones have several function in the body. The help to maintain theh balance of biological

activities in the body . The role of insulin in keeping the blood glucose level within the narrow limits is an example of this function . Insulin is relased in response to the rapid rise in blood glucose level . On the other hand hormore glucagon tends to increase the glucose level in the blood . The two hormones together regulate teh glucose level in the blood. Epinephrine and norepinephrine mediate respones to external stimuli.Growth hormones and sex hormones play role in the grwoth and development. Thyroxine produced in the thyroid gland is an iodinated derivative of amino acid tyrosine.

Define hormone is insulin ?

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What kind of hormone is insulin ?

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What are different functions of hormoes ?

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What is the role of epinephrine and norepinephrine ?

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What is thyroxine ?

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Multiple Choice Questions

1. Double strand helix structure of DNA was given by

A. Albert Einstein

B. James Dewey Watson

C. Pauling

D. Har Gobind Khorana.

Answer: B

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2. Molecules that act as intercellular messengers are called .

A. enzymes

B. proteins

C. hormones

D. vitamins

Answer: C

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3. Scurvy is caused due to deficiency of

A. Vitamin A

B. Vitamin B_6

C. Vitamin C

D. Vitamin D.

Answer: C

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4. Which of the following is not an essential amino acid ?

A. Tryptophan

B. Histidine

C. Methionine

D. Serine

Answer: D

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5. Proteins are polymers of a-amino acids which are connected to each other by

A. ionic bond.

B. covalent bond

C. peptide bond.

D. coordinate bond.

Answer: C

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6. Organic compounds required in the diet in small amounts to perform specific biological functions for normal maintenance of optimum growth and health of the organism are called

A. nucleic acids.

B. enzymes

C. vitamins

D. None of these.

Answer: C

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7. Which of the following does not contain protein ?

A. Milk

B. Pulses

C. Cane sugar

D. Fish

Answer: C

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8. The spatial arrangement of two or more polypeptide chains with respect to each other is known as

A. primary structure.

B. secondary structure.

C. tertiary structure.

D. quaternary structure.

Answer: D

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9. Glycogen is present in

A. kidney

B. liver

C. intestine

D. blood

Answer: B

View Text Solution

10. Which of the following are examples of fibrous proteins?

A. Insulin

B. Keratin

C. Myosin

D. Albumin

Answer: B

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11. DNA and RNA contain four bases each. Which of the following bases is not present in RNA?

A. Adenine

B. Uracil

C. Thymine

D. Cytosine

Answer: C

View Text Solution

12. Which of the following bases is not present in DNA ?

A. Adenine

B. Thymine

C. Cytosine

D. Uracil

Answer: D

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13. Deficiency of vitamin B_1 causes the disease

A. convulsions

B. beri-beri

C. cheilosis

D. sterility

Answer: B

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14. Each polypeptide in a protein has aminoacids linked with each other in a specific sequence. This sequence of amino acids is said to be_____ structure of proteins.

A. primary

B. secondary

C. tertiary

D. quaternary

Answer: A

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15. Glucose does not react with

A. Br_2 / H_2O

B. H_2NOH

C. HI

D. $NaHSO_3$

Answer: D

View Text Solution

16. Which of the following are purine bases ?

A. Guanine

B. Adenine

C. Thymine

D. Uracil

Answer: A::B::D

View Text Solution

17. Which of the following B group vitamins can be stored in our body?

A. Vitamin B_1

B. Vitamin B_2

C. Vitamin B_6

D. Vitamin B_{12}

Answer: D

View Text Solution

18. In fibrous proteins, polypeptide chains are held together by

A. van der Waals forces

B. disulphide linkage

C. electrostatic forces of attraction

D. hydrogen bonds

Answer: A::B::D

View Text Solution

19. Which of the following is a vitamin ?

A. Aspartic acid

B. Adipic acid

C. Ascorbic acid

D. Saccharic acid

Answer: B

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Assertion Reason Questions

1. Assertion (A) : Strach consists of two components , amylose and amylopetic.

Reason (R) : The carbohydrates are stored in animal body as a glycogen.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: B

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2. Assertion (A) : When the body needs glucose , enzymes break the glycogen down the glucose.

Reason (R) : Honey has been used for a long time as an instant source of energy

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: B

View Text Solution

3. Assertion (A): The amino acids which can be synthesised in the body are known as essential amino acids.

Reason (R) : Most naturally occurring amino acids have L-configuration.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: D

View Text Solution

4. Assertion (A): Enzymes are needed in small quantities for the progress of a reaction.

Reason (R): Most of the vitamins can be prepared by our body.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: C

View Text Solution

5. Assertion (A): Maltose is obtained by the hydrolysis of sucrose.

Reason (R) : Citrus fruits and green leafy vegetables contain vitamin C.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: D

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6. Assertion (A): Saccharic acid is obtained by the oxidation of gluconic acid or glucose. Reason (R) : The letters D or L before the name of any compound indicate the relative configuration of a particular stereoisomer.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: B

View Text Solution

7. Assertion (A): B group vitamins and vitamin C must be taken regularly in diet.

Reason (R) : Vitamin B and Vitamin C are water soluble and are readily excreted in urine.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: A

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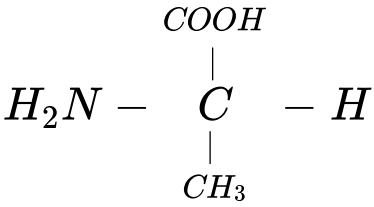
8. Assertion (A): Glucose is found to exist in two crystalline forms which are known as α and β

Reason (R) : The formula for aspartic acid is :



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C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: C

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9. Assertion (A): Quaternary structure of proteins represents overall folding of polypeptide chains.

Reason (R) : DNA contains four bases, adenine, guanine, cytosine and thymine.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: D

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10. Assertion (A): On prolonged healing with HI, glucose forms H-hexane.

Reason (R) Acetylation of glucose with acetic anhydride gives glucose pentaacetate which confirms the presence of five - OH groups.

A. Both Assertion (A) and Reason (R) are correct statement and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason(R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct , but Reason (R) is incorrect statement

D. Assertion (A) is incorrect , but Reason (R) is correct statement.

Answer: B

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Fill In The Blanks

1. Carbohydrates that produce two to ten monosaccharide units on hydrolysis are called_____.

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2. Glucose is an_____and is also known as_____.

View Text Solution

3. _____ may be defined as optically active polyhydroxy aldehydes or ketones or the compounds which produce such units on hydrolysis.

View Text Solution

4. Enzymes greatly reduce the amount of _____in their action.

View Text Solution

5. An example of ketohexose is_____.

View Text Solution

6. Amino acids contains_____and_____functional groups.

View Text Solution

7. Glucose on oxidation with Br_2, water produces _____.

View Text Solution

8. The formula for alanine is_____.

View Text Solution

True Or False

1. Information regarding the sequence of nucleotides in the chain of a nucleic acid is called its secondary structure.

View Text Solution

2. Nucleosides are joined together by phosphodiester linkage between 5' and 3' carbon atoms of pentose sugar.

View Text Solution

3. Complete hydrolysis of DNA yields a pentose sugar, phosphoric acid and nitrogen containing heterocyclic compouds.

View Text Solution

4. Deficiency of vitamin A causes night blindness.

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5. Water soluble of vitamins must be supplied regularly in diet because they are diet because they are readity excreted in urine.

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6. β - helix structure of proteins is the most common ways in which a polypeptide chain forms

all possible hydrogen bonds .

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7. In aqueous solution of an amino acid, the carboxyl group can gain a proton and amino acid can lose a protons hydrogen bonds.

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8. Strach is the most important dietary source for human beings .

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9. Amylopetcin in soluble in water and constitutes about 80-50% of starch.

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10. C1 of α - D- glucose and C_2 of β - D-fructose are linked together to form a molecule of sucrose .

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Very Short Answer Questions

1. What are biomolecules ?

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2. What is the function of insulin in the human body?

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3. Write the structure of the product obtained when glucose is oxidised with nitric acid.

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4. Write the reaction when glucose is heated with excess of HI.

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5. What is meant by 'reducing sugars'?

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6. Except for vitamin B_{12} all other vitamins of group B should be regularly supplied in diet. Why?

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7. What are the ultimate products of digestion of proteins?

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8. What type of linkage holds together the monomers of DNA ?

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9. How do you explain the presence of all the six carbon atoms in glucose in a straight chain?

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10. Under what conditions glucose is converted to gluconic and saccharic acid ?

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11. What are enzymes ?

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12. Name the sugar present in milk. How many monosaccharide units are present in it? What are such oligosaccharides called ?

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13. Name the linkage connecting monosaccharide units in polysaccharides.

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14. Monosaccharides contain a carbonyl group and hence are classified as aldose or ketose. The number of carbon atoms present in the monosaccharide molecule are also considered for classification. In which class of monosaccharide will you place fructose ?

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15. The letters 'D' or 'L' before the name of a stereoisomer of a compound indicate the correlation of configuration of that particular

stereoisomer. This refers to their relation with one of the isomers of glyceraldehyde. Predict whether the following compound has 'D' or 'L' configuration.

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16. Aldopentoses named as ribose and 2-deoxyribose are found in nucleic acids. What is their relative configuration ?

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17. During curdling of milk, what happens to the sugar present in it?

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18. Some enzymes are named after the reaction, where they are used. What name is given to the class of enzymes which catalyse the oxidation of one substrate with simultaneous reduction of the other substrate ?

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19. How do you explain the presence of five-OH groups in glucose molecule ?

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20. Why must vitamin C be supplied regularly in diet?

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21. Name the vitamins whose deficiency is responsible for.

(i) night blindness

(ii) poor coagulation of blood.

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22. Name the deficiency disease resulting from lack of vitamins A and E in the diet.

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23. Write two main functions of carbohydrates in plants.

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24. Why is cellulose in our diet not nourishing ?

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25. What are heterocyclic bases? Give an example of nitrogenous heterocyclic base.

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26. Name two of the different types of RNA molecules found in the cells of organisms.

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27. State any one characteristic of enzymatic catalysts.

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28. Name the purines present in DNA.

View Text Solution

29. Differentiate between the nucleotides of DNA and RNA.

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30. What is the name given to the linkage which holds together two monomeric units in polysaccharides?

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31. Under what condition does each protein take a shape that is energetically most stable ?

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32. In what sense are the two strands of DNA not identical but complementary to each other?

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33. Define the term denaturation in relation to protein.

View Text Solution

34. Mention two classes of nitrogen containing bases found in nucleotides.

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35. The deficiency of which vitamin causes the disease 'pernicious anaemia' ?

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36. Why are carbohydrates generally optically active ?

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37. Name one important function of nucleic acids in our body

View Text Solution

38. What type of substance is phenylalanine hydroxylate ? What is its importance for us?

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39. How do amino acids form proteins?

View Text Solution

40. What type of bonding occurs in B-pleated structure of proteins?

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41. Give an example of anomers.

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42. What is secondary structure of proteins?

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43. Which type of bonds are responsible for secondary structure of proteins?

View Text Solution

44. Write the names of the enzymes whose deficiency causes albinism and phenylketone urea.

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45. What structural difference is there between a-glucose and B-glucose ?

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46. Name the enzyme that converts sucrose into glucose and fructose.

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47. What is meant by primary structure of proteins?

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48. What is meant by RNA and DNA ?

View Text Solution

49. If the fragment of one strand in DNA molecule has the base sequence CCATGCATG, what is the base sequence of complementary strand ?

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50. What type of bonding is present in globular proteins?

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51. Give the name and structural formula of the simplest amino acid.

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52. Give one example of a disaccharide.

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53. What do we call those carbohydrates that give Fehling solution test?

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54. What do we obtain when starch is boiled with dilute H_2SO_4 at 393 K under pressure ?

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55. What is obtained when glucose is heated with HI for a long time?

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56. What is obtained when glucose is treated with Br_2 water ?

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57. Give the name of the compound having the structure $COOH-(CHOH)_4-COOH.$

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58. Name the product obtained when sucrose is hydrolysed accompanied by change in sign of

rotation.

View Text Solution

59. Which linkage binds the monosaccharide units in polysaccharides?

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60. Which form of glucose constitute celluose ?

View Text Solution

61. Which substance is the most abundant substance in plnat kingdom ?

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62. Amino acids behaves as a dipolar ion . What is this know as ?

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63. What do we call the proteins where the polypeptide chains are held together by hydrogen and disulphide bonds?

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64. Which structure represents the overall folding of polypeptide chains ?

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65. Name the enzyme that catalyses the hydrolysis of maltose into glucose .

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66. Name the compounds that are required in small amounts in our diet and their deficiency cause specific disease.

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67. Name the vitamin whose deficiency cause night blindness.

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Short Answer Questions

1. Give one example each of hormones from the categories of steroids and amino acid derivative.

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2. Which hormone tends to increase the glucose level in blood ?

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3. What is Addison's disease ?

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4. What is the function of testosterone ?

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5. Write any two reactions of glucose which cannot be explained by the open chain structure of glucose molecule.

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6. What is meant by (i) peptide linkage (ii) biocatalyst ?

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7. Name two components of strach . How do they differ from each other structurally ?

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8. What is essentially the difference between α - from of glucose ? Explain.

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9. Describle what do you understand by primary structure and secondary structure of proteins.

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10. Explain what is meant by the following :

(i) peptide linkage . (ii) pyranose structure of glucose .

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11. Write the main structure difference between DNA and RNA of the four bases, name those which are common to both DNA and RNA.

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12. Name the products of hydrolysis of sucrose . Why is sucrose not a reducing sugar ?

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13. Explain the following terms :

(i) Invert sugar (ii) Polypeptides.

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14. What are essential and non - essential amino acids in human food ? Give one example of each type .

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15. Name two water soluble vitamins, their source and the diseases caused due to their deficiency in diet .

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16. Explain what is meant by .

(i) a peptide linkage . (ii) a glycosdic linkage .

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17. Define the following terms in relation to proteins :

(i) Peptide linkage . (ii) Denaturation.

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18. Name the two components of strach. How do they differ from each other structurally?

View Text Solution

19. Name the four bases present in DNA. Which one of these is not present in RNA ?

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20. In nucleoside a base is attached at 1 position of sugar moiety . Nucleotide is formed by linking of phospheric acid unit of nucleoside . At which position of sugar units is the phosphoric acid linked in a nucleoside to give a nucleotide ?

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21. What changes occur in the nature of egg proteins on boiling ?

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22. Name the type of bonding which stabilies α - helix structure in proteins.

View Text Solution

23. Name two fat soluble vitamins , their source and the disease caused bue to their deficiency in

diet .

View Text Solution

24. List the reactions of glucose which cannot be explained by the open chain structure .

View Text Solution

25. α - Helix is a secondary structure of protein formed by twisting of polypeptide chain into right handed screw like structure . Which type of

interactions are responsible for making the α - helix structure stable ?

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26. Sucrose is dextroroatory but the mixture obtained after hydrolysis is lavorotatory . Explain.

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27. Why does compoun (A) given below not form an oxime ?

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28. What are essential and non - essential amino acids ? Given two examples of each .

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29. Proteins found in a biological system with a unique three - dimensional structure and biological activity is called a native protein in its native form , is subjected to a physical change like change in temperature or a chemical change in pH

, denaturation of protein takes place. Explain the cause .

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30. How do you explain the presence of an aldehydic group in a glucose molecule ?

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31. Structures of glycine and alanine are given below. Show the peptide linkage in glycylalanine .

$H_2N - \underset{\text{Glycine}}{CH_2} - COOH$ $H_2N - \underset{\underset{\text{Alanine}}{CH_3}}{\overset{|}{CH_2}} - COOH$

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32. Activation energy for the acid catalysed hydrolysis of sucrose is $6.22kJmol^{-1}$, while thie activation energy is only $2.15kJmol^{-1}$ when hydrolysis is catalysed by the enzyme sucrase.

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33. Describible the following :

(i) Glycosidic linkage (ii) Peptide linkage .

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34. List any four vitamins . Mention the chief source and functions of two of them.

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35. (i) Which forces are responsible for the stability of α - helix ?

(ii) What is a denatured protein ?

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36. Name the chemical components which constitute nucleotides . Write any two functions of nucleotides in a cell.

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37. State two main differences between globular proteins and fibrous proteins.

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38. Describle two important function of nucleic acid .

View Text Solution

39. Name the diseases caused due to the deficieny of vitamins A,E and B_{12}.

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40. Explain the term mutarotation giving an example .

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41. Amino aicds behave like salts rather than simple aminess or carboxylic aicds. Explain.

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Long Answer Questions I

1. Define the following with an example of each :

(a) Polysaccharides (b) Denatured protien .

(c) Essental amino acids.

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2. Write the product when D-glucose reacts with conc. HNO_3

View Text Solution

3. Amino acids show amphoteric behaviour. Why?

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4. Write one difference between a-helix and B-pleated structures of proteins.

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5. (i) Write the name of two monosaccharides obtained on hydrolysis of lactose sugar.

(ii) Why vitamin C cannot be stored in our body?

(iii) What is the difference between a nucleoside and nucleotide ?

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6. (i) Write the structural difference between starch and cellulose.

(ii) What type of linkage is present in Nucleic acids ?

(iii) Give one example each for fibrous protein and globular protein.

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7. (i) Draw the pyranose structure of glucose.

(ii) What type of linkage is present in proteins?

(iii) Give one example each for water-soluble vitamins and fat-soluble vitamins.

View Text Solution

8. (i) Which one of the following is a disaccharide : starch, maltose, fructose, glucose ?

(ii) What is the difference between fibrous protein and globular protein ?

(iii) Write the name of vitamin whose deficiency causes bone deformities in children ?

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9. (i) Which one of the following is a monosaccharide :

starch, maltose, fructose, cellulose.

(ii) What is the difference between acidic amino acids and basic amino acids ?

(iii) Write the name of the vitamin whose deficiency causes bleeding of gums.

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10. (i) Which one of the following is a polysaccharide :

starch, maltose, fructose, glucose .

(ii) Write one difference between a-helix and B-pleated sheet structure of protein.

(iii) Write the name of the disease caused by the deficiency of vitamin B_{12}.

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11. Define the following terms as related to proteins :

(i) Peptide linkage (ii) Primary structure .

(iii) Denaturation.

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12. (i) Deficiency of which vitamin causes night-blindness ?

(ii) Name the base that is found in nucleotide of RNA only.

(iii) Glucose on reaction with HI gives n-hexane. What does it suggest about the structure of glucose ?

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13. Amino acids may be acidic, alkaline or neutral. How does this happen ? What are essential and

non-essential amino acids ? Name one of each type.

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14. (i) Give one structural difference between amylose and amylopectin.

(ii) Name the protein and its shape present in oxygen carrier in human body.

(iii) Name two fat storing tissues in human body.

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15. Give one reaction of D-glucose which cannot be explained by its open chain structure.

View Text Solution

16. Give one example each for essential and non-essential amino acids.

View Text Solution

17. Differentiate between keratin and insulin.

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18. An optically active compound having molecular formula $C_6H_{12}O_6$ is found in two isomeric forms (A) and (B) in nature. When (A) and (B) are dissolved in water, they show the following equilibrium.

(i) What are such isomers called ?

(ii) Can they be called enantiomers ? Justify your answer.

(iii) Draw the cyclic structure of isomer (A).

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19. Fill in the missing quantities in the following figure :

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20. An optically active amino acid (A) can exist in three forms depending on the pH of the medium. If the molecular formula of (A) is $C_3H_7NO_2$ write.

(i) structure of compound (A) in aqueous medium. What are such ions called ?

(ii) in which medium will the cationic form of

compound (A) exist ?

(iii) in alkaline medium, towards which electrode will the compound (A) migrate in electric field ?

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21. (i) Which of the following biomolecule is insoluble in water ? Justify.

Insulin, Haemoglobin, Keratin.

(ii) Draw the Haworth structure for α-D-Glucopyranose.

(iii) Write chemical reaction to show that glucose contains aldehyde as carbonyl group.

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22. Despite having an aldehyde group :

(a) Glucose does not give 2,4-DNP test. What does this indicate ?

(b) Draw the Haworth structure of α-D-(+)-glucopyranose.

(c) What is the significance of D and (+) here?

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