doubtnut
India's Number 1 Education App

CHEMISTRY

BOOKS - PRADEEP CHEMISTRY (HINGLISH)

BIOMOLECULES

Curiosity Questions

1. What makes human blood group types A,B,AB or O different ?

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2. What is snake venom made of ?

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Test Your Grip Multiple Choice Questions

1. Which of the following is incorrect for glucose

A. it contains four $> CHOH$ groups

B. it contains one ketone group

C. it contains one CH_2OH group

D. it contins one $-CHO$ group

Answer: B

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2. Glucose does not react with

A. Br_2 / H_2O

B. NH_2OH

C. $(CH_3CO)_2O$

D. $NaHSO_3$

Answer: D

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3. Glucose reacts with excess of phenylhydrazine and forms

A. glucosazone

B. phenylhydrazone of glucose

C. oxime of glucose

D. glucosamine

Answer: A

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

A. five

B. six

C. three

D. four

Answer: A

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5. The letter 'D' in D-glucose signifies:

A. configuration at all chiral carbons

B. dextrorotatory

C. that it is a monosaccharide

D. configuration at the penultimate chiral carbon

Answer: D

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6. The term anomer of glucose refers to

A. isomers of glucose that differ in configuration at carbons one and four (C-1and C-4)

B. a mixture of (D)-glucose and (L)-glucose

C. enantiomers of glucose

D. isomers of glucose that differ in configuration at carbon one (C-1)

Answer: D

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7. Which of the following disaccharide gives a ketose and an aldose only on hydrolysis ?

A. Sucrose

B. Maltose

C. Lactose

D. All the three

Answer: A

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8. Hydrolysis products of lactose are

A. glucose and glucose

B. glucose and fructose

C. glucose and galactose

D. none of these

Answer: C

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9. Which of the following sets consists only of essential amino acids ?

A. Alanine, tyrosine, cysteine

B. Leucine, lysine , tryptophan

C. Alanine , glutamine ,lysine

D. Leucine, proline, glycine

Answer: B

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10. Important constituent of cell wall is

A. lipid

B. cellulose

C. protein

D. vitamin

Answer: B

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11. Antibodies are

A. Carbohydrates

B. Proteins

C. Lipids

D. Enzymes.

Answer: B

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12. At pH 4, glycine exists as

A. $H_3\overset{+}{N}CH_2COO^-$

B. $H_3\overset{+}{N} - CH_2COOH$

C. H_2NCH_2COOH

D. $H_2NCH_2COO^-$

Answer: B

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13. The helical structure of protein is stabilized by

A. dipeptide bonds

B. hydrogen bonds

C. ether bonds

D. peptide bonds.

Answer: B

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14. The number of disulphide linkages present in insulin are

A. 3

B. 4

C. 1

D. 2

Answer: A

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15. The amino acids are the end-products of the digestion of

A. lipid

B. fats

C. protein

D. alcohol

Answer: C

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16. Which of the following is a steroid hormone ?

A. Progesterone

B. Insulin

C. Thryoxine

D. Oxytocin

Answer: A

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17. The vitamins absorbed from the intestine along with fats are:

A. A,D

B. A,B

C. A,C

D. D,B

Answer: A

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18. Vitamin A is

A. ascorbic acid

B. retinol

C. calciferol

D. thiamine

Answer: B

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19. The human body does not produce :

A. enzymes

B. DNA

C. vitamins

D. hormones

Answer: C

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20. Antisterility vitamin is

A. vitamin D

B. vitamin B group

C. vitamin E

D. vitamin A

Answer: C

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21. Which sugar is present in DNA ?

A. Ribose

B. 2-Deoxyribose

C. Glucose

D. Fructose

Answer: B

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22. Which base is present in RNA but not in DNA?

A. Uracil

B. Cytosine

C. Guanine

D. Thymine

Answer: A

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23. Adenosine is an example of

A. nucleotide

B. nucleoside

C. purine base

D. pyrimidine base

Answer: B

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Test Your Grip Fill In The Blanks

1. .....involves conversion of solar energy into chemical energy.

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2. A carbohydrate which cannto be hydrolysed to simpler compounds, is called

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3. Carbohydrates containing an aldehydic group are called .....and those containing a keto group at any other chiral carbon of the carbohydrate molecule is called.....

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4. .....differ in configuration at the glycosidic carbon while .....differ in configuration at any other carbon of hte carbohydrate molecule.

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5. Invert sugar is obtained by hydrolysis of .....and contains equimolar amounts of .....and .....

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6. Glucose and sucrose can be distinguished by .....or .....solution.

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7. Milk sugar is called .....in which .....is present in the reducing form while .....is present in the non -reducing form.

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8. .....shows metarotation but .....does not .

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9. The monosaccharide units in oligosaccharides and polysaccharides are connected through .....linkages.

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10. Starch is .....saccharide.

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11. Most of the naturally occuring sugars have .....configuration while most of the naturally occuring .....have L-configuration.

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12. Out of alanine and phenyalanine, ...is an essential amino acid.

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13. Most of the α-amino acids exist as .....

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14. The acidic character of glycine is due to .....group and the basic character is due to .....group.

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15. The sequence in which α-amino acids are linked to each other through.....bonds determine the.....structure of proteins.

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16. Quaternary structure of haemoglobin consists of .....subunits , two of the subunits are identical and contain

.....amino acid residues and the other two subunits are also identical and contain. Amino acid residues.

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17. Denaturation involves converstion of .....proteins to .....proteins.

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18. The presence of .....in the body induces the formation of antibodies.

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19. Heart attacks can be checked by using the enzyme .....

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20. Hormone secretion in mammals is under the control to .....

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21. Aderaline is an .....hormone while testosterone is a .....hormone.

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22. Expose of body to sun rays prouduces.....

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23. Deficiency of which vitamin causes scurvy ?

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24. The chemical name of vitamin B_{12} is .....

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25. The prosthetic group of nucleoproteins are .....while those of glycoproteins are .....

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26. A nucleotide consists of three parts :

a phosphate unit, a sugar and a.....or .....

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27. DNA undergoes .....but .....usually does not.

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28. In RNA, the sugar is .....but in DNA, it is .....

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29. A chemical or physical change that alters the sequence of bases in DNA molecules is called .....

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Conceptual Questions

1. What are reducing and non-reducing sugars ? What is the structural feature characterising reducing sugars ? What is an invert sugar ?

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2. Fructose contains a keto group but still it reduces Tollen's reagent. Explain.

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3. Glucose does not give 2,4- DNP test , Schiff's test or does not give sodium bisulphite adduct. Give reacsons. Or Despire having an aldehyde group, glucose not give 2,4-DNP test ? What does this indicate ?

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4. Name two components of starch. How do they differ from each other structurally?

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5. Glycine exists as $NH_3{}^+CH_2COO^-$, zwitter ion but anthranilic acid (p-amino benzoic acid) does not exist as zwitter ion. Why?

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6. Can the acid chloride of an α-amino acid be made by treating it with $SOCI_2$?

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7. Is a diet consisting mainly of rice an adequate diet? Why or why not?

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8. What is the monomer unit of protein ? Give two examples of monomers , one of which contains sulphur. Write the zwitterionic form of one of them.

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9. Give reason for the following : (i) Amino acids have high melting points and are soluble in water.

(ii) What is meant by the secondary structure of proteins ?

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10. Towards which electrode would an α-amino acid migrate in an electric field at

(i) $pH < pI, (ii) pH > pI$ and $(iii) pH = pI$? Explain.

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

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12. Define enzymes ? What is the most important reason for their specific action ?

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13. What is the difference between hormones and vitamins ?

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14. If one of the strands of DNA has the following sequence of bases in the $5' - 3'$ direction :

$5' - G - A - A - T - A - C - C - G - G - T - A - 3'$

(i) What is the sequence of bases in the complementary strand ?

(ii) Which base is closest to the 5'-end in the complementary strand ?

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Ncert Questions And Exercises With Answers Ncert Intext Unsolved Questions

1. Glucose or sucrose are soluble in water but cyclohexane or bezene (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 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 happenes 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.

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12. Define the following as related to proteins :

(i) Peptide linkage

(ii) Primary structure

(iii) Denaturation

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13. What are the common types of secondary structures fo proteins?

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14. What type of bonding helps in stabilising the α-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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Watch Video Solution

17. What are enzymes ?

Watch Video Solution

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 for 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. Explain.

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24. Write the important structral 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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Ncert Exemplar Problems With Answers Hints And Solution Multiple Choice Questions I

1. Glycogen is a branched chain polymer of $\alpha - D$ glucose units in which chain is formed by $Cl - C4$ glycosidic linkage where as

branching occurs by the formation of $C1 - C6$ glycosidic linkage.

Structure of glycogen is similar to .... .

A. Amylose

B. Amylopectin

C. Cellulose

D. Glucose

Answer: B

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2. Which of the following polymer is stored in the liver of animals ?

A. Amylose

B. Cellulose

C. Amylopectin

D. Glycogen

Answer: D

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3. Sucrose (cane sugar) is a disaccharide. One molecule of sucrose on hydrolysis gives..... .

A. 2 molecules of glucose

B. 2 moles of glucose $+1$ molecule of fructose

C. 1 molecule of glucose $+1$ molecule of fructoes

D. 2 molecules of fructose

Answer: C

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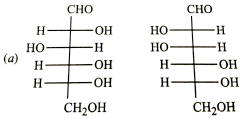
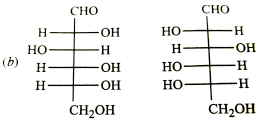
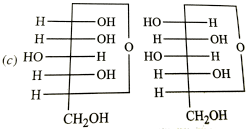
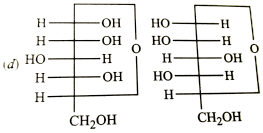
4. Which of the following pairs represents anomers ?

A. 

B. 

C. 

D. 

Answer: C

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5. Proteins are found to have two different types of secondary structures viz α-helix and β-pleated sheet structure. α-helix

structure of protein is stabilised by

A. Peptide bonds

B. van der Waals forces

C. Hydrogen bonds

D. Dipole -dipole interactions

Answer: C

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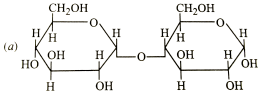
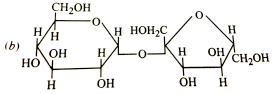
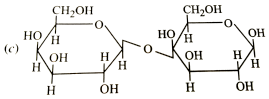
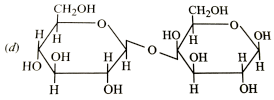
6. In disaccharides, if the reducing groups of monosaccharides, i.e., aldehydic or ketonic groups are bonded, these are non-reducing sugars. Which of the following disaccharide is a non-reducing sugar?

A. 

B. 

C. 

D. 

Answer: B

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7. Which of the following acids is a vitamin?

A. Aspartic acid

B. Ascorbic acid

C. Adipic acid

D. Saccharic acid

Answer: B

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8. Dinucleotide is obtained by joining two nucleotides together by phosphodiester linkage. Between which carbon atoms of pentose sugars of nucleotides are these linkages present ?

A. 5' and 3'

B. 1' and 5'

C. 5' and 5'

D. 3' and 3'

Answer: A

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9. Nucleic acids are the polymers of

A. Nucleotides

B. Nucleotides

C. Bases

D. Sugars

Answer: B

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10. Which of the following statements is not true about glucose?

A. it is an aldohexose

B. On heating with HI it forms n-hesane

C. It is present in furanose form

D. It does not give 2, 4-DNP test.

Answer: C

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11. Each polypeptide in a protein has amino acids linked with each other in a specific sequence. This sequence of amino acids is said to be... .

A. primary structure of proteins

B. secondary structure of proteins

C. tertiary structure of proteins

D. quaternary structure of proteins.

Answer: A

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

A. Adeine

B. Uracil

C. Thymine

D. Cytosine

Answer: C

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13. 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

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14. Which of the following bases is not present in DNA

A. Adenine

B. Thymine

C. Cytosine

D. Uracil

Answer: D

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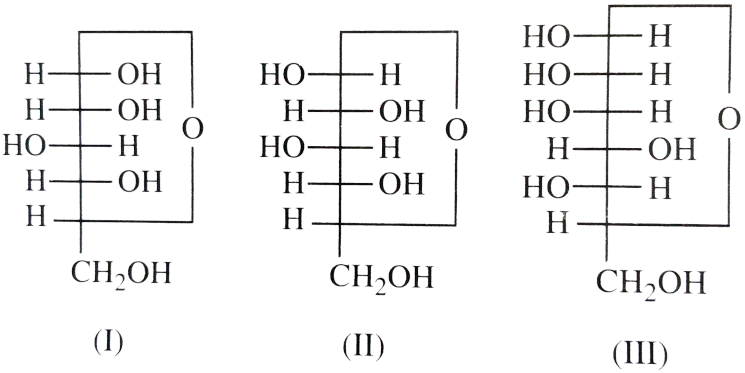
15. Three cyclic structure of monosaccharides are given below. Which of these are anomers ?



A. I and II

B. II and III

C. I and III

D. III is anomer of I and II

Answer: A

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16. Which of the following reactions of glucose can be explained only by its cyclic structure?

A. Glucose forms pentaacetate

B. Glucose reacts with hydroxylamine to form an oxime

C. Pentaacetate of glucose does not react with hydroxylamine

D. Glucose is oxidised by nitric acid to gluconic acid

Answer: C

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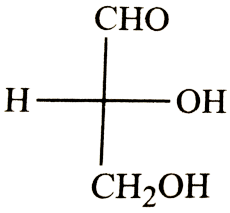
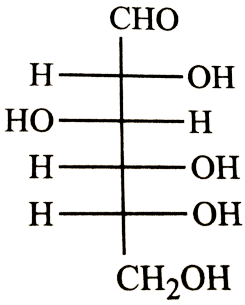
17. Which of them have D configuration ?



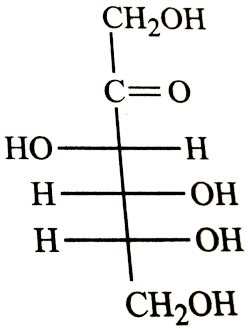
(+) rotation

(I)



(+) rotation

(II)



(–) rotation

(III)

A. I ,II, III

B. II,III

C. I,II

D. III

Answer: A

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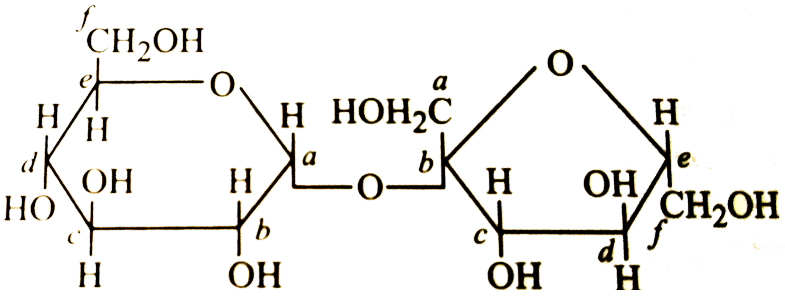
18. Structure of a disaccharide formed by glucose and fructose is given below. Identify anomeric carbon atoms in monosaccharide units.



A. a' carbon of glucose and 'a' carbon of fructose

B. a' carbon of glucose and 'e' carbon of fructose

C. a' carbon of glucose and 'b' carbon of fructose

D. f' carbon of glucose and 'f' carbon of fructose

Answer: C

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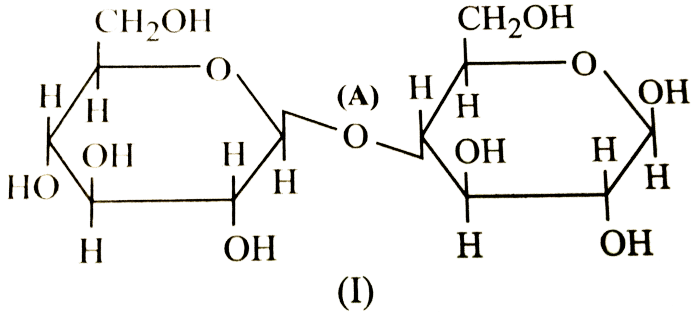
19. Three structure are given below in which two glucose units are linked. Which of these linkages between glucose units are between C_1 and C_4 and which linkages are between C_1 and C_6` ?



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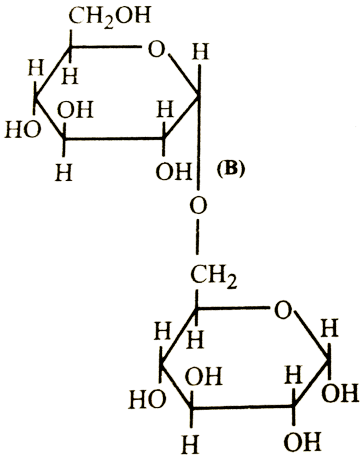

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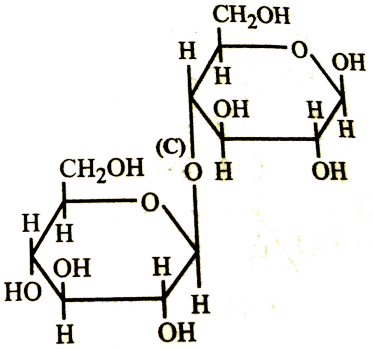

(III)

A. (A) is between C_1 and C_4 (B) and (C) are between C_1 and C_6

B. (A) and (B) are between C_1 and C_4 , (C) is between C_1 and C_6

C. (A) and (C) are between C_1 and C_4, (B) is between C_1 and C_6

D. (A) and (C) are between C_1 and C_6 , (B) is between C_1 and C_4`.

Answer: C

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Ncert Exemplar Problems With Answers Hints And Solution Multiple Choice Questions Ii

1. Carbohydrates are classified on the basis of their bahaviour on hydrolysis and also as reducing or non-reducing sugar. Sucrose is a ..... .

A. monosaccharide

B. disaccharide

C. reducing sugar

D. non-reducing sugar

Answer: B::D

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2. Proteins can be classified into two types on the basis of their molecular shape, i.e., fibrous proteins and globular proteins. Examples of globular proteins are

A. Insulin

B. Keratin

C. Albumin

D. Myosin

Answer: A::C

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3. Which of the following carbohydrates are branched polymer of glucose?

A. Amylose

B. Amylopectin

C. Cellulose

D. Glycogen

Answer: B::D

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4. Amino acids are classified as acidic, basic or neutral depending upon the relative number of amino and carboxyl groups in their molecule. Which of the following are acidic?

A. $(CH_3)_2(CH) - \underset{|}{\overset{}{C}}\underset{NH_2}{} H - COOH$

B. $HOOC - CH_2 - CH_2 - \underset{|}{\overset{}{CH}}\underset{NH_2}{} - COOH$

C. $H_2N - CH_2 - CH_2 - CH_2 - COOH$

D. $HOOC - CH_2 - \underset{|}{\overset{}{CH}}\underset{NH_2}{} - COOH$

Answer: B::D

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5. Lysine, $H_2N - (CH_2)_4 - \underset{|}{\overset{}{CH}}\underset{NH_2}{} - COOH$ is..... .

A. α-amino acid

B. Basic amino acid

C. Amino acid synthesised in body

D. β-Amino acid

Answer: A::B

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6. Which of the following monosaccharides are present as five membered cyclic structure (furanose structure)?

A. Ribose

B. Glucose

C. Fructose

D. Galactose

Answer: A::C

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

A. van der Waals forces

B. disulphide linkage

C. electrostatic forces of attaraction

D. hydrogen bonds

Answer: B::D

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8. Which of the following are purine bases?

A. Guanine

B. Adenine

C. Thymine

D. Uracil

Answer: A::B

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9. Which of the following terms are correct about enzyme?

A. Proteins

B. Dinucleotides

C. Nucleic acids

D. Biocatalysts

Answer: A::D

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Short Answer Questions

1. Name the sugar present in milk. How many monosaccharide units are present in it ?

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

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

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4. Name the linkage connecting monosaccharide units in polysaccharides.

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5. Under what condtions glucose is converted to gluconic acid and saccharide acid?

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6. Monosaccharides contain carbonyl group 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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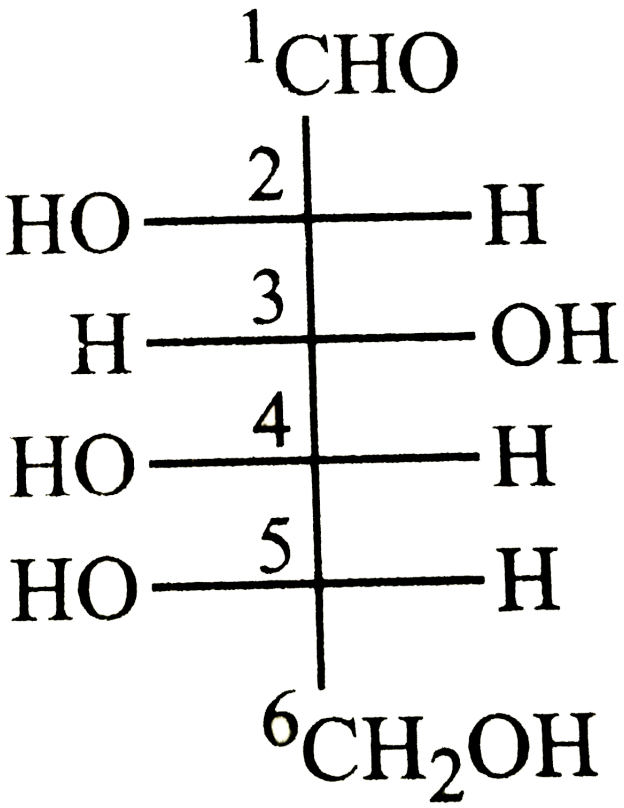
7. . Predict whether the following compound has 'D' or 'L' configuration.



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

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9. Which sugar is called invert sugar? Why is it called so?

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10. Amino acids can be classified as $\alpha-$, $\beta-$, $\gamma-$, δ-and so depending upon the relative position of amino group with respect to carboxyl group. Which type of amino acids form polypeptide chain in proteins?

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11. $\alpha-$ helix is a secondary structure of proteins 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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12. 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 another substrate?

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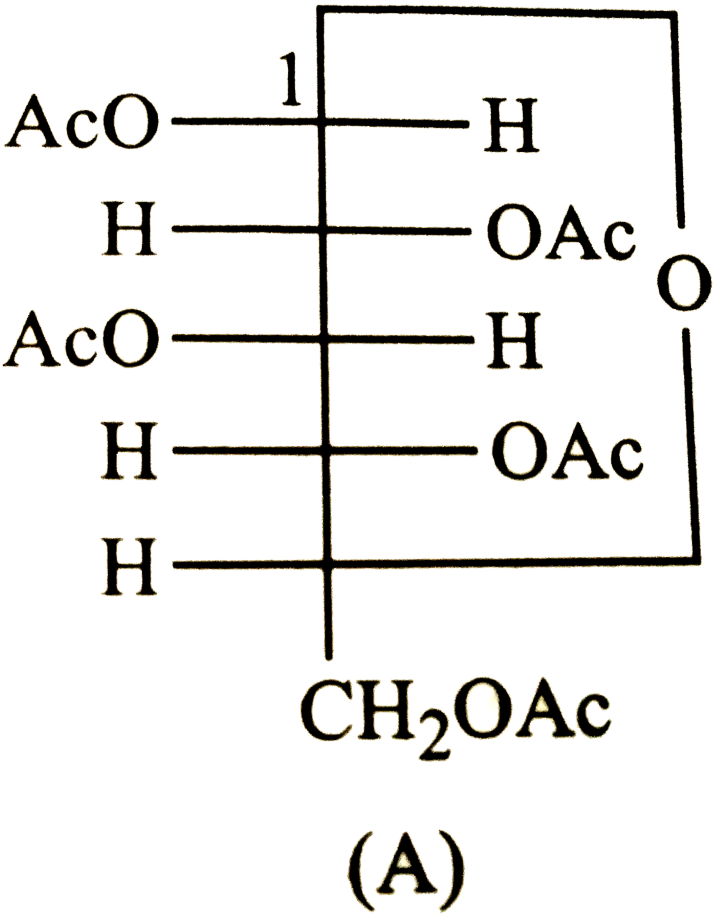
13. During curdling of milk, what happens to sugar present in it?

Watch Video Solution

14. How do yout explain the presence of five $-OH$ groups in glucose molecule?

Watch Video Solution

15. Why does compound (A) given below not form an oxime ?



(A)

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

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17. Sucrose is dextrorotatory but the mixture obtained after hydrolysis is laevorotatory. Explain.

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18. Amino acids behave like salts rather than simple amines or carboxylic acids. Explain.

Watch Video Solution

19. Structure of glycine and alanine are given below. Show the peptide linkage in glycylalanine.

$$\underset{\text{(Gylcince)}}{H_2N-CH_2-COOH},\ \underset{\text{(Alanine)}}{H_2N-\underset{\displaystyle CH_3}{\underset{|}{CH}}-COOH}$$

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20. Protein found in a biological system with a unique three-dimensional structure and biological activity is called a native protein. When a protein in its native form, is subjected to a physical change like change in temperature or a chemical change like, change in pH, denaturation of protein takes place. Explain the cause.

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

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

Watch Video Solution

23. Which moieties of nucleosides are involved in the formation of phosphodiester linkage present in dinucleotides? What does the word diester in the name of linkage indicate? Which acid is involved in the formation of this linkage?

Watch Video Solution

24. What are glycosidic linkages ? In which type of biomolecules, are they present ?

Watch Video Solution

25. Which monosaccharide units are present in strach, cellulose and glucose and which linkage link these units?

Watch Video Solution

26. How do enzymes help a substrate to be attacked by the reagent effectively?

Watch Video Solution

27. Descrive the term D- and L-configuration used for amino acids with exmaples.

Watch Video Solution

28. How will you distinguish 1° and 2° hydroxyl groups present in glucose? Explain the reactions.

Watch Video Solution

29. Coagulation of egg white on boiling is an example of denaturation of protein. Explain it in terms of structural changes.

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30. Write the major classes in which the carbohydrates are divided depending upon whether these undergo hydrolysis and if so , on the number of products formed.

Watch Video Solution

31. Carbohydrates are classified into monosaccharides , oligosaccharides and polysaccharides.

(i) What is the basis of such classification ?

(ii) Give an example of the oligosaccharide.

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32. What are reducing sugars. Give an example each of a reducing sugar and a non - reducing sugar.

Watch Video Solution

33. Write chemical reaction for following conversions

glucose into glucoxime

Watch Video Solution

34. What happenes when $D-$ glucose is treated with the following reagents?

(i). HI

(ii).Bromine water

(iii). HNO_3

Watch Video Solution

35. How will you obtain from glucose : (i) gluconic acid (ii) n-hexane ?

Watch Video Solution

36. Give chemical reactions to show glucose :

(a) all the six carbon atoms are linked in a straight chain.

(b) one aldehyde group is present.

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37. D-Glucose and L-Glucose are :

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38. Give three reactions of glucose which cannot be explained by its chain structure.

Watch Video Solution

39. Explain muta rotation taking D-glucose as example.

Watch Video Solution

40. What is essentially the difference between $\alpha-$ glucose and $\beta-$ glucose ? What is mean by pyranose structure of glucose ?

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41. What is the difference in the structures of $\alpha-D(+)$ glucose and $\beta-D(+)$ glucose ?

Watch Video Solution

42. What is meant by pyranose ring of glucose ?

Watch Video Solution

43. What are monosaccharides ? Draw ring structure of $\alpha-D-(+)$-glucopyranose ?

Watch Video Solution

44. How do α and β-D-glucose differ ? Write their pyranose structures.

Watch Video Solution

45. How does fructose differ from glucose ? Draw their open chain structures.

Watch Video Solution

46. What is the basic structural difference between glucose and fructose ?

Watch Video Solution

47. Indicating linkage involved draw the structure of sucrose. Also name the linkage.

Watch Video Solution

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

Watch Video Solution

49. LACTOSE

Watch Video Solution

50. Which of the following is an example of Zwitter ion?

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Watch Video Solution

51. What are the polysaccharides that make up starch and what is the difference between them?

Watch Video Solution

52. Draw the structure of amylopectin.

Watch Video Solution

53. Draw the structure of amylose.

Watch Video Solution

54. Write the structure of cellulose ? How does it differ from amylose ?

Watch Video Solution

55. Why do individuals differ from one another?

Watch Video Solution

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

Watch Video Solution

57. What are carbohydrates ? Give important functions of carbohydrates.

Watch Video Solution

58. What are carbohydrates ? How do they act as source of energy ?

Watch Video Solution

59. What are proteins ? Name the compounds obtained on partial and complete hydrolysis of proteins.

Watch Video Solution

60. What are α-amino acids ? How are they related to proteins ? Give the structures of two α-amino acids.

Watch Video Solution

61. What are essential and non-essential amino acids ? Give one example of each type.

Watch Video Solution

62. 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.

Watch Video Solution

63. What are amino acids ? Describe their zwitterion structure. What do you know about the isoelectric point of amino acids ?

Watch Video Solution

64. Differentiate between the following :

Peptide linkage and Glycosidic linkage

Watch Video Solution

65. ILLustrate the formation of a peptide bond by taking a suitable example.

Watch Video Solution

66. What is peptide linkage? How is tripeptide formed?

Watch Video Solution

67. What is peptide bond ? Cite one example of a molecule in which peptide bond is present.

Watch Video Solution

68. Peptide bond is formed between two amino acids through

Watch Video Solution

69. What are peptides ?

Watch Video Solution

70. What are polypeptides ? How are they named ?

Watch Video Solution

71. How are oligopeptides different from polypeptides ?

Watch Video Solution

72. Distinguish between peptides and proteins.

Watch Video Solution

73. What are proteins ? How are they classified ? Give two functions of proteins.

Watch Video Solution

74. What are proteins ? Describe simple and conjugated proteins with at least one example in each case .

Watch Video Solution

75. Distinguish between the following:

(i) A globular protein and a fibrous protein.

(ii) Primary and secondary structure of proteins.

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76. What is meant by tertiary structure of proteins ?

Watch Video Solution

77. What the denaturation of proteins ?

Watch Video Solution

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

Watch Video Solution

79. Antibodies that help to fight infectious agents are

Watch Video Solution

80. What are enzymes ? Give two example with uses.

Watch Video Solution

81. A biocatalyst

Watch Video Solution

82. Define enzymes ? What is the most important reason for their specific action ?

Watch Video Solution

83. Most important form of energy currency in living systems is the

Watch Video Solution

84. What are chemical messengers ?

Watch Video Solution

85. What are vitamins ? How are they classified ?

Watch Video Solution

86. Name the male and female sex hormones.

Watch Video Solution

87. Give one example of each type of dopants.

Watch Video Solution

88. What are hormones? Give examples. State their functions.

Watch Video Solution

89. A peptide hormone is :

Watch Video Solution

90. Name two amine hormones.

Watch Video Solution

91. Chemical nature of insulin is

Watch Video Solution

92. Name the organs or cells which secrete Thyroxine and Adrenaline. State their functions.

Watch Video Solution

93. How are vitamins classified? Mention the chief sources of vitamins A and C.

Watch Video Solution

Watch Video Solution

94. Name the deficiency diseases resulting from lack of Vitamins A and E in the diet.

Watch Video Solution

95. Name of disease caused due to deficiency of Vitamin-C

Watch Video Solution

96. Name the disease caused due to lack in insulin secretion.

Watch Video Solution

97. Deficiency of which vitamin causes scurvy ?

Watch Video Solution

98. The deficiency of which vitmain causes the disease pernicious anaemia ?

Watch Video Solution

99. Name two fat soluble vitamins, their sources and the diseases caused due to their deficiency.

Watch Video Solution

100. Name two water soluble vitamins, their sources and diseases caused due to their deficiency in diet.

Watch Video Solution

101. How are vitamines classified? Name the vitamin responsible for the coagulation of blood.

Watch Video Solution

102. Name two fat soluble vitamins, their sources and the diseases caused due to their deficiency.

Watch Video Solution

103. Name the deficiency disease caused due to deficiency of vitamin A

Watch Video Solution

104. What is the chemical name of vitamin A and which disease is caused by its deficiency?

Watch Video Solution

105. Write the full form of t-RNA.

Watch Video Solution

106. Name the bases present in RNA. Which one these is not present in DNA ?

Watch Video Solution

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

Watch Video Solution

Watch Video Solution

108. Uridine, present only in RNA is

Watch Video Solution

109. Discuss briefly the structure of CsCl.

Watch Video Solution

110. The two strands in DNA are not identical but are complementary. Explain.

Watch Video Solution

111. What are nucleic acids ? Explain the terms (i) Replication &(ii) Transcription.

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112. Discuss the role, the enzyme DNA ligase plays during DNA replication.

Watch Video Solution

113. What are two functions of DNA polymerase ?

Watch Video Solution

114. Give three differences between DNA and RNA.

Watch Video Solution

Watch Video Solution

Matching Type Questions

1. Match the vitamins given in Column I with the deficiency disease they cause given in Column II.

$Column I$ (Vitamins)	$Column II$ (Diseases)
A. Vitamin A	1. Pernicious anaemia
B. Vitamin B_1	2. Increased blood clotting time
C. Vitamin B_{12}	3. Xerophthalmia
D. Vitamin C	4. Rickets
E. Vitamin D	5. Muscular weakness
F. Vitamin E	6. Night blindness
G. Vitamin K	7. Beri-beri
	8. Bleeding gums
	9. Osteomalacia

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2. Match the following enzymes given in Column I with the reactions they catalyse given in Column II.

$Column I$ (Enzymes)	$Column II$ (Reactions)
A. Invertase	1. Decomposition of urea into NH_3 and CO_2
B. Maltase	2. Conversion of glucose into enthyl alcohol
C. Pepsin	3. Hydrolysis of maltose into glucose
D. Urease	4. Hydrolysis of cane sugar
E. Zymase	5. Hydrolysis of proteins into peptides

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Assertion And Reason Type Questions

1. Assertion (A) $D(+)-$ Glucose is dextrorotatory in nature.

Reason (R) 'D' represents its dextrorotatory nature.

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 statement.

D. Assertion is wrong statement and reason is correct statement.

Answer: C

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2. Assertion (A) Vitamin D can be stored in our body.

Reason (R) Vitamin D is fat soluble vitamin.

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 statement.

D. Assertion is wrong statement and reason is correct statement.

Answer: A

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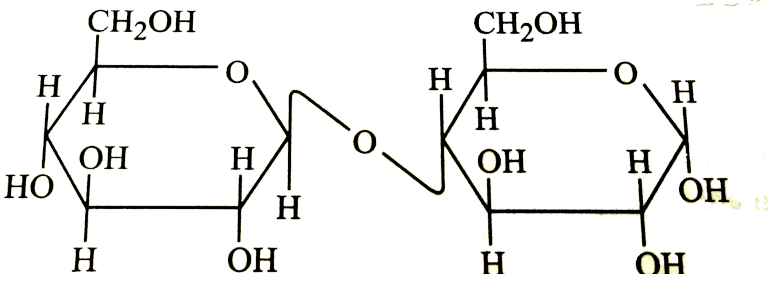
3. Assertion : β- Glycosidic linkage is present in maltose.



Reason :Maltose is composed of two glucose units in which $C-1$ of one glucose unit is linked to $C-4$ of another glucose unit.

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 statement.

D. Assertion is wrong statement and reason is correct statement.

Answer: D

View Text Solution

4. Assertion (A) All naturally occurring α-aminoacids except glycine are optically active.

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

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 statement.

D. Assertion and reason both are correct statements but reason does not explain assertion.

Answer: D

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5. Assertion (A) Deoxyribose, $C_5H_{10}O_4$ is not a carbohydrate.

Reason (R) Carbohydrates are hydrates of carbon so compounds which follow $C_x(H_2O)_y$ formula are carbohydrates.

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 statement.

D. Assertion is wrong statement and reason is correct statement.

Answer: B

Watch Video Solution

6. Assertion (A) Glycine must be taken through diet.

Reason (R) It is an essential amino acid.

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 statement.

D. Assertion is wrong statement and reason is correct statement.

Answer: B

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7. Assertion (A) In presence of enzyme, substrate molecule can be attacked by the reagent effectively.

Reason (R) Active sites of enzymes hold the substrate molecule in a suitable position.

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 statement.

D. Assertion is wrong statement and reason is correct statement.

Answer: A

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Long Answer Questions

1. Write the reactions of D-glucose which can't be explained by its open chain structure. How can cyclic structure of glucose explain

these reactions?

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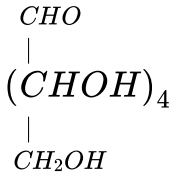
2. On the basis of which evidences D-glucose was assigned the following structure?



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3. Carbohydrates are essential for life in both plants and animals. Name the carbohydrates that are used as storage molecules in plants and animals, also name the carbohydrate which is present in wood or in the fibre of cotton cloth.

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4. Explain the terms primary and secondary structures of proteins. What is the difference between α-helix and β-pleated sheet structure of proteins?

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5. Write the structures of fragments produced on complete hydrolysis of DNA. How are they linked in DNA molecule? Draw a diagram to show pairing of nucleotide bases in double helix of DNA.

Watch Video Solution

6. What are carbohydrates ? How are they classified ? Give example of each class.

Watch Video Solution

7. Name two important polysaccharides of D-glucose.

Watch Video Solution

8. Discuss briefly the chemical properties of H_2S.

Watch Video Solution

9. What are proteins ? How are they classified ? Discuss briefly their primary, secondary and tertiary structures.

Watch Video Solution

10. What are nucleic acids are how are they classified ? What are their functions ? Name the types of bases present in their nucleotides.

Watch Video Solution

11. Name the prodcuts obtained on complete hydrolysis of DNA. Enumerate the structural difference between DNA and RNA. In what way is a nucleotide different from a nucleoside ? ILLustrate with examples.

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Additional Questions Very Short Answer Questions

1. What are biomolecule ?

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2. How is oxygen replenished in our atmosphere ?

Watch Video Solution

3. Why are carbohydrates generally optically active ?

Watch Video Solution

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

Watch Video Solution

5. What are oligosaccharides?

Watch Video Solution

6. What are disaccharides ? Give an example.

Watch Video Solution

7. Which one of the following is a disaccharide : Starch , Maltose , Fructose, Glucose?

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8. What are tetrasaccharides ? Give an example.

Watch Video Solution

9. What are polysaccharides ? Give one example.

Watch Video Solution

10. Name one reducing and one nonreducing disaccharide.

Watch Video Solution

11. What is mutarotation ?

Watch Video Solution

12. What is invert sugar?

Watch Video Solution

13. What is meant by inversion of sugar ?

Watch Video Solution

14. Explain what is meant

(i) Glycosidic linkage

Watch Video Solution

15. Give an example of a disaccharide that contains fructose unit in the furanose form.

Watch Video Solution

16. Name the monosaccharide units in maltose.

Watch Video Solution

Watch Video Solution

17. Which of the components of starch is water soluble ?

Watch Video Solution

18. How are carbohydrates stored in the animal body ?

Watch Video Solution

19. Name two carbohydrates which act as bio-fuels.

Watch Video Solution

20. Enlist two biological importance of amino acids.

Watch Video Solution

21. Amino acids and proteins

Watch Video Solution

22. In what respect would any two naturally occuring amino acids differ from one another ?

Watch Video Solution

23. What are zwitterions ?Give one example.

Watch Video Solution

24. Write the zwitterion structure for glycine.

Watch Video Solution

25. Isoelectric point is a

Watch Video Solution

26. (a) Give one example each of essential and non-essential amino acids.

(b) What is the difference between DNA and RNA ?

Watch Video Solution

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

Watch Video Solution

28. What is a prothetic group ?

Watch Video Solution

29. Write the name of linkage joining two amino acids.

Watch Video Solution

30. What is a peptide bond?

Watch Video Solution

31. What is a polypeptide ? Give one example.

Watch Video Solution

32. What type of bonding occurs in globular protein?

Watch Video Solution

33. What forces are responsible for stability of α-helix ?

Watch Video Solution

34. Name the central atom present in haemoglobin and chlorophyll.

Watch Video Solution

35. Give one example each for (a) Fibrous Protein (b) Globular Protein

Watch Video Solution

36. Differentiate between Keratin and insulin.

Watch Video Solution

37. What causes sickle cell anaemia?

Watch Video Solution

38. When protein is subjected to denaturation

Watch Video Solution

39. Give the biological functions of the following proteins:

(i) Haemog

Watch Video Solution

40. What are coenzymes ? Give example.

Watch Video Solution

41. Name the enzyme present in human saliva.

Watch Video Solution

42. The sucrose that we eat in daily life is converted into glucose and fructose. Name the enzyme which facilitates this chemical reaction.

Watch Video Solution

43. the enzyme that converts glucose into alcohol is

Watch Video Solution

44. Certain diseases are caused by enzyme defiencies. Explain giving one example.

Watch Video Solution

45. Name the enzyme that is used to dissolve blood clots ?

Watch Video Solution

46. Define hormone. Give one example.

Watch Video Solution

47. How many amino acids are present in completely mature insulin?

Watch Video Solution

48. Give the biological importance of polysaccharides.

Watch Video Solution

49. Name the vitamins, deficiency of which cause

(i) Night-blindness

(ii) Rickets

(iii) Poor coagulation of blood

(iv) Impotency

Watch Video Solution

50. What is the chemical name of (i) vitamin E and (ii) vitamin C ?

Watch Video Solution

51. Name the central metal ion present in haemoglobin and vitamin B_{12}?.

Watch Video Solution

52. Name the vitamins deficiency of which causes (i) rickets (ii) night blindness. (iii) Seurvy.

Watch Video Solution

53. Write tha name of the vitamin whose deficiency causes bone deformities in children.

Watch Video Solution

54. Deficiency of _____ causes a disease known as beri-beri.

Watch Video Solution

55. Fresh tomatoes are a better source of vitamin C than those which have been stored for some time. Explain.

Watch Video Solution

56. Vitamin 'C' is a vitamin found in fruits and vegetables. It cannot be stored in our body. Why ?

Watch Video Solution

57. What is hypervitaminoses and avitaminoses ?

Watch Video Solution

58. Deficiency of which vitamin in human diet may cause pernicous anaemia?

Watch Video Solution

59. B-complex is an often prescribed vitamin. What is complex about it and what is its usefulness ?

Watch Video Solution

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

Watch Video Solution

61. Which purine and pyrimidine bases are present in DNA and RNA?

Watch Video Solution

62. The sugar present in DNA is :

Watch Video Solution

63. What is nucleotide?

Watch Video Solution

64. What is a nucleotide ?

Watch Video Solution

65. (i) Which vitamin deficiency causes rickets?

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

Watch Video Solution

66. (i) What type of linkage is present in nucleic acids ?

(ii) Give one example each of water soluble and fat soluble vitamins.

Watch Video Solution

67. What type of linkage holds together the monomers in DNA ?

Watch Video Solution

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

Watch Video Solution

69. name three nucleic acids which are used in protein synthesis.

Watch Video Solution

70. name three nucleic acids which are used in protein synthesis.

Watch Video Solution

71. What are the three types of RNA molecules which perform different functions ?

Watch Video Solution

72. What is a gene?

Watch Video Solution

73. Which of the following base pairs are found in DNA and which of them in RNA ?

(i) $A : A$

(ii) $A : T$

(iii) $C : G$

(iv) $G : C$

(v) $G : A$

(vi) $A:U$,

(vii) $G:U$ and

(viii) $A:C$.

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74. If a fragment of DNA molecule has the base sequence :

(a)$TGATGCCGA$

(b) $ATCTCGTAC$

(c) $GTAATCCAG$

(d) $AATTCCCGG.$

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Higher Order Thinking Skills Questions And Problems With Answers Solution Hots Questions

1. How many moles of acetic anhydride will be required to form glucose pentaacetate from 2 M of glucose ?

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2. How do anomers differ from epimers?

Watch Video Solution

3. Glucose, Mannose and fructose.give identical osazones. Explain

Watch Video Solution

4. Give reason :

On electrolysis in acidic solution amino acids migrate towards cathode while in alkaline solution these migrate towards anode.

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5. What forces are responsible for the stability of α-helix. Why is it also known as 3.6_{13} helix?

Watch Video Solution

6. 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.

$$\begin{array}{lccccc} & [A] & \Longleftrightarrow & \text{equilibrium mixture} & \Longleftrightarrow & B \\ [\alpha]_D = & 111^\circ & & 52.2^\circ & & 19.2^\circ \end{array}$$

(i) What are such isomers called ?

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

(iii) Draw the cyclic structure of anomer [A].

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7. The K_α and K_β values of a-amino acids are very low. Explain.

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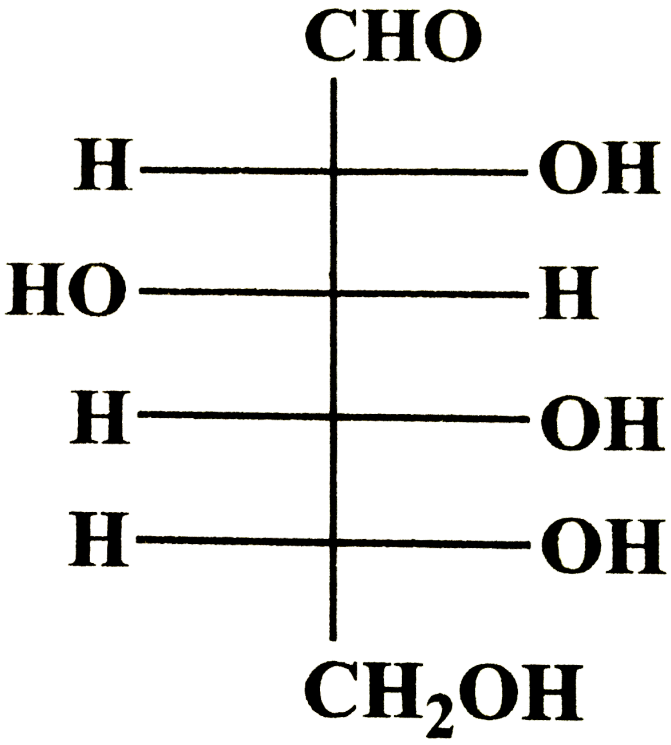
8. Write the structure of alanine at pH = 2 and pH = 10.

Watch Video Solution

9. The Fisher projection of $D-(+)$-glucose is



(i) Give the Fischer projection of L-(-)- glucose.

(ii) Give the product of reaction of L-glucose with Tollens' reagent .

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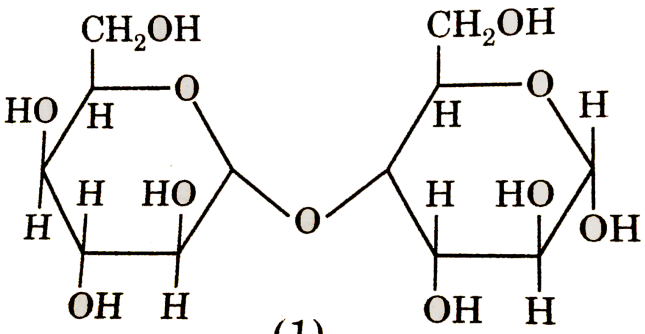
Higher Order Thinking Skills Hots Problems

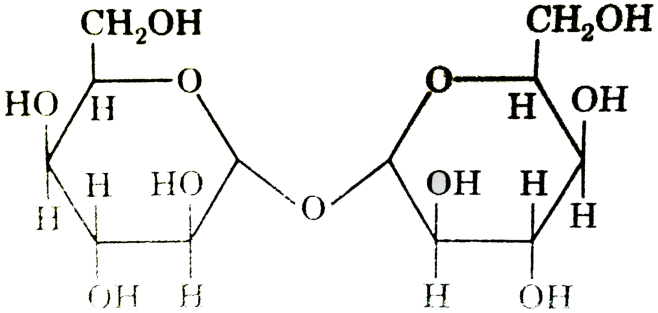
1. Which of the following will reduce Tollen's reagent ? Explain.

(a)



(1)

(b)



(2)

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Higher Order Thinking Skills Questions And Problems With Answers Solution Hots Questions P 1

1. A tripeptide on complete hydrolysis gives glycine, alanine, and phenylanine,using three-letter symbols write down the possible sequences of the tripeptide.

Watch Video Solution

Higher Order Thinking Skills Questions And Problems With Answers Solution Hots Questions P 2

1. The two samples of DNA, A and B have melting tempreatures $(T_m)340$ and $350K$,respectively. Can you draw any conclusion from this data regarding their base content?

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Higher Order Thinking Skills Questions And Problems With Answers Solution Hots Questions P 3

1. In $E.\ coli DNA,\ AT/GC$ ratio is 0.93. If the number of moles of adenine in its DNA sample is $465,000,$ calculate the number of moles of guanine present.

Watch Video Solution

Value Based Questions With Answers

1. Shikhas has three frocks that she wear when playing. The material is good, but the colours are faded. Her mother buys some blue dye and uses it on two of the frocks. What fraction of all of the Shikha play frocks did her mother dye?

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2. Financial statements are prepared following the consistent accounting concepts, principles, procedures and also the legal environment in which the business organisations operate. These statements are the sources of information on the basis of which conclusions are drawn about the profitability and financial position of a company so that their users can easily understand and use them in their economic decisions in a meaningful way.

From the above statement, identify any two values that a company should observe while preparing its financial statement. Also, state under which major headings and sub-headings the following items will be presented in the Balance Sheet of a company as per Schedule III of the Companies Act, 2013:

(i) Capital Reserve, (ii) Calls-in-Advance,

(iii) Loose Tools, and (iv) Bank Overdraft.

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3. Shanti , a domesticf helper of Mrs. Anuradha , fainted while mopping the floor. Mrs. Anuradha immediately took her to the nearby hospital where she was diagnosed to be severly anaemic. The doctor prescribed an iron rich diet and multivitamins supplement to her . Mrs. Anuradha supported her financially to get the medicines. After a month , Shanti was diagnosed to be normal.

After reading the above passage, answer the following questions :

(i) What values are displayed by Anuradha ?

(ii) Name the vitamin whose deficiency causes 'pernichious anaemia'.

(iii) Give an example of a water soluble vitamin.

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4. After watching a programme on TV about the adverse effects of junk food and soft drinks on the health of school children, Sonali, a student of Class XII, discussed the issue with the school principal.

Principal immediately instructed the canteen contrator to replace the fast food with the fibre and vitamins rich food like sprouts, salad, fruits etc. This decision was welcomed by the parents and the students.

After reading the above passage, answer the following questions :

(a) What values are expressed by SonaJi and the Principal of the school?

(b) Give two examples of water-soluble vitamins.

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5. The judical system in our country is quite slow. Sometimes it takes 10-15 years to decide a criminal or a rape or a paternity case. Pragya, a class XII student, pointed out that reacent developments in forensic sciences has evolved DNA fingerprinting technique which is quite fast and gives relibale results.

After rading the above pasage, answer the following questions :

(i) What is DNA fingerprinting and how DNA fingerprinting has been useful in identification of criminals.

(ii) How DNA fingerprinting has been used to determine the paternity of a person ?

(iii) Can DNA fingerprinting be used to prove someone innocent ?

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Competition Focus Jee Main And Adanced Medical Entrance Special I Multiple Choice Questions

1. Which of the following compound can be detected by Molisch's test?

A. Sugars

B. Amines

C. Primary alcohols

D. Nitro compounds

Answer: A

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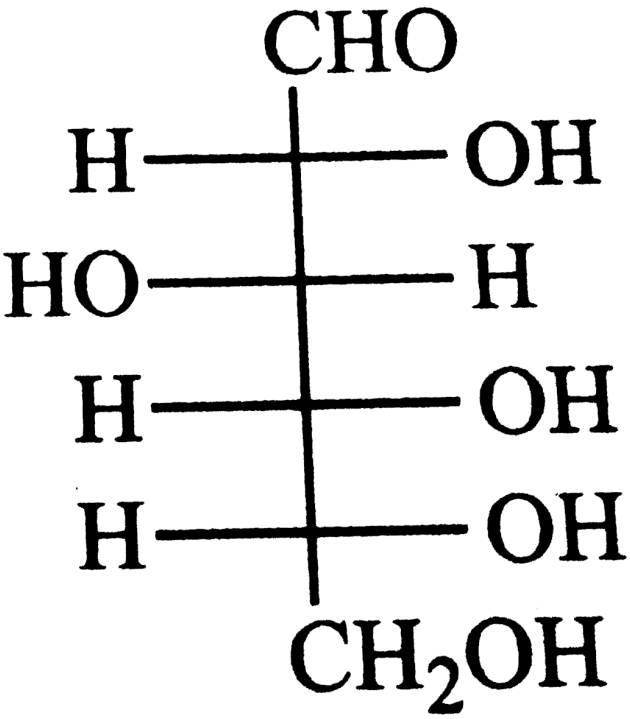
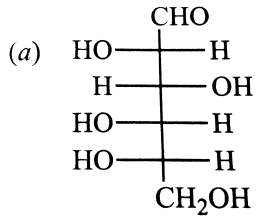
2. The structure of $D-(+)-$ glucose is

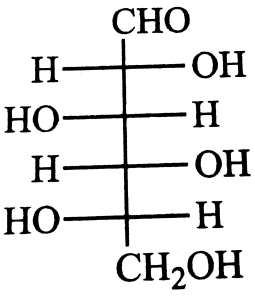


The structure of $D-(-)-$ glucose is

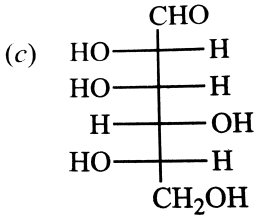
A.



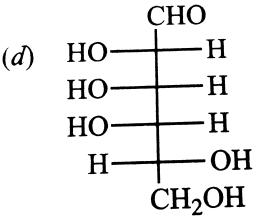
B.



C.



D.



Answer: A

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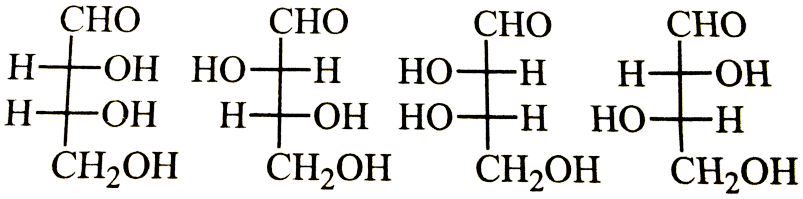
3. The correct corresponding order of names of four aldoses with configuration given below



A. L-erythrose , L-threose , L-erythrose , D-threose

B. D-threose , D-erythrose, L-threose , L-erythrose

C. L-erythreose, D-erythrose, D-erythrose, D-threose

D. D-erythrose, D-threose, L-erythrose, L-threose

Answer: D

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4. Glucose when reduced with HI and red phosphorus gives

A. n-hexane

B. n-heptane

C. n-pentane

D. n-octane

Answer: A

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5. Glucose molecule reacts with X number of molecules of phenylhydrazine to yield osazone. The value of X is

A. three

B. two

C. one

D. four

Answer: A

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6. Which of the following set of molecules give same osazone when reacted with excess of phenylhydrazine :-

A. D-glucose , D-fructose and D-galactose

B. D-glucose ,D-fructose

C. D-glucose, D-mannose and D-galactose

D. D-fructose , D-mannose and D-galactose

Answer: B

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7. Ribose and 2-deoxyribose can be differentiated by

A. Fehling's solution

B. Tollen's reagent

C. Barfoed's reagent

D. Osazone does not react with

Answer: D

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8. Glucose does not react with :

A. hydroxylamine

B. acetic anhydride

C. sodium bisulphite

D. Br_2 / H_2O

Answer: C

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9. $D(+)$ glucose reacts with hydroxylamine and yields an oxime. The structure of the oxime would be :

A.

B.

C.

D.

Answer: D

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10. α-D(+)-glucose and β-D(+) glucose are

A. enantiomers

B. conformers

C. epimers

D. anomers

Answer: D

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

A. Glucose

B. Sucrose

C. Maltose

D. Lactose

Answer: B

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12. Which one of the following does not exhibit the phenomenon of mutarotation ?

A. (-) Fructose

B. (+) Sucrose

C. (+) Lactose

D. (+) Maltose

Answer: B

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13. The beta (β) and alpha (α) glucose have different specific rotation. When either is dissolved in water, their specific rotation changed to reach a certain fixed value. This is called :-

A. epimerization

B. racemisation

C. anomerisation

D. mutarotation

Answer: D

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14. Fructose reduces Tollens' reagent due to :

A. asymmetric carbons

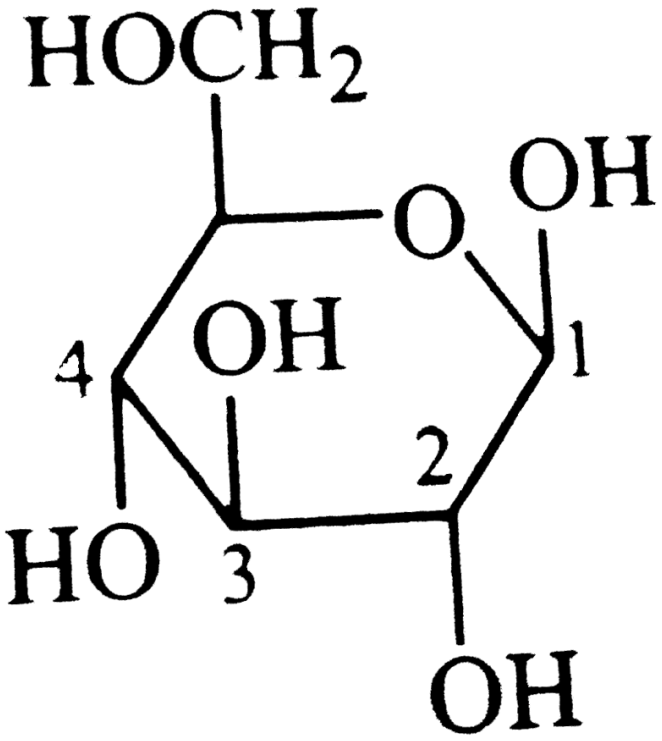
B. primary alcoholic group

C. secondary alcoholic group

D. enolisation of fructose followed by conversion to aldehyde by base

Answer: D

15. In the following structure,



anomeric carbon is

A. 1

B. 2

C. 3

D. 4

Answer: A

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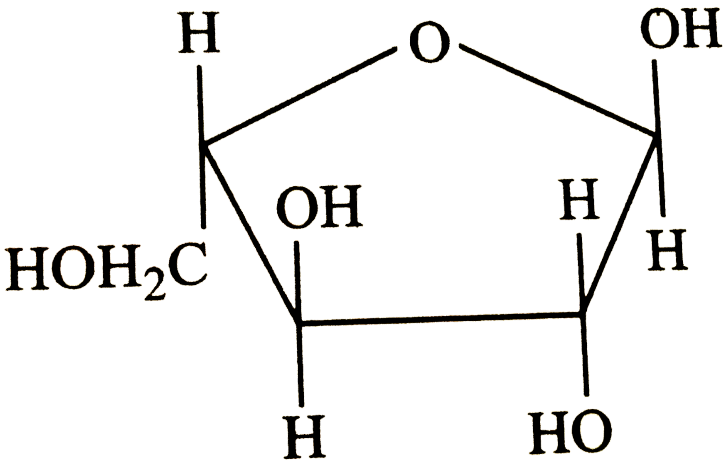
16. Which set of terms correctly identifies the carbohydrate shown ?



1.Pentose 2.Hexose 3. Aldose 4. Ketose 5.Pyranose 6.Furanose

A. 1,3 and 6

B. 1,3 and 5

C. 2,3 and 5

D. 2,3 and 6

Answer: A

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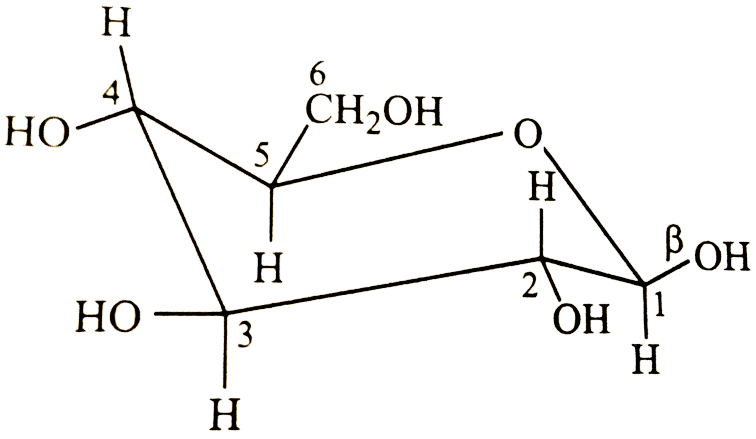
17. The following carbohydrate is



A. a ketohexose

B. an aldohexose

C. an α-furanose

D. an α- pyranose

Answer: B

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18. Which of the following has maximum laevorotation ?

A. D-Glucose

B. D-Fructose

C. Sucrose

D. Invert sugar

Answer: B

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19. Hydrolysis of sucrose is called

A. inversion

B. esterification

C. hydration

D. saponification

Answer: A

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20. Which one of the following sets of monosaccharides forms sucrose ?

A. α-D-galactopyranose and α-D-glucopyranose

B. α-D-glucopyranose and β-D-fructofuranose

C. β-D-glucopyranose and α-D-fructofuranose

D. α-D-glucopyranose and β-D-fructopyranose

Answer: B

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21. α-Maltose consists of

A. one $\alpha - D$ -glucopyranose unit and one $\beta - D$-glucopyranose unit by 1,2-glycosidic linkage

B. two $\alpha - D$-glucopyranose unit with 1,2-glycosidic linkage

C. two $\beta - D$- glucopyranose units with 1,4-glycosidic linkage

D. two `alpha-D-glucopyranose units with 1,4-glycosidic linkage

Answer: D

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22. Which one of the following statements is not true regarding $(+)$ Lactose ?

A. $(+)$ -Lactose , $C_{12}H_{22}O_{11}$ contains $8OH$ groups

B. On hydrolysis $(+)$- lactose gives equal amounts of $D-(+)$-glucose and $D-(+)$ -galactose.

C. $(+)$ - Lactose is a β-glycoside formed by the union of a molecule of $D(+)$ glucose and a molecule of $D(+)$-galactose

D. $(+)$-Lactose is a reducing sugar and does not exhibit mutarotation

Answer: D

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23. The statement that is NOT correct is that

A. aldose or ketose sugars in alkaline medium do not isomerise

B. carbohydrates are optically active

C. penta-acetate of glucose does not react with hydroxylamine

D. lactose has glycosidic linkage between C_4 of glucose and C_1 of galactose.

Answer: A

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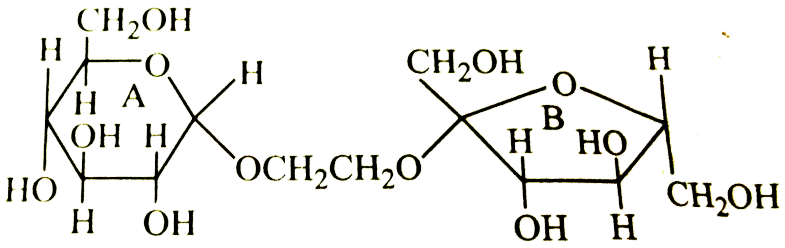
24. The correct statement about the following disaccharide is



A. Ring (A) is pyranose wiht α-glycosodoc link

B. Ring (A) is furanose with α-glycosidic link

C. Ring (B) is furanose with α- glycosidic link

D. Ring (B) is pyranose with β-glyscosidic link.

Answer: A

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25. Which of the components of starch is water soluble ?

A.

B.

C.

D.

Answer:

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26. Glycogen is

A.

B.

C.

D.

Answer: B

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27. Cellulose upon acetylation with excess acetic anhydride/ H_2SO_4 (catalytic) gives cellulose triacetate whose structure is

A.

B.

C.

D.

Answer: A

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28. Cellulose is soluble in

A. ammonical curpic hydroxide solution

B. organic solvents

C. water

D. none of these

Answer: A

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29. Callulose is not digestible by human beings due to the absence of cellulose hydrolysing enzyme called

A. cellulose

B. zymase

C. invertase urease

D. urease

Answer: A

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30. The one letter code for the amino acid tryptophan is

A. G

B. V

C. W

D. H

Answer: C

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31. Which of the following is an essential amino acid ?

A. Methionine

B. Tyrosine

C. Alanine

D. Glycine

Answer: A

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32. Thiol group is present in :

A. cytosine

B. cystine

C. cysteine

D. methionine

Answer: C

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33. Which of the following satements is correct ?

A. All amino acids are optically active

B. All amino acids except glycine are optically active.

C. All amino acids except glutamic acid are optically active

D. All amino acids except lysine are optically active

Answer: B

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34. Lysine is least soluble in water in the pH range.

A. 3 to 4

B. 5 to 6

C. 6 to 7

D. 8 to 9

Answer: D

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35. Which the list shown below, the correct pair of structures of alanine in pH ranges 2-4 and 9-11 is

I. $H_3N^+CH(CH_3)CO_2H$

II. $H_2NCH(CH_3)CO_2^-$

III. $H_3N^+CH(CH_3)CO_2^-$

IV. $H_2NCH(CH_3)CO_2H$

A. I, II

B. I,III

C. II, III

D. III, IV

Answer: A

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36. In a protein molecule various amino acids are linked together by :

A. peptide bond

B. dative bond

C. α-glycosidic bond

D. β-glycosidic bond

Answer: A

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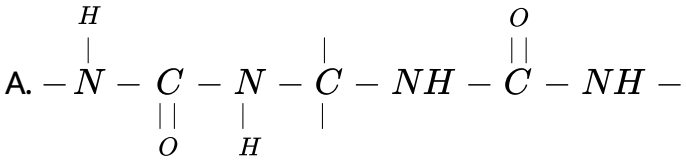
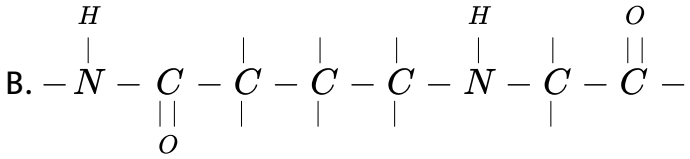
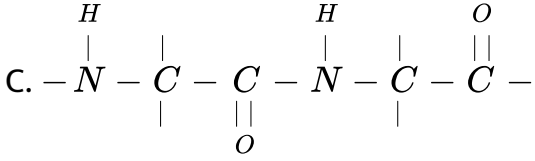
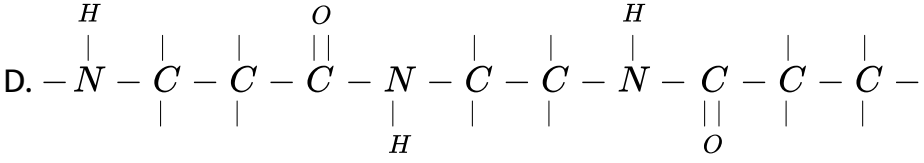
37. Which of the following structures represents the peptide chain?

A. 

B. 

C. 

D. 

Answer: C

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38. The number of tripeptides formed by three different amino acids is:

A. Three

B. Four

C. Five

D. Six.

Answer: D

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39. Which statement is incorrect about peptide bond?

A. $C-N$ bond length in proteins is longer than usual bond length of $C-N$ bond

B. Spectroscopic analysis shows planar structure of $-CO-NH-$ group

C. $C-N$ bond length in proteins in smaller than usual bond length of $C-N$ bond

D. None of tha above

Answer: A

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40. Sanger's reagent is used for the identification of:

A. N -terminal of a peptide chain

B. C-terminal of a peptide chain

C. side chain of amino acids

D. molecular weight of the peptide chain

Answer: A

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41. The correct structure of the dipeptide gly-ala is

A. $H_2N-\overset{\overset{CH_3}{|}}{CH}-\overset{\overset{O}{||}}{C}-NH-CH_2-COOH$

B. $H_2N-\overset{\overset{CH_2SH}{|}}{CH}-\underset{\underset{O}{||}}{C}-NH-CH_2-COOH$

C. $H_2N-CH_2-\overset{\overset{O}{||}}{C}-NH-\overset{\overset{CH_3}{||}}{CH}-COOH$

D. $H_2N - CH_2 - \overset{\overset{O}{||}}{C} - NH - \overset{\overset{CH_3SH}{||}}{CH} - COOH$

Answer: C

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42. The tripeptide is written as Glycine-Alanine-Glycine. The correct structure of the tripeptide is

A.

B.

C.

D.

Answer: $(\#\#PR_CHE_V02_XII_C14_E17_{042}\ \_\ O01\#\#)$

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43. Which of the following is conjugated protein

A. Phosphoprotein

B. Glycoprotein

C. Chromoprotein

D. All of these

Answer: D

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44. Secondary structure of proteins refers to

A. mainly denatured proteins and the structure of the prosthetic group

B. three dimensional structure , especially between amino acid residue that the distant from each other in the polypeptide chain

C. linear structure of amino acid residues in the polypeptide chain

D. regular folding patterns of continuous protions of the polypeptide chain

Answer: D

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45. Select the incorrect statement , among the following

A. Haemoglobin is soluble in water

B. α-Keratin is soluble in water

C. Cellulose is a polymer of glucose

D. Chlorophyll is responsible for the synthesis of carbohydrates in plants.

Answer: B

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46. Which functional group participates in the disulphide bond formation in proteins?

A. Thioether

B. Thiol

C. Thioester

D. Thiolactose

Answer: B

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47. Subunits present in haemoglobin are:

A. 2

B. 3

C. 4

D. 5

Answer: C

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48. Biuret test is not given by :

A. urea

B. proteins

C. carbohydrates

D. polypeptides

Answer: C

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49. Which of the statements about "Denaturation" given below are correct ?

(1) Denaturation of proteins causes loss of secondary and tertiary structures of the protein.

(2) Denaturation leads to the conversion of double strand of DNA into single strand.

(3) Denaturation affects primary structure which gets distorted.

A. (i) and (iii)

B. (ii) and (iii)

C. (i) and (ii)

D. (i) , (ii) , (iii)

Answer: C

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50. Which one of the following statements is incorrect about enzyme catalysis ?

A. Enzymes are mostly proteinous in nature

B. Enzymes action is pecific

C. Enzymes are denatured by ultraviolet rays and at high temperature

D. Enzymes are least reactive at optimum temperature

Answer: D

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51. How many amino acids are present in insulin ?

A. 25

B. 51

C. 20

D. 22

Answer: B

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52. The number of disulphide linkages present in insulin are

A. 4

B. 3

C. 2

D. 1

Answer: B

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53. The hormone which controls the process of burning of fats, protiens, and carbohydrates and liberates energy in the body is:

A. thyroxine

B. adrenaline

C. insulin

D. cortisone.

Answer: C

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54. The hormone that helps in the conversion of glucose into glycogen is:

A. cortisone

B. bile acids

C. adrenaline

D. insulin

Answer: D

Watch Video Solution

55. Which of the following hormones is produced under the conditions of stress which stimulate glycogenolysis in the liver of human beings ?

A. thyroxine

B. Insluin

C. adrenaline

D. Estradiol

Answer: C

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56. The deficiency of vitamin C causes

A. scurvy

B. rickets

C. pyorrhea

D. pernicious anaemia.

Answer: A

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57. Deficiency of vitamin B_1 causes the disease :

A. convulsions

B. beri-beri

C. cheilosis

D. sterility

Answer: B

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58. Cheilosis and digestive disorders are due to the deficiency of

A. ascorbic acid

B. pyridoxine

C. thiamine

D. riboflavin

Answer: D

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59. Biotin is an organic compound present in yeast. Its deficiency in diet causes dermatitis and paralysis. It is also known as:

A. vitamin H

B. vitamin B_1

C. vitamin B_{12}

D. vitamin D

Answer: A

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60. The vitamins which is neither soluble in water nor in fat is

A. biotin

B. phylloquinone

C. thiamine

D. ergocaleiferol

Answer: A

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61. Which of the vitamins given below is water soluble ?

A. Vitamin E

B. Vitamin K

C. Vitamin C

D. Vitamin D

Answer: C

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62. Which of the following contain cobalt?

A. haemoglobin

B. chlorophyll

C. vitamin B_{12}

D. vitamin A

Answer: C

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63. Which of the following is not a fat soluble vitamin ?

A. Vitamin B complex

B. Vitamin D

C. Vitamin E

D. Vitamin A

Answer: A

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

A. Thymine

B. Quinoline

C. Adenine

D. Cytosine

Answer: B

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65. Adenosine is an example of

A. purine base

B. nucleoside

C. nucleotide

D. pyridoxine base

Answer: B

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66. The presence or absence of hydroxy group on which carbon atom of sugar differentiates RNA and DNA.

A. 2nd

B. 3rd

C. 4th

D. 1st

Answer: A

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67. RNA and DNA are chiral molecules, their chirality is due to

A. D-sugar component

B. L-sugar componet

C. chiral bases

D. chiral phosphate ester unit

Answer: A

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68. The correct statement regarding RNA and DNA, respectively is :

A. the sugar component in RNA is a arabinose and the sugar component in DNA is ribose

B. the sugar component in RNA is 2' -dexoyribose and the sugar component in DNA is arabinose

C. the sugar component in RNA is arabinose and the sugar component in DNA is 2' deoxyribose

D. ths sugar component in RNA is ribose and the sugar component in DNA is 2' -deoxyribose.

Answer: D

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69. In both DNA and RNA, the heterocyclic base and phosphate ester linkages are at:

A. C_5' and C_2' respectively of the sugar molecule

B. C_2' and C_5' respectively of the sugar molecule

C. C_1' and C_5' respectively of the sugar molecule

D. C_5' and C_1' respectively of the sugar molecule

Answer: C

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70. Chargaff' a rule states that in an organism:

A. Amount of adenine (A) is equal to that of thymine (T) and the amount of thymine (T) is equal to that of cytosine (C).

B. Amount of adenine (A) is equal to that of guanine (G) and the amount of thymine (T) is equal to that of cytosine (C).

C. Amount of adenine (A) is equal to that of cytosine(C) and the amount of thymine (T) is equal to that of guanine (G).

D.

Answer: A

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71. In DNA, the complimentary bases are

A. adenine and guanine , thymine and cytosine

B. uracil and adenine , cytosine and guanine

C. adenine and thymine, guanine and cytosine

D. adenine and thymine , guanine and uracil.

Answer: C

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72. The central dogma of molecular genetics states that the genetic information flows from

A. Amino acids $\rightarrow$ Proteins $\rightarrow DNA$

B. $DNA \rightarrow$ Carbohydrates $\rightarrow$ Proetins

C. DNA $\rightarrow$ RNA $\rightarrow$ Proteins

D. DNA $\rightarrow$ RNA $\rightarrow$ Carbohydrates

Answer: C

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73. The anticondon transfer RNA for the messenger RNA codon $G - C - A$ is

A. TGA

B. GUT

C. AGT

D. CGU

Answer: D

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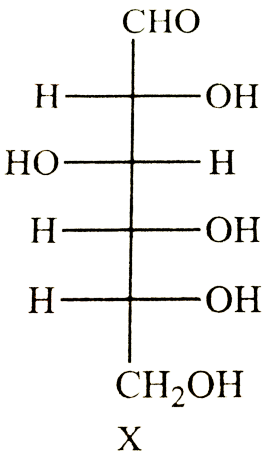
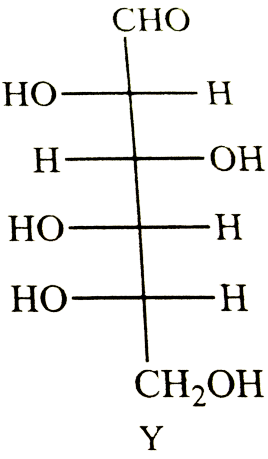
Competition Focus Jee Main And Adanced Medical Entrance Special Ii Multiple Choice Questions

1. Among the following statements about the molecules X and Y , the one (s) which is (are) correct is (are)



X



Y

A. X and Y are diastereomers

B. X and Y are enantiomers

C. X and Y both are aldohexoses

D. X is a D- sugar Y is an L-sugar

Answer: B,C,D

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2. Which of the following statements are correct ?

A. α- and β-D-glucopyranose are anomers

B. β-D - glucopyranose is more stable than $\alpha - D$-glucopyranose

C. galactose is a C_4 - epimer of glucose

D. invert sugar is laevorotatory

Answer: A,B,C,D

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3. For 'invert sugar', the correct statement(s) is (are)

(Given : specific rotations of (+) - sucrose, (+) - maltose, + 66°, $+140^\circ$, -52° and 92° respectively)

A. invert sugar' is prepared by acid catalyzed hydrolysis of maltose

B. invert sugar' is an equimolar mixture of D-$(+)$-glucose and $D-(-)$ -fructose

C. specific rotation of 'invert sugar' is -20°

D. on reaction with $Br-(2)$ water , 'invert sugar' forms saccharic acid as one of the products.

Answer: B,C

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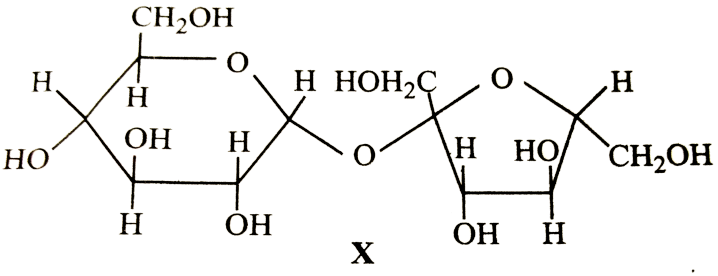
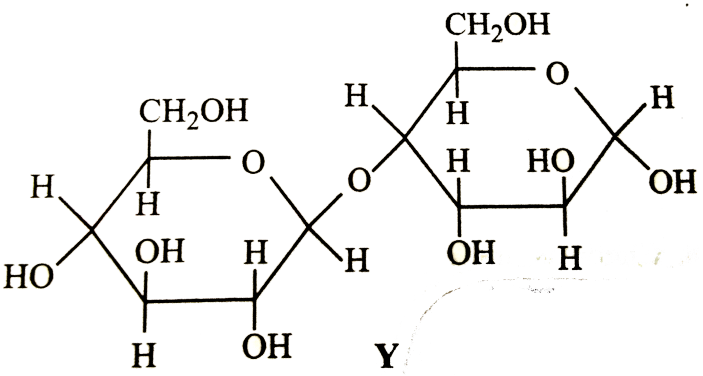
4. The correct statement(s) about the following sugars X and Y is (are)



X



Y

A. X is a reducing sugar and Y is a non- reducing sugar

B. X is a non -reducing sugar and Y is a reducing sugar

C. The glucosidic linkages in X and Y are α and β, respectively

D. The glucosidic linkages in X and Y are β and α, respectively.

Answer: B,C

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5. Which of the following statements about α-amino acids are true ?

A. In α -amino acids , the acidic group is $-\overset{+}{N}H_3$ while the basic group is $-COO^-$

B. All the α-amino acids which constitute proteins have D-configuration

C. The isoelectric point of glycine is 6.1

D. Valine is an essential amino acid

Answer: A,C,D

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6. Globular proteins are present in:

A. blood

B. keratin

C. eggs

D. muscles

Answer: A,C

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7. Number of pyrimidine bases present in both in DNA and RNA are

A. uracil

B. thymine

C. Cytosine

D. adenine

Answer: C,D

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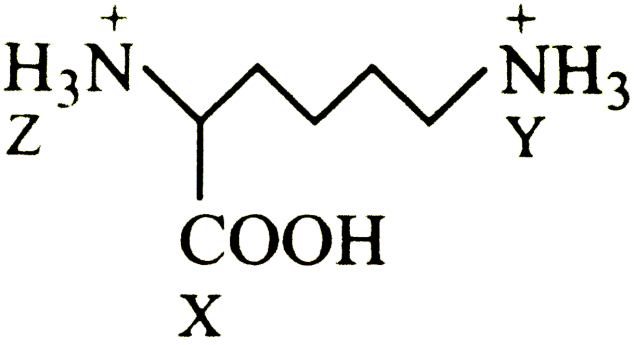

8. Acidity order is

A. $X > Z > Y$

B. $Z < X < Y$

C. $X > Y > Z$

D. $Z > X > Y$

Answer:

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

A. Lysine

B. Phenylalanine

C. Valine

D. Glycine

Answer:

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Multiple Choice Questions Comprehension

1. Monosaccharides containg an aldehyde group are called aldoses while those containing a keto group are called ketoses. The aldehyde group is usually present at C_1 while the keto group is

usually present at C_2. All monosaccharides containing five ans six carbon atoms have cyclic structures , furanose (five membered) and pyranose (six membered). During ring formation. C_1 in aldoses and C_2 in ketoses becomes chiral and hence all these monosaccharides exist in two steroismeric forms called the α-anomer and the β-anomer while C_1 and C_2 are called glycosidic or anomeric carbon atoms. In contrast, steroisomers , which differ in configuration at any other chiral carbon other than the glycosidic carbon are called epimers. Two molecules of the same or different monosaccharides combine together through glycosidic linkage to form dissacharides. All monosaccharides (aldoses and ketoses) and disacchardies expect sucrose reduce Tollens' reagent and Fehling's solution , undergo mutarotation and form osazones.

In disaccharides , the linkage connecting monosaccharide units is called.

A. glycoside linkage

B. nuclesoside linkage

C. glycogen linkage

D. peptide linkage.

Answer: A

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2. Monosaccharides are polyhydric aldehydes and ketones which cannot be hydrolysed into simpler carbohydrates. The monosaccharides containing $-CHO$ group are called aldoses while those containing $C=O$ group are called ketoses. The aldehyde group is always present at C_1 while keto group is generally present at C_2. All monosaccharides are oxidised by Tollen's reagent and Fehling solution and are called reducing sugars.

The monosaccharide molecules may be assigned D and L-configurations depending upon whether the configuration of the

molecule is related to D- or L-glyceraldehyde. If the $-OH$ group is attached to the carbon adjacent to the $-CH_2OH$ group (last chiral carbon) is on the right hand side, it is assigned D-configuration. The molecule is assigned L-configuration if the -OH group attached to the carbon adjacent to the $-CH_2OH$ group is on the left. The monosaccharides contain one or more chiral carbon atoms. Pentoses and hexoses have cyclic structures furanose (five membered) and pyranose (six membered). During cyclization, C_1 in aldohexoses and C_2 in fructose become chiral and the newly formed -OH group may be either on the left or on the right in Fischer projection formulae. These monosaccharides, therefore, exist in two stereoisomeric forms called α-anomer and β-anomer while C_1 and C_2 are called glycosidic or anomeric carbon. The bonds joining glycosidic carbon are called glycosidic linkages. $D(+)$ glucose exists in two stereoisomeric forms, α-D-glucose and β-D-glucose. When either of these two forms of glucose i.e., $\alpha - D -$ glucose are dissolved in water and allowed to stand, these get slowly converted into other form and an

equilibrium mixture of both is formed. This process is called mutarotation.

Mutarotation does not occur in

A. Sucrose

B. D-glucose

C. L-glucose

D. D-gulcose

Answer: A

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3. Monosaccharides are polyhydric aldehydes and ketones which cannot be hydrolysed into simpler carbohydrates. The monosaccharides containing $-CHO$ group are called aldoses while those containing $C=O$ group are called ketoses. The

aldehyde group is always present at C_1 while keto group is generally present at C_2. All monosaccharides are oxidised by Tollen's reagent and Fehling solution and are called reducing sugars.

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Which of the following pairs give positive Tollen's test?

A. Glucose , sucrose

B. Glucose , fructose

C. Hexanal , acetophenone

D. Fructose, sucrose.

Answer: B

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4. Monosaccharides are polyhydric aldehydes and ketones which cannot be hydrolysed into simpler carbohydrates. The monosaccharides containing $-CHO$ group are called aldoses while those containing $C=O$ group are called ketoses. The aldehyde group is always present at C_1 while keto group is generally present at C_2. All monosaccharides are oxidised by Tollen's reagent and Fehling solution and are called reducing sugars.

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Two forms of D-glucopyranose are called

A. enantiomers

B. anomers

C. epimers

D. diastereomers

Answer: B

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5. Monosaccharides containg an aldehyde group are called aldoses while those containing a keto group are called ketoses. The aldehyde group is usually present at C_1 while the keto group is usually present at C_2. All monosaccharides containing five ans six carbon atoms have cyclic structures , furanose (five membered) and pyranose (six membered). During ring formation. C_1 in aldoses and C_2 in ketoses becomes chiral and hence all these monosaccharides exist in two steroismeric forms called the α-anomer and the β-anomer while C_1 and C_2 are called glycosidic or anomeric carbon atoms. In contrast, steroisomers , which differ in

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Which of the following pairs give the same osazone ?

A. Glucose , Fructose

B. Glucose , Galactose

C. Maltose , Lactose

D. Sucrose , Fructose

Answer: A

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6. α- Amino acids are the building blocks of proteins. About 20 α-amino acids have been isolated by the hydrolysis of proteins. All these amino acids except glycine are chiral and have L-configuration. Ten amino acids (valine , leucine, isoleucine , phenylalanine, methionine , trytophan , threonine , lysine , arginine and histidine) which the body cannot synthesize are called essential amino acids. The remaining ten are called non -essential amino acids. All α-amino acids exist are zwitterions each of which has a specific isoelectric point. Above isoelectric point , a α-amino acid exists as an anion. Two, three or many α-amino acids join together to form di-,tri -or polypeptides or proteins respectively. Each polypeptides or protein has a free amino group at one end called the N-terminal end and a free carboxyl group at the other end called the C-terimal end. Sanger's reagent (i.e., 2,4-dinitrofluorobenzene) is used to determine the N-terminal end while C-terimal end is determined by hydrazinolysis.

The acid showing salt-like character in aqueous solution is

A. acetic acid

B. benzoic acid

C. formic acid

D. α-aminoacetic acid.

Answer: D

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An α-amino below its isoelectric point exists as

A. $H_3\overset{+}{N} - CHR - COO^-$

B. $H_2N - CHR - COOH$

C. $H_2N - CHR - COO^-$

D. $H_2\overset{+}{N} - CHR - COOH$

Answer: D

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while C-terimal end is determined by hydrazinolysis.

Which of the following reagents is used to determine the C-terminal end in a polypeptide ?

A. Hydrazine

B. 2,4-Dintrophenylhydrazine

C. 2,4-Dinitrofluorobenzene

D. 3,5-Difluorenitrobenzene

Answer: A

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Iv Matching Type Questions

1. Match the entries of Column I with appropriate entries of Column II and choose the correct option out of the four options

(a), (b) ,(c) , (d) given at the end of each questions.

Column I		Column II	
(A)	Antirachitic vitamin	(p)	Vitamin B_{12}
(B)	Antihaemorrhagic vitamin	(q)	Vitamin D
(C)	Cyanocobalamin	(r)	Neither soluble in fat nor in water
(D)	Biotin	(s)	Vitamin K

A. A-p, B-q, C-s, D-r

B. A-q, B-s, C-r, D-p

C. A-p, B-s, C-r, D-q

D. A-q, B-s, C-p, D-r

Answer:

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Interger Type Questions

1. The total number of possible aldohexoses belonging to D-series is

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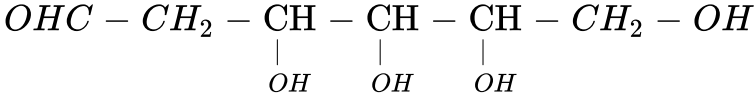
2. When the following aldohexose exists in its D-configuration, the total number of stereoisomers in its pyranose form is.



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

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4. The number of disulphide linkages present in insulin are

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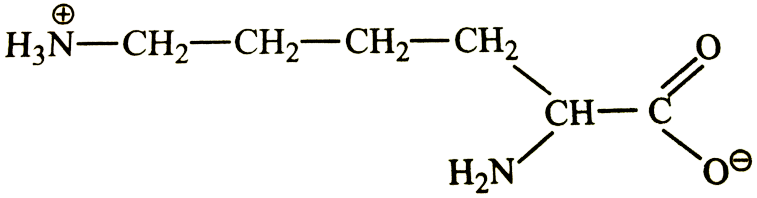
5. The total number of basic groups in the following form of lysine is



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6. Among the following total number of essential amino acids: Leucine, Alanine, Phenylalanine, Proline, Threonine, Lysine, Histidine, Arginine, Cysteine, Tryptophan, Serine, Valine is

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7. The number of tripeptides formed by three different amino acids is:

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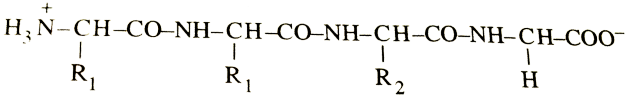
8. The substituents R_1 and R_2 for nine peptides are listed in the table given below. How many of these peptides are positively charge at p H 7.0 ?



Peptide	R_1	R_2
I	H	H
II	H	CH_3
III	CH_2COOH	CH_3
IV	CH_2CONH_2	$(CH_2)_4NH_2$
V	CH_2CONH_2	CH_2CONH_2
VI	$(CH_2)_4NH_2$	$(CH_2)_4NH_2$
VII	CH_2COOH	CH_2CONH_2
VIII	CH_2OH	$(CH_2)_4NH_2$
IX	$(CH_2)_4NH_2$	CH_3

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9. Sixteen aldohexosea are possible. How many of these do not undergo mutarotation or osazone formation ?

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10. Number of pyrimidine bases present in both in DNA and RNA are

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11. A decapeptide (Mol. Wt. 769) on complete hydrolysis gives glycine (Mol. Wt. 75), alanine and phenylalanine.

Glycine contributes $47.0\,\%$ to the total weight of the hydrolysed products. The number of glycine units. Present in the decapeptide is.

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12. A tetrapeptide has $-COOH$ group on alanine. This produces glycine (Gly), valine (Val), phenyl alanine (Phe) and alanine (Ala), on complete hydrolysis. For this tetrapeptide, the number of possible sequences (primary structures) with $-NH_2$ group attached to a chiral centre is :

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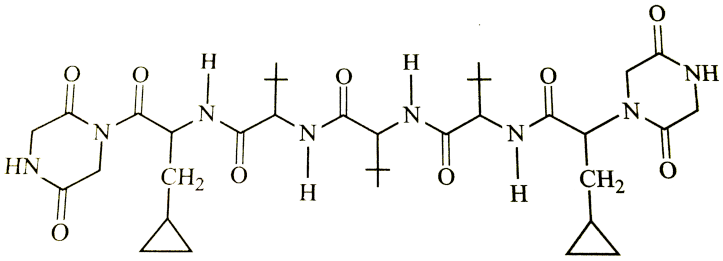
13. The total number of distinct naturally occuring amino acids obtained by complete acidic hydrolysis of the peptide shown below is



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Assertion Reason Type Questions Type I

1. Statement I : Glucose gives a reddish-brown precipitate with Fehling's solution

Statement II : Reaction of glucose with Fehling's solution gives CuO and gluconic acid

A. Statement -1 is True , Statement -2 is True, Statement -2 is a correct explanation of Statement -1

B. Statement -1 is True , Statement -2 is True, Statement -2 is not a correct explanation for Statement -1

C. Statement -1 is True , Statement -2 is False

D. Statement -1 is False, Statement -2 is True.

Answer: C

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2. Statement -1: Fructose reduces Fehling's solution and Tollen's reagent.

Statement - 2: Fructose does not contain any aldehyde group.

A. Statement -1 is True , Statement -2 is True, Statement -2 is a correct explanation of Statement -2

B. Statement -1 is True , Statement -2 is True, Statement -2 is not a correct explanation for Statement -2

C. Statement -1 is True , Statement -2 is False

D. Statement -1 is False, Statement -2 is True.

Answer: B

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3. Statement :1 The K_a values of α-amino acids are very low.

Statement- 2: α-amino acids have zwitterionic structures.

A. Statement -1 is True , Statement -2 is True, Statement -2 is a correct explanation of Statement -1

B. Statement -1 is True , Statement -2 is True, Statement -2 is not a correct explanation for Statement -1

C. Statement -1 is True , Statement -2 is False

D. Statement -1 is False, Statement -2 is True.

Answer: B

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4. Statement- 1 : Keratin is a globular protein.

Statement -2 : Enzymes are globular proteins.

A. Statement -1 is True , Statement -2 is True, Statement -2 is a correct explanation of Statement -4

B. Statement -1 is True , Statement -2 is True, Statement -2 is not a correct explanation for Statement -4

C. Statement -1 is True , Statement -2 is False

D. Statement -1 is False, Statement -2 is True.

Answer: D

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5. Assertion : The two strands in DNA are complementary.

Reason : Cytosine always pairs with guanine and thymine with adenine.

A. Statement -1 is True , Statement -2 is True, Statement -2 is a correct explanation of Statement -5

B. Statement -1 is True , Statement -2 is True, Statement -2 is not a correct explanation for Statement -5

C. Statement -1 is True , Statement -2 is False

D. Statement -1 is False, Statement -2 is True.

Answer: A

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Assertion Reason Type Questions Type Ii

1. Assertion (A) Deoxyribose, $C_5H_{10}O_4$ is not a carbohydrate.

Reason (R) Carbohydrates are hydrates of carbon so compounds which follow $C_x(H_2O)_y$ formula are carbohydrates.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: D

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2. Assertion : Fructose does not contain an aldehydic group but still reduces Tollen's regant.

Reason : In the presence of base, fructose undergoes rearrangement to give glucose.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: A

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3. Assertion : Glycosides are hydrolysed in acidic conditions.

Reason : Glycosides are acetals

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: A

4. Assertion : A solution of sucrose in water is dextrorotatory. But on hydrolysis in the presence of a little hydrochloric acid, it becomes laevaorotatory.

Reason : Sucrose on hydrolysis gives unequal amounts of glucose and fructose. As a result of this, change in sign of rotation is observed.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: C

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5. Assertion : Sucrose is a non – reducing sugar.

Reason : It has glycosidic linkage.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: B

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6. Assertion:Maltose is a reducing sugar , one molecule of which gives two molecules of d-glucose on hydrolysis.

Reason: Maltose has a 1,4 β-glycosidic linkage.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: C

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7. Assertion : Cellulose is not digested by human beings.

Reason : Cellulose is a polymer of $\alpha - D$ glucose.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: B

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8. Assertion : Alpha$(\alpha)-$ amino acids exist as internal salt in solution as they have amino and carboxylic acid groups in near vicinity.

Reason : H^+ ion given by carboyxylic group $(-COOH)$ is captured by amino group $(-NH_2)$ having lone pair of electrons.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: A

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9. Assertion. Carboxypetidase is an exopeptidase.

Reason. It cleaves the N-terminal bond.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: C

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10. Assertion : Insulin is a glubular protein.

Reason : Gloubular proteins are water soluble.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: A

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11. Assertion(A): All enzymes are proteins, but all proteins are not enzymes.

Reason(R): Enzymes are biocatalysts and posses a stable configuration having active sites.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: A

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12. Assertion: Uracil is present in DNA.

Reason : DNA undergoes replication.

A. If both assertion and reason are true , and is the true explanation of the assertion.

B. If both assertion and reason are true, but reason is not the true explanation of the assertion.

C. If asseration is true , but reason is false.

D. If both assertion and reason are false.

Answer: D

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Important Questions For Board Examination

1. What is Molisch reagent and what is it used for ?

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

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3. What is mutarotation ?

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4. Despite having an aldehyde group, gulcose does not give 2,4-DNP test ? What does this indicate ?

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5. Glucose forms an oxime but glucose pentaacetate does not .Explain.

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6. How do epimers differ from anomers ? Give two examples.

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7. Fructose contains a keto group but still it reduces Tollen's reagent. Explain.

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8. Give the Fischer projection of L-glucose.

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9. Name the carbohydrate that is used as storage molecule in plants and animals. Comment upon its structure. How does differ from amylopectin ?

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

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11. What is isoelectric point ? Write the structure of alanine at $pH2$ and $pH10$.

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12. Differentiate between globular and fibrous proteins.

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13. What is denaturation of proteins ? What is the effect of denaturation on the structure of proteins ? Give two examples of denatured proteins from your daily life.

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14. What is a peptide bond ? Write the structure of two dipeptides derived from glycine and alanine. Write their names also.

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15. Discuss the primary strcuture of proteins and their biological properties.

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16. Give the biological functions of the following proteins :

(i) Haemoglobin ,

(ii) Collagen ,

(iii) Insulin.

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17. Define enzymes ? What is the most important reason for their specific action ?

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18. What enzyme is present in the saliva ? What is its fuction ?

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19. (a) Define hormone. Give one example.

(b) Name the organ of secretion and one principal fucntion of (i) adrenaline , (ii) insulin , (iii) thyroxine.

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20. What are vitamins ? How are they classified ? Name two water soluble and two water insoluble vitamins.

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21. Name the vitamins whose deficiency causes the following diseases:

(i) pernicions anaemia , (ii) rickets , (iii) scurvy , (iv) beri-beri , (v) lengthens the time of blood clotting (vi) sterility , (vii) cheilosis and digestive disorders and (viii) conviulsions.

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22. What is the difference between hormones and vitamins ?

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

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24. The two strands in DNA are not identical but are complementary. Explain.

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25. Write the important structral and functional differences between DNA and RNA.

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