



CHEMISTRY

BOOKS - GR BATHLA & SONS CHEMISTRY (HINGLISH)

BIOMOLECULES

Level 1 Q 1 To Q 25

1. Which of the following is not a monosaccharide?

A. Glucose

B. Fructose

C. Cellulose

D. Ribose

Answer: C



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2. Glucose is :

- A. aldopentose
- B. aldohexose
- C. ketopentose
- D. ketohexose

Answer: B



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3. The monomer unit of starch are:

- A. α -glucose
- B. β -glucose
- C. pyranose

D. galactose

Answer: A



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4. Which of the following is the sweetest sugar?

A. Glucose

B. Fructose

C. Matose

D. Sucrose

Answer: B



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5. Maltose is made up of :

- A. α -D-glucose
- B. D-fructose
- C. α -D-glucose and β -D-glucose
- D. glucose and fructose

Answer: A

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6. Which one of the following is used to identify glucose?

- A. Neutral $FeCl_3$
- B. $CHCl_3 + KOH(alc.)$
- C. C_2H_5ONa
- D. Ammoniacal $AgNO_3$

Answer: D

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7. The carbohydrate which cannot be hydrolysed by the human digestive system is :

- A. starch
- B. glycogen
- C. Cellulose
- D. all of these

Answer: C



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8. Which of the following has a branched chain structure?

- A. Amylopectin
- B. Amylose
- C. Cellulose

D. Nylon

Answer: A



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9. Glucose reacts with acetic anhydride to form:

A. monoacetate

B. tetra-acetate

C. penta-acetate

D. hexa-acetate

Answer: C



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10. DNA molecule is formed of :

- A. pentose sugar, pyrimidines and purines
- B. pentose sugar, phosphoric acid, pyrimidines and purines
- C. pentose sugar, phosphoric acid and purines
- D. chloridepentose sugar, phosphoric acid and pyrimidines

Answer: B

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11. Glucose is hydrolysed by zymase into:

- A. dicarboxylic acid
- B. alcohol
- C. amino acid
- D. aromatic acids

Answer: B

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12. Which of the following monosaccharides is a pentose

A. Glucose

B. Fructose

C. Ribose

D. galactose

Answer: C



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13. Ring structure of glucose is due to formation of hemiacetal and ring formation between:

A. C_1 and C_5

B. C_1 and C_4

C. C_1 and C_3

D. C_2 and C_4

Answer: A



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14. Glucose is a

A. monosaccharide

B. disaccharide

C. trisaccharide

D. polysaccharide

Answer: A



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15. Hydrolysis of sucrose is called:

- A. esterfication
- B. saponification
- C. inversion
- D. hydration

Answer: C

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16. Starch is changed into diasaccharide in presence of :

- A. amylase
- B. maltase
- C. lactase
- D. zymase

Answer: A

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17. The disaccharide present in milk is :

- A. sucrose
- B. maltose
- C. lactose
- D. cellobiose

Answer: C



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18. A carbohydrate which cannot be hydrolysed to simpler compounds, is called

- A. monosaccharide
- B. polysaccharide
- C. disaccharide

D. trisaccharide

Answer: A



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19. Which is non-reducing sugar

A. sucrose

B. Galactose

C. Glucose

D. Lactose

Answer: A



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20. How many carbon atoms can be found in a monosaccharide?

A. 5 – 6

B. 3 – 5

C. 3 – 7

D. 1 – 5

Answer: C



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21. A nucleoside is :

A. base+sugar

B. base+phosphate

C. sugar+phosphate

D. base+sugar+phosphate

Answer: A



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22. Hair, finger,nails, hoofs, etc. are all made of:

- A. fat
- B. vitamins
- C. proteins
- D. iron

Answer: C



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23. Mark the globular protein in the following

- A. Collagen
- B. Myoglobib or Haemoglobin
- C. Myosin

D. Fibroin

Answer: B



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24. The end product of protein digestion is :

A. peptides

B. peptones

C. protons

D. α -amino acids

Answer: D



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25. Which one is the complimentary base of adenine in one strand to that in the other strand of DNA?

- A. Cytosine
- B. Guanine
- C. Uracil
- D. Thymine

Answer: D



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Level 1 Q 26 To Q 44

1. The base present in RNA but not found in DNA is :

- A. Thymine
- B. Uracil

C. Adenine

D. Guanine

Answer: B



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2. Calorific value is in the order:

A. Fats > protein > Carbohydrates

B. Carbohydrates > Fats > Protein

C. Fats > Carbohydrates > Protein

D. Protein > Fats > Carbohydrates

Answer: C



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3. Deficiency of vitamin A result in :

- A. scurvy
- B. night blindness
- C. beri-beri
- D. rickets

Answer: B



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4. Ribofavin deficiency causes:

- A. scurvy
- B. pellagra
- C. beri-beri
- D. cheilosis

Answer: D



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5. A good source of vitamins A and D is :

A. whole cereal

B. cod liver oil

C. yeast

D. water melon

Answer: B



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6. Ascorbic acid is vitamin

A. vitamin C

B. vitamin A

C. vitamin D

D. vitamin B

Answer: A



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7. Continuous bleeding from an injured part of body is due to deficiency of

A. vitamin A

B. vitamin E

C. vitamin B

D. vitamin K

Answer: D



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8. Cobalt as a rare element is essential in the synthesis of this vitamin

A. vitamin C

B. vitamin D

C. vitamin B_1

D. vitamin B_{12}

Answer: D



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9. Scurvy is a disease caused by :

A. a virus

B. deficiency of vitamin E

C. deficiency of ascorbic acid

D. deficiency of vitamin D

Answer: C



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10. Which pairing is found in DNA?

- A. Adenine with thymine
- B. Thymine with guanine
- C. Guanine with adenine
- D. Uracil with adenine

Answer: A



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11. AGCT are nitrogenous bases of DNA. The pairing is :

- A. A-G,C-T

B. A-T,G-C

C. A-C,G-T

D. A-T,G-T

Answer: D



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12. The successive nucleotides of DNA are covalently linked through :

A. peptide bond

B. hydrogen bonds

C. glycosidi bonds

D. phosphodiester bonds

Answer: D



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13. Lactose is composed of

- A. glucose + glucose
- B. glucose+fructose
- C. glucose+galactose
- D. fructose+galactose

Answer: C

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14. Glucose $\xrightarrow{\text{HCN}}$ $\xrightarrow{\text{hydrolysis}}$ $\xrightarrow{\text{HI heat}}$ A, A is :

- A. hypotonic acid
- B. 2-iodohexane
- C. heptane
- D. heptanol

Answer: A

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15. Glucose $\xrightarrow{Br_2 + H_2O}$ Product, Product is :

- A. glucaric acid
- B. gluconic acid
- C. hexanoic acid
- D. bromo hexane

Answer: B

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16. Number of possible isomers of glucose is :

- A. 16

B. 14

C. 10

D. 8

Answer: A

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17. Carbohydrates which differ in configuration at the glycosidic carbon (i.e., C_1 in aldose and C_2 in ketoses) are called:

A. anomers

B. epimers

C. diastereomers

D. enantiomers

Answer: A

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18. A pair of diastereomers that differ only in the configuration about a single carbon atom are called:

- A. anomers
- B. epimers
- C. conformers
- D. enantiomers

Answer: D



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19. Osazone formation involves only 2 carbon atoms of glucose because of

- A. oxidation
- B. reduction

C. chelation

D. hydrolysis

Answer: C



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Level 2 Q 1 To Q 25

1. The minimum number of carbon atoms that should be present in a carbohydrate is :

A. 2

B. 3

C. 4

D. 6

Answer: B



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2. Carbohydrates are commonly defined as :

- A. Polycarbonyl compounds
- B. Polycarboxylic acid
- C. Polyhydroxy carboxylic acid ketone
- D.

Answer: D



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3. Carbohydrates that are not cleaved to smaller carbohydrates on attempted hydrolysis are called

- A. Monsaccharide
- B. Oligosaccharide

C. Polysaccharide

D. Disaccharide

Answer: A

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4. The number of chiral centers in the open chain structure of glucose is :

A. 3

B. 4

C. 5

D. 6

Answer: B

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5. Cane sugar on hydrolysis gives

- A. Glucose and Galactose
- B. Glucose only
- C. Glucose and Fructose
- D. Fructose only

Answer: C



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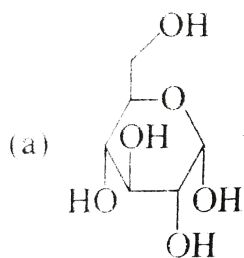
6. The carbohydrate presents in milk:

- A. sucrose
- B. Maltose
- C. Lactose
- D. Celobios

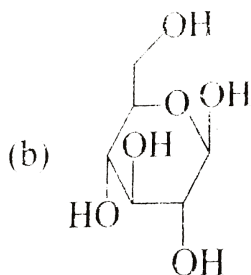
Answer: C

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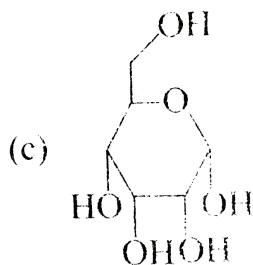
7. Which of the following structures represents α -D-glucopyranose?



A.

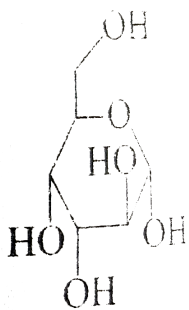


B.



C.

(d)



D.

Answer: A

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8. $\alpha - D -$ Glucopyranose and $\beta - D -$ glucopyranose are

A. anomers

B. epimers

C. diastereomers

D. Meso compounds

Answer: A

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9. The disaccharide that is constituted of two glucose units is

A. Lactose

B. Maltose

C. Sucrose

D. Ribose

Answer: B



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10. Invert sugar is an equimolar mixture of

A. D-Glucose and D-Fructose

B. D-Glucose and L-Fructose

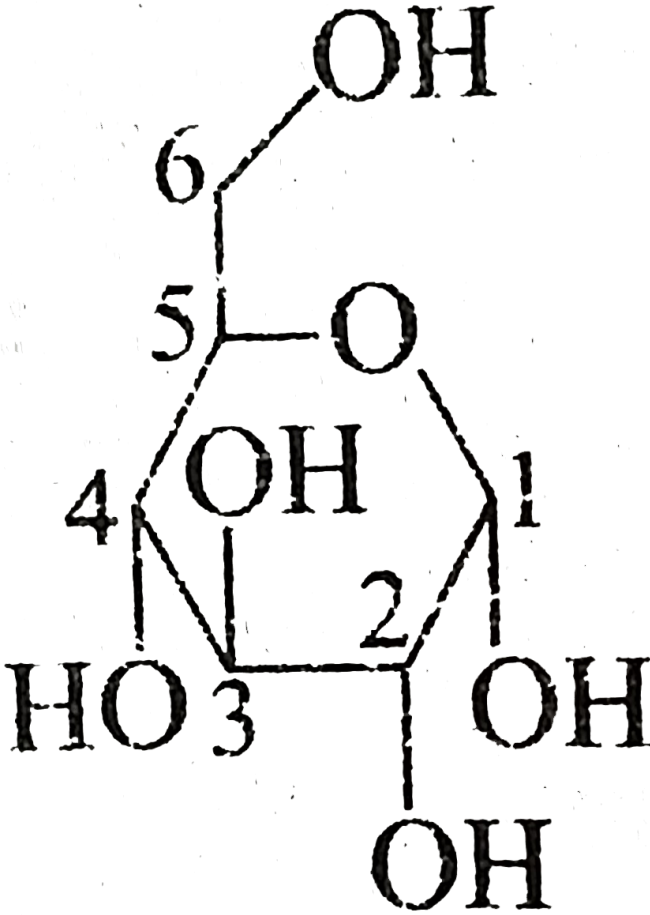
C. D-Glucose and L-Fructose

D. D-Fructose and L-Fructose

Answer: A

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11. In α -D-Glucose, the anomeric carbon is at:



B. 2

C. 4

D. 5

Answer: A



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12. In the ring structure of fructose, the anomeric carbon is

A. C-1

B. C-5

C. C-2

D. C-6

Answer: C



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13. Fructose reduces Fehling's solution due to the presence of :

- A. hydroxy group
- B. aldehyde group
- C. ketone group
- D. α -hydroxy ketone group

Answer: D



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14. Which one of the following is used to identify glucose?

- A. Neutral $FeCl_3$ solution
- B. Ammoniacal $AgNO_3$ solution
- C. $CHCl_3$ and KOH(alc.)
- D. $NaHSO_3$

Answer: B



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15. Lactose is hydrolysed into

- A. glucose and mannose
- B. glucose and fructose
- C. glucose and galactose
- D. glucose and arabinose

Answer: C



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16. Glucose and galactose differs on which carbon atom.

- A. C-1

B. C-2

C. C-3

D. C-4

Answer: D



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17. Which of the following is C-2 epimer of D-Glucose?

A. D-Galactose

B. L-Glucose

C. D-Mannose

D. D-Fructose

Answer: C



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18. Starch is a polymer of

- A. fructose
- B. glucose
- C. lactose
- D. Ribose

Answer: B

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19. Glucose when treated with CH_3OH in presence of dry HCl gives α - and β -methylglucosides because it contains:

- A. an aldehydic group
- B. $-CH_2 - OH$ group
- C. Five-OH group
- D. None of these

Answer: A

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20. Which one of the following is non-reducing sugar ?

A. Glyceraldehyde

B. Glucose

C. Fructose

D. Sucrose

Answer: D

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21. Glycosidic linkage is :

A. an amide linkage

- B. an ester linkage
- C. an ether linkage
- D. an amine linkage

Answer: C

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22. Pyranose ring consist of a skeleton of :

- A. 5 carbon atoms and one oxygen atom
- B. 6 carbon atoms
- C. 6 carbon atoms and one oxygen atom
- D. 4 carbon atoms and one oxygen atom

Answer: A

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23. Glucose and Fructose can be differentiated by:

A. Tollen's reagent

B. Cold $KMnO_4$

C. Br_2 / H_2O

D. PCC

Answer: C



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24. Periodic acid splits glucose and fructose into formic acid and formaldehyde. Ratio of formic acid and formaldehyde from glucose and fructose is:

A. 5/1 and 4/2

B. 5/1 and 3/2

C. 4/2 and 4/2

D. $3/2$ and $4/2$

Answer: B

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25. An aldose is converted into its next higher homologue by:

- A. Ruff's method
- B. Amadori rearrangement
- C. Killiani synthesis
- D. Wohl's method

Answer: C

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1. The change in optical rotation with time of freshly prepared solution of sugar is known as :

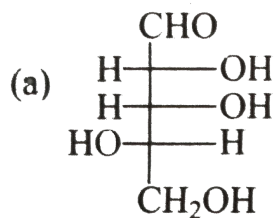
- A. Specific rotation
- B. Mutarotation
- C. inversion
- D. Rotatory motion

Answer: C

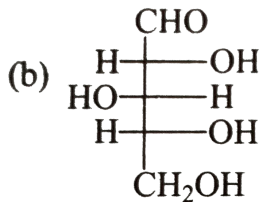


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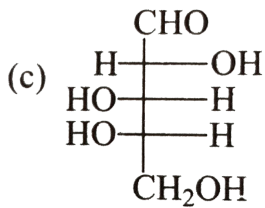
2. Which of the following gives an optically inactive aldaric acid on oxidation with dilute nitric acid ?



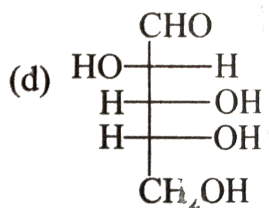
A.



B.



C.



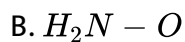
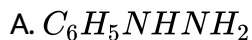
D.

Answer: B



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3. Glucose does not react with



C. HCN

D. $NaHSO_3$

Answer: D

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4. Cellulose is a linear polymer of

A. α -D-glucose

B. β -D- glucose

C. α -D-Fructose

D. β -L-Glucose

Answer: B

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5. Rapid interconversion of α D-glucose and β -D-glucose in solution is known as :

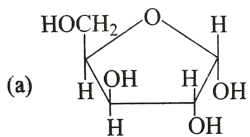
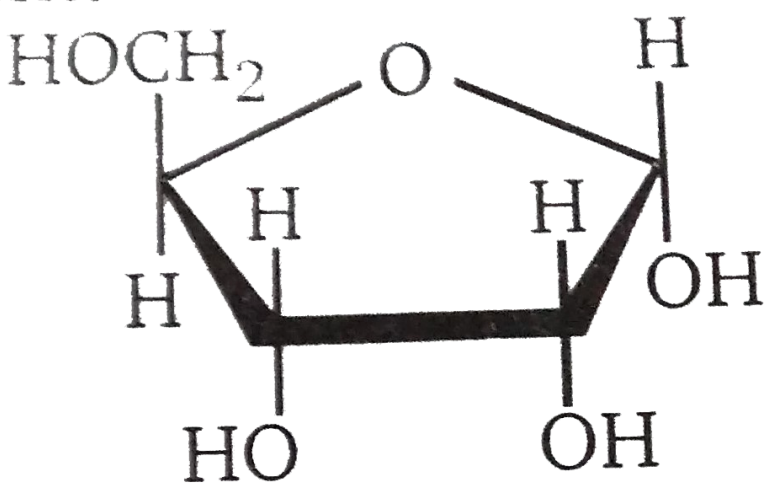
- A. racemisation
- B. asymmetric induction
- C. fluxional isomerisation
- D. mutarotation

Answer: D

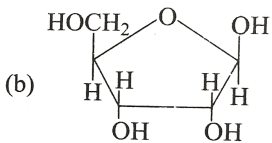


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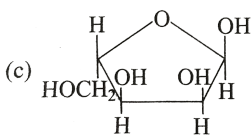
6. Which of the following represents the anomer of the compound shown ?



A.



B.

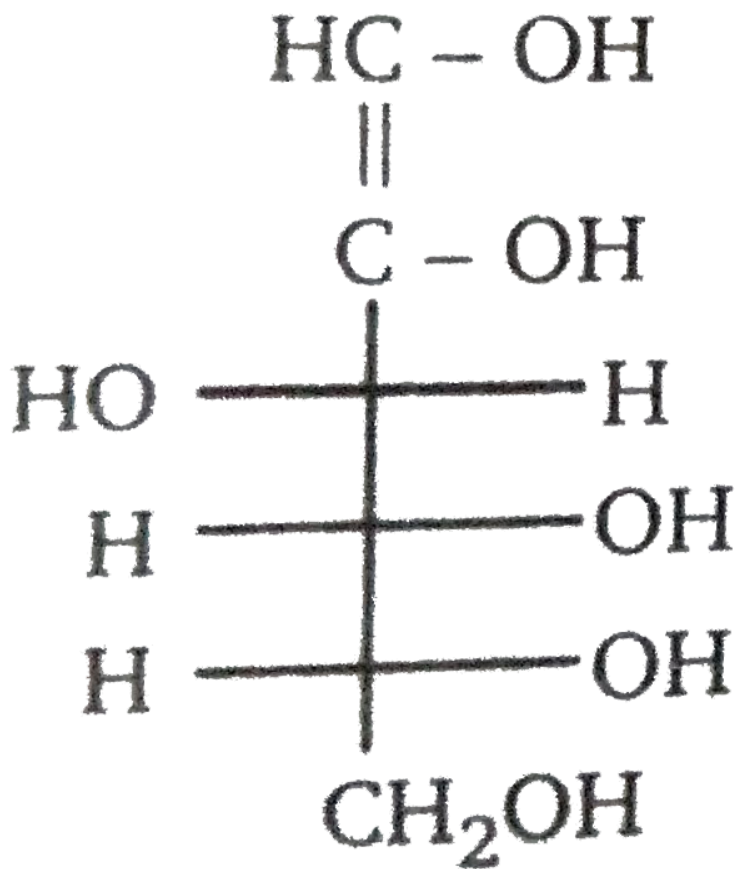


C.

D. all of these

Answer: B

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7.

, the given

is enol form of :

- A. D-Glucose
- B. D-Mannose
- C. D-Fructose
- D. all of these

Answer: D

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8. The number of chiral centers in glucopyranose and fructofuranose are:

A. 4 and 3

B. 5 and 4

C. 4 in each

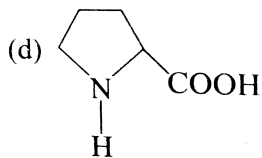
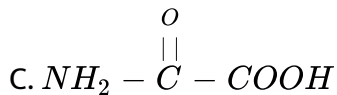
D. 5 in each

Answer: B

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9. Which of the following is an amino acid?

A. $H_2N - COOH$



D.

Answer: D

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10. Amino acids undergo internal acid base reaction to form:

A. an amide

B. a lactum

C. zwitter ion

D. a peptide

Answer: C



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11. An amino acid usually shows its lowest solubility in water:

A. in acidic solution

B. in basic solution

C. at pH 7

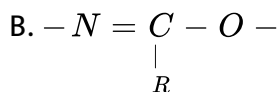
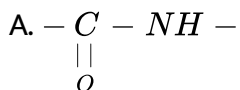
D. at isoelectric point

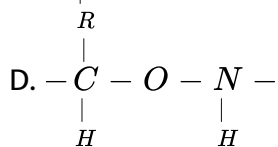
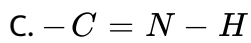
Answer: D



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12. Which one among following is a peptide linkage?

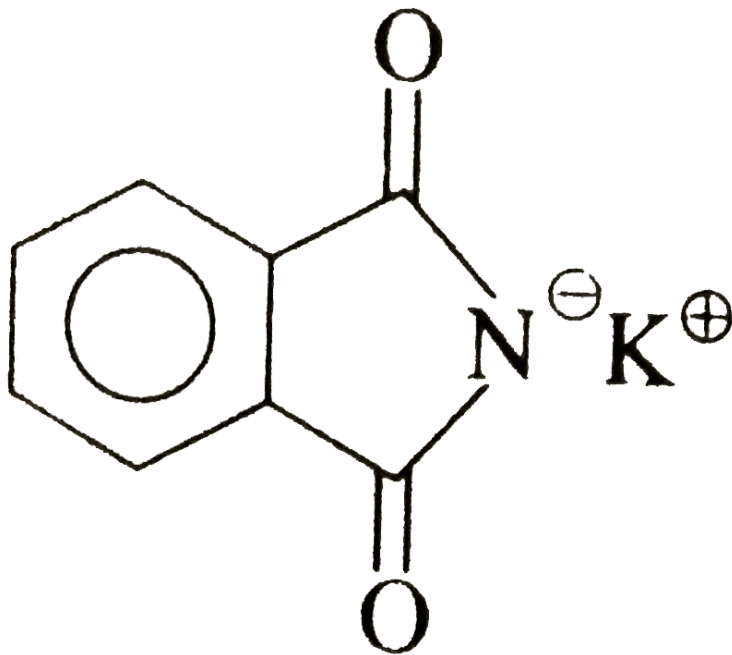


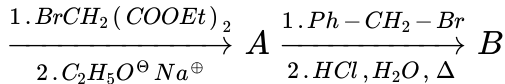


Answer: A

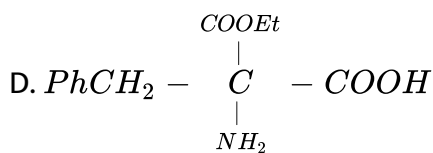
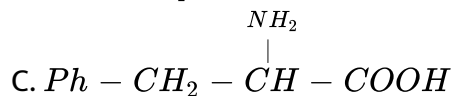
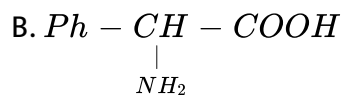
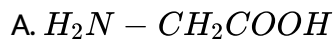
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13. Consider the following sequence of reaction,





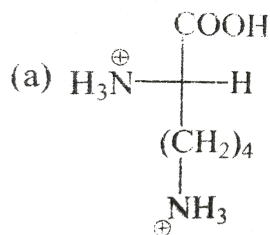
The major final product (B) is :



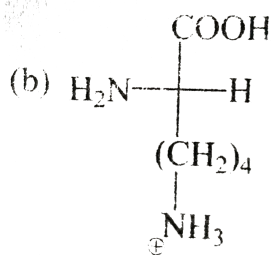
Answer: C

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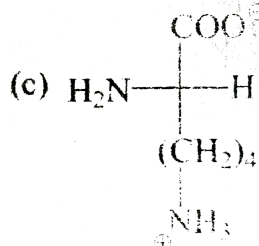
14. Which of the following is the major solute species in a solution of lysine at $pH = 10.5$?



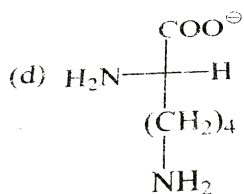
A.



B.



C.

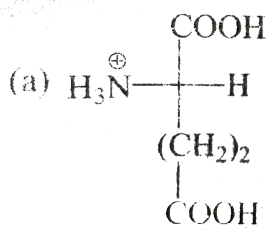


D.

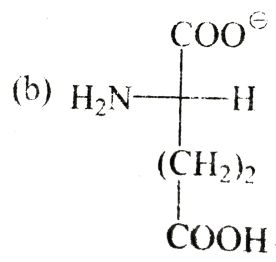
Answer: D

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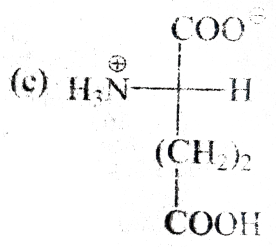
15. Which of the following is the major solute species in a solution of glutamic acid at pH=1.3?



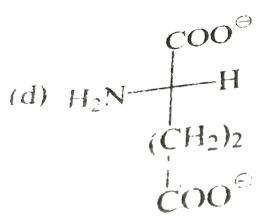
A.



B.



C.



D.

Answer: A

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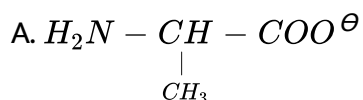
16. Which of the following statements most correctly defines the isoelectric point?

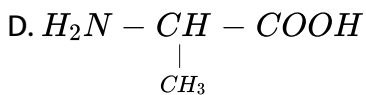
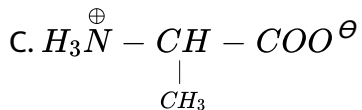
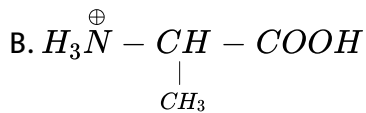
- A. The pH at which all molecular species are ionised and that carry the same charge.
- B. The pH at which all molecular species are neutral and uncharge
- C. The pH at which half of the molecular species are ionised and the other half unionised
- D. The pH at which negatively and positively charged molecular species are present in equal concentration.

Answer: D

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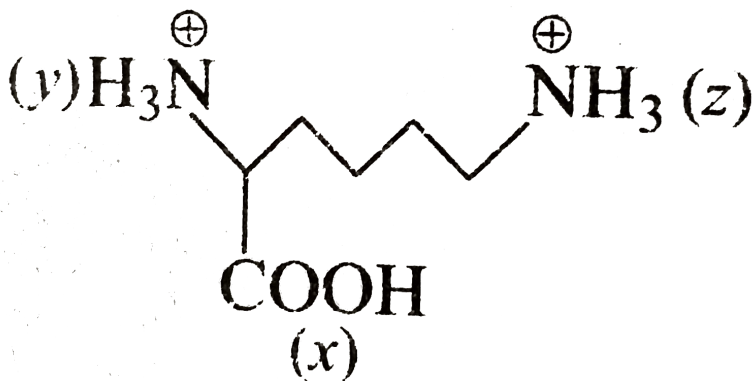
17. Alanine at its isoelectric point, exist in solution as :





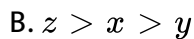
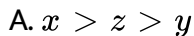
Answer: C

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18.

The order of decreasing acidity of these acidic sites is :



C. $x > y > z$

D. $y > x > z$

Answer: C



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19. Biuret test is used for the detection of :

A. sugar

B. proteins

C. fats

D. starch

Answer: B



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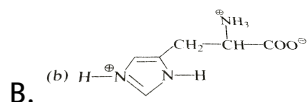
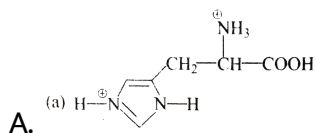
20. α -Amino acids behave as crystalline ionic solid and have high melting point due to the presence of :

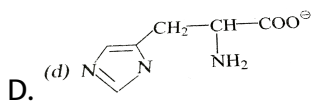
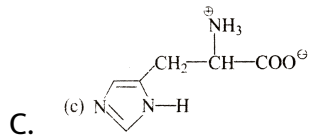
- A. $-NH_2$ group
- B. $-COOH$ group
- C. both $-NH_2$ and $-COOH$
- D. None of these

Answer: C

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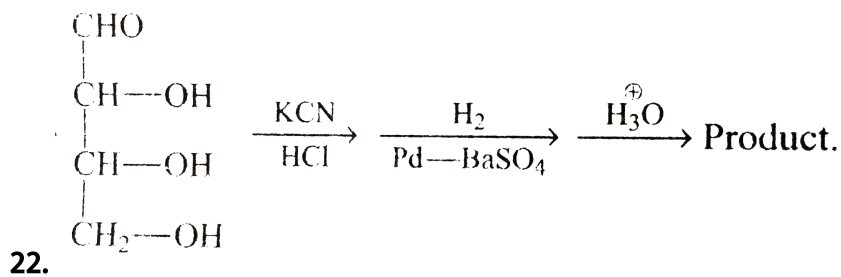
21. Which of the following is correct structure of histidine at pH=0?



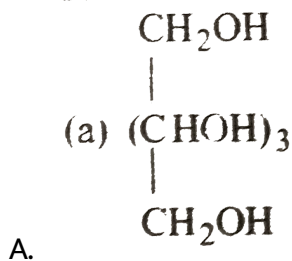


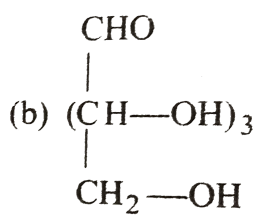
Answer: A

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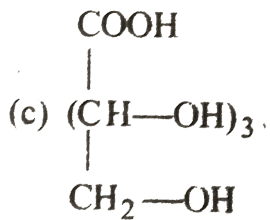


Find out final product:

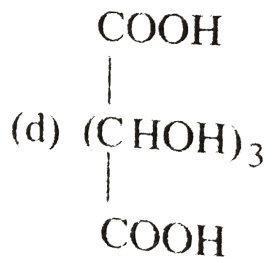




B.



C.



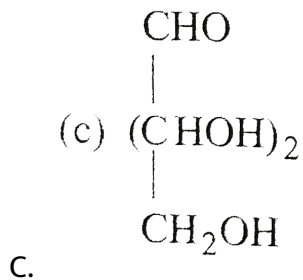
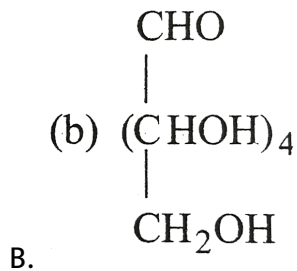
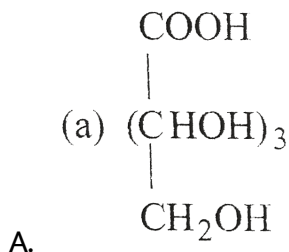
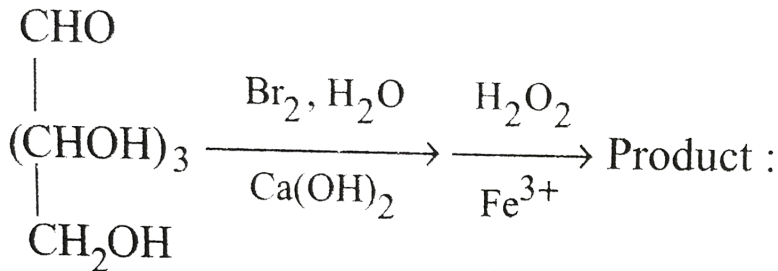
D.

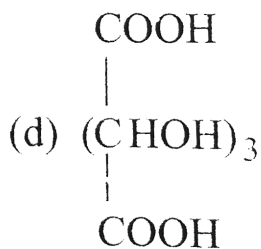
Answer: B



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23. Match the following columns

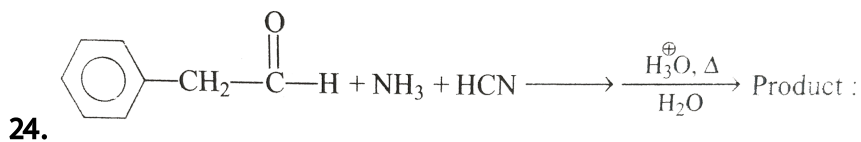




D.

Answer: C

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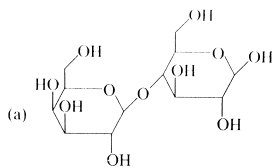
- A. $\text{Ph} - \text{CH}_2 - \begin{array}{c} \text{OH} \\ | \\ \text{C} - \text{H} \\ | \\ \text{NH}_2 \\ \text{OH} \end{array}$
- B. $\text{Ph} - \text{CH}_2 - \begin{array}{c} \text{NH}_2 \\ | \\ \text{C} - \text{H} \\ | \\ \text{CN} \\ \text{H} \end{array}$
- C. $\text{Ph} - \text{CH}_2 - \begin{array}{c} \text{H} \\ | \\ \text{C} - \text{NH}_3^+ \\ | \\ \text{COO}^- \end{array}$

D. all of these

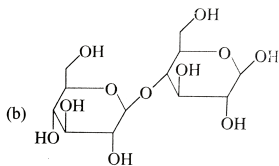
Answer: C

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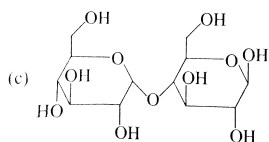
25. Find out the structure of lactose:



A.



B.



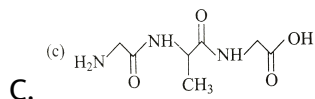
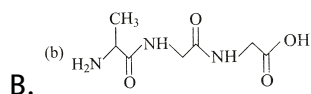
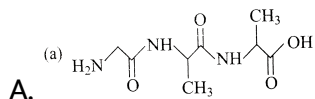
C.

D. None of these

Answer: A

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1. A tripeptide is written as Glycine-Alanine-Glutamic. The correct structure of tripeptide.

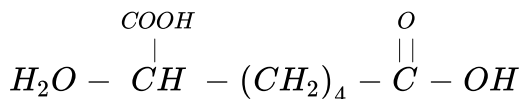


D. None of these

Answer: C

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2. What would be the net charge on the given amino acid at pH=14?



A. -1

B. -2

C. $+1$

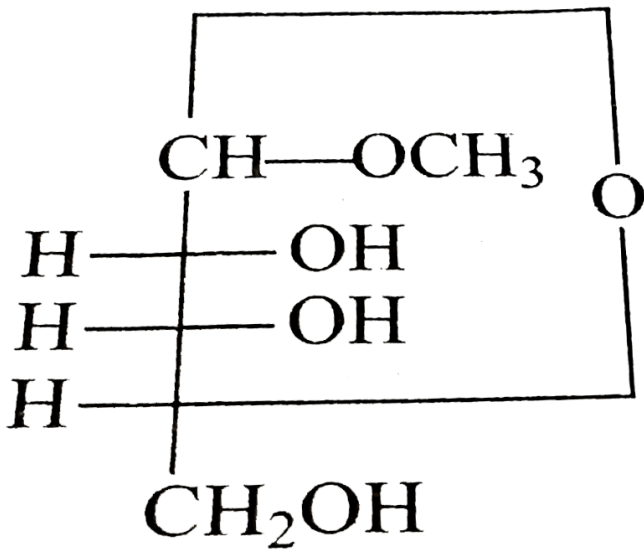
D. $+2$

Answer: B



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3. How many moles of HIO_4 is required to break down the given molecule here ?



A. 0

B. 1

C. 2

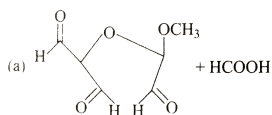
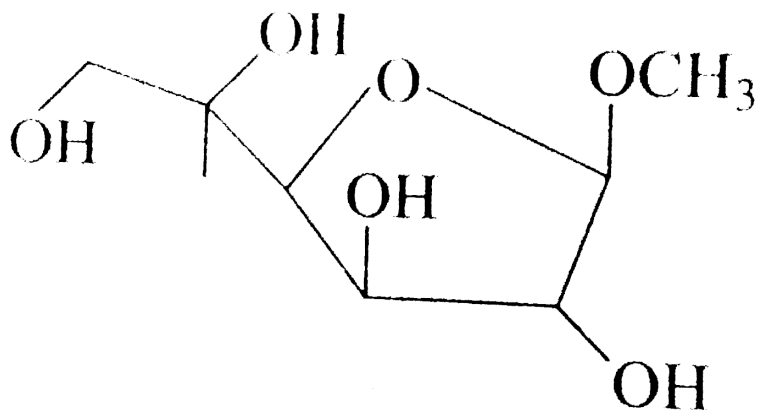
D. 3

Answer: B

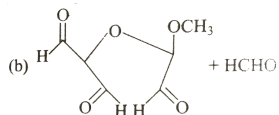


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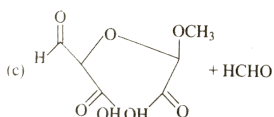
4. The product of HIO_4 oxidation of the following compounds is :



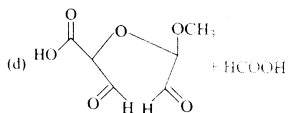
A.



B.



C.

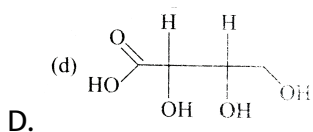
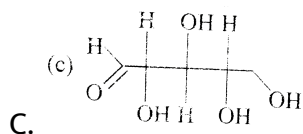
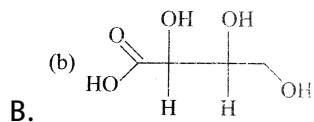
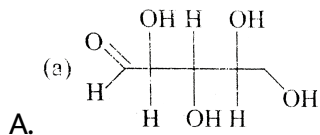


D.

Answer: B

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5. Which of the following compounds is D-aldopentose?



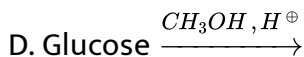
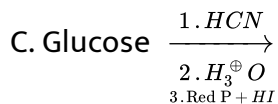
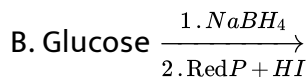
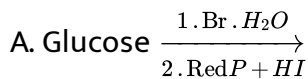
Answer: A



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More Than One Correct

1. The final product of which of the following reactions furnishes evidence that glucose has unbranched carbon chain:



Answer: A::B::C



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2. Which of the following reagents would convert an aldose into corresponding aldonic acid?

A. Tollen's reagent

B. Fehling's solution

C. Bromine water

D. Red P+HI

Answer: A::B::C

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3. Which of the following statements are correct?

- A. Monosaccharides are optically active polyhydroxy carbonyl compounds.
- B. Fructose does not react with Fehling's solution because it is keto.
- C. α -D-Glucose and β -D-glucose are anomers
- D. D-Glucose and D-Mannose are epimers.

Answer: A::C::D

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4. Which of the following statements are correct?

- A. Hydrolysis of sucrose with dilute acid yields an equimolar mixture of D-Glucose and D-Fructose
- B. Acidic hydrolysis of sucrose is accompanied by a change in optical reaction.
- C. In sucrose, the glucosidic linkage is between C-1 glucose and C-2 of fructose.
- D. Aqueous solution of sucrose exhibits mutarotation.

Answer: A::B::C



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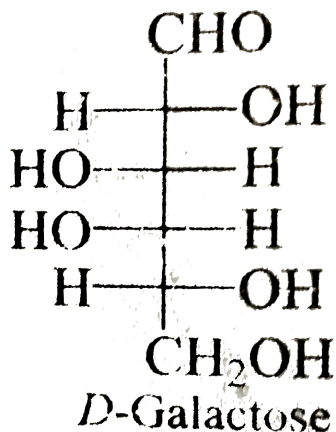
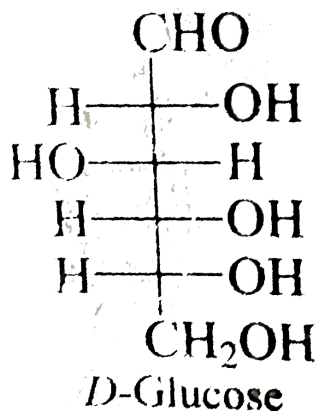
5. Find the correct statements regarding the methyl glucosides obtained by the reaction of D-Glucose with methanol in presence of dry HCl gas.

- A. These are methyl ether of hemiacetal of glucose formed by intramolecular reaction.
- B. These are enantiomers
- C. These are anomers.
- D. In one of these all the substituents are equatorial.

Answer: A::C::D

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6. Following are the structure of D-Glucose and D-Galactose.



Which of the following statements are correct about these compounds?

- A. They are diastereomers
- B. Both are component of lactose
- C. They are C-4 epimer
- D. Both optically active

Answer: A::B::C::D

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7. When fructose treated with Tollen's reagent, silver mirror is formed due to reduction of Ag^{\oplus} by:

- A. fructose itself
- B. glucose formed by isomerisation
- C. mannose formed by isomerisation
- D. galactose formed by isomerisation

Answer: B::C

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8. Which of the following do not undergo hydrolysis?

- A. Glucose
- B. Fructose
- C. Cane sugar
- D. Maltose

Answer: A::B

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9. Which of the following carbohydrates will give the same osazone?

- A. Glucose
- B. Fructose
- C. Cane sugar

D. Lactose

Answer: A::B



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10. Which of the following are disaccharides?

A. Glucose

B. Canesugar Maltose

C. Maltose

D. starch

Answer: B::C



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11. On hydrolysis which of the following carbohydrates give only glucose?

A. sucrose

B. Lactose

C. Maltose

D. starch

Answer: C::D

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12. The presence of -CHO group in glucose is confirmed by its:

A. reaction with PCl_5

B. reaction by Na-Hg to give S-orbital

C. reaction with Fehling solution

D. reaction with Tollen's reagent

Answer: B::C::D

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13. Which of the following statements are correct for glucose?

- A. It gives positive test with Schiff's reagent
- B. It react with $NaHSO_3$ and NH_3
- C. Pentaacetate derivative of glucose does not react with $H_2N - OH$
- D. It gives positive test with Fehling solution

Answer: C::D



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14. When D-Glucose is treated with base it is converted into:

- A. D-Fructose
- B. D-Mannose
- C. D-Galactose

D. D-Arabinose

Answer: A::B



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15. The phenomenon of mutarotation is shown by:

A. glucose

B. fructose

C. Cellulose

D. starch

Answer: A::B



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16. Which of the following statements are correct with reference to amino acid?

- A. A amino acid that contains carboxylic acid and amino group.
- B. Amino acids are the building blocks of peptides and proteins
- C. An amino acid may exist as a zwitter ion under suitable conditions.
- D. Amino acids are negatively charged in basic medium

Answer: A::B::C::D



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17. Which of the following statements are correct with reference to isoelectric point?

- A. It is the poin at which amino acids bear no net charge.
- B. It corresponds to the pH at which concentration of zwitter ion in mixture

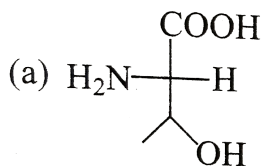
C. At isoelectric point amino acid exists as a base

D. None of the above.

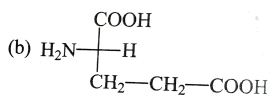
Answer: A::B

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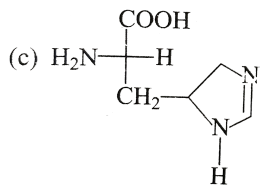
18. Choose the neutral amino acid:



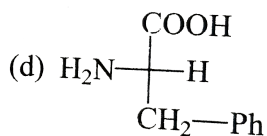
A.



B.



C.



D.

Answer: A::D

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19. Consider the following statements about amino acids:

- A. the amino acids that constitute proteins are all L-amino acids.
- B. among the 20 amino acids that constitute proteins, glycine is the only one that does not possess chiral center.
- C. an important and sensitive test for the detection of L-amino acid is the ninhydrin colour test.
- D. HNO_2 liberates nitrous oxide from amino acid

Answer: A::B::C

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20. Globular protein is present in :

A. blood

B. milk

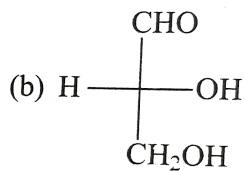
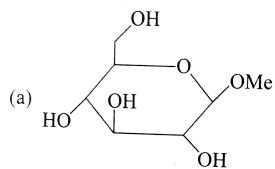
C. eggs

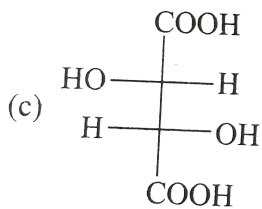
D. cellulose

Answer: A::B::C

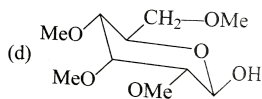
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21. Which of the following carbohydrates are D-isomers?





C.

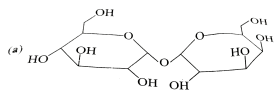


D.

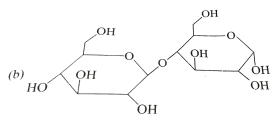
Answer: A::B::C::D

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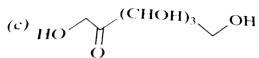
22. Which of the following are reducing sugar?



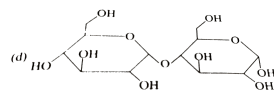
A.



B.



C.



D.

Answer: B::C::D

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23. Which are true?

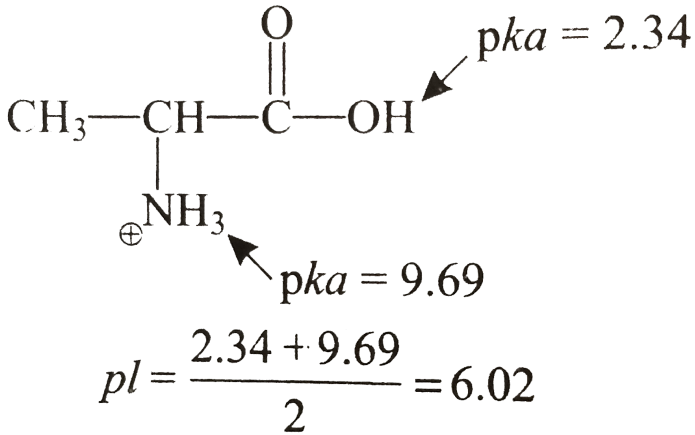
- A. Glucose is a disaccharide
- B. Starch is a polysaccharide
- C. Glucose and Fructose are not anomer
- D. Invert sugar consists of glucose and fructose

Answer: B::C::D

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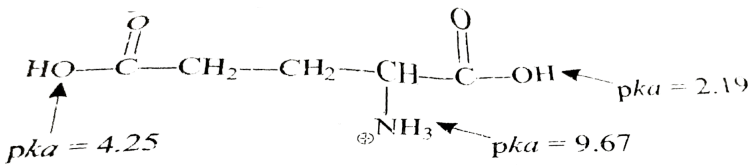
Linked Comprehension Type

1. The isoelectric point (pI) of an amino acid is the pH of which it has no net charge. The pI of an amino acid that does not have an ionizable side chain such as alanine, is midway between its two pKa values.



If an amino acid has an ionizable side chain, its pI is the average of the pKa values of the similarly ionizing groups.

Find the pI of the following amino acids



A. 3.22

B. 6.44

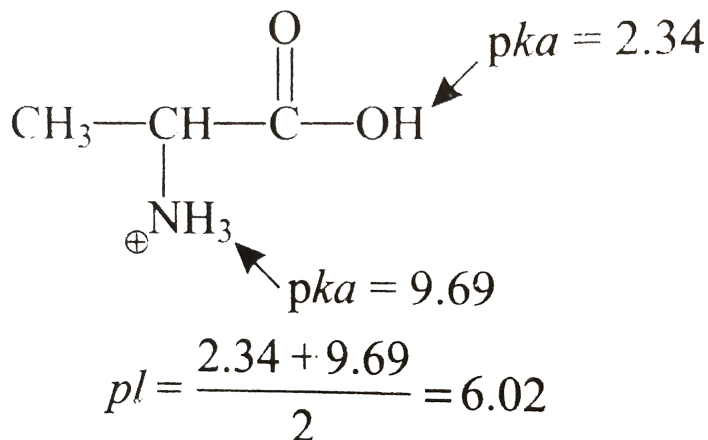
C. 7.96

D. 5.93

Answer: A

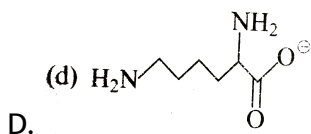
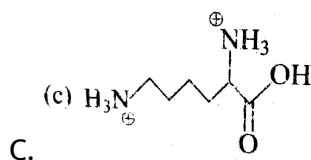
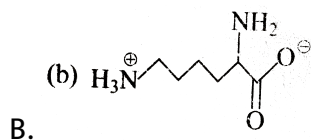
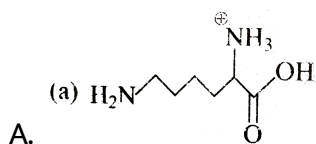
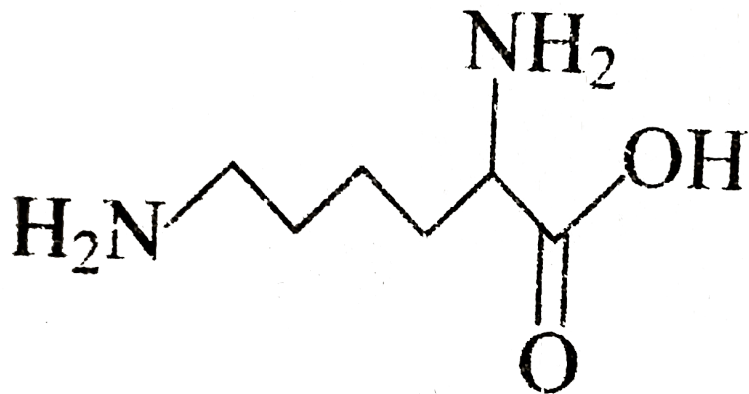
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2. The isoelectric point (pI) of an amino acid is the pH of which it has no net charge. The pI of an amino acid that does not have an ionizable side chain such as alanine, is midway between its two pKa values.



If an amino acid has an ionizable side chain, its pI is the average of the pKa values of the similarly ionizing groups.

Find the structure of the following amino acids at pH=1:

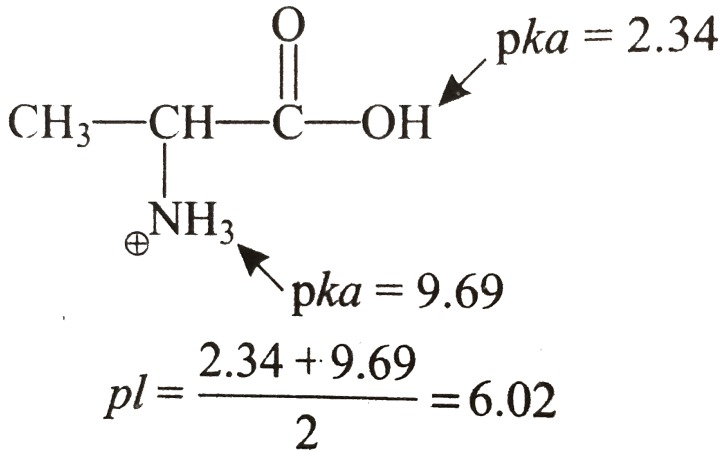


Answer: C



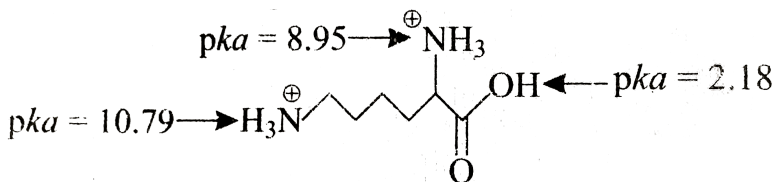
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3. The isoelectric point (pI) of an amino acid is the pH of which it has no net charge. The pI of an amino acid that does not have an ionizable side chain such as alanine, is midway between its two pKa values.



If an amino acid has ionizable side chain, its pI is the average of the pKa values of the similarly ionizing groups.

What is the pI of the following amino acids?



A. 3.22

B. 9.87

C. 5.6

D. 6.49

Answer:

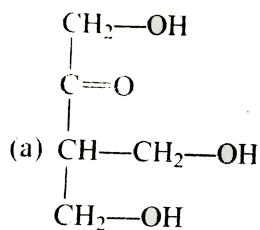


Study the Observation

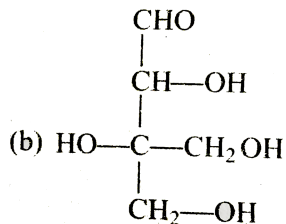
Compounds	Red P + HI	Ac ₂ O/pyridine	Br ₂ + H ₂ O	HIO ₄	Ph—NH—NH ₂
(X) C ₅ H ₁₀ O ₅	Isopentane	Tetraacetate	C ₅ H ₁₀ O ₆	4 mole	No Osazone
(Y) C ₅ H ₁₀ O ₄	Isopentane	Triacetate	C ₅ H ₁₀ O ₅	1 mole	Osazone formed
(Z) C ₅ H ₁₀ O ₄	n-pentane	Triacetate	C ₅ H ₁₀ O ₅	2 mole	Osazone formed

4.

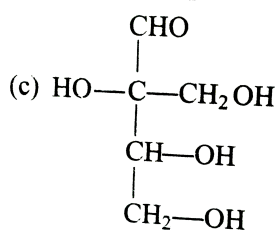
Compounds 'X' is :



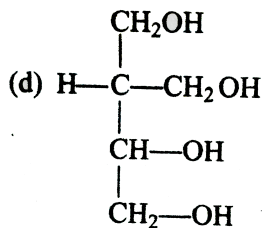
A.



B.



C.



D.

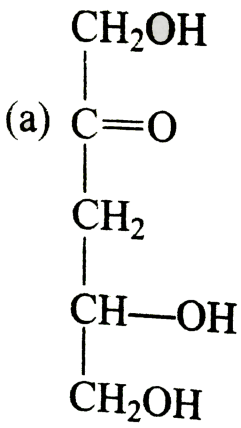
Answer: C

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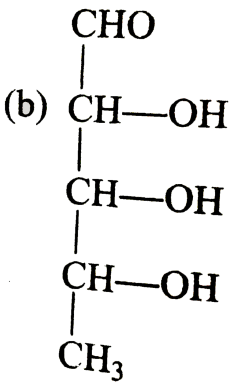
Study the Observation

Compounds	Red P + HI	Ac ₂ O/pyridine	Br ₂ + H ₂ O	HIO ₄	Ph—NH—NH ₂
(X) C ₅ H ₁₀ O ₅	Isopentan	Tetraacetate	C ₅ H ₁₀ O ₆	4 mole	No Osazone
(Y) C ₅ H ₁₀ O ₄	Isopentane	Triacetate	C ₅ H ₁₀ O ₅	1 mole	Osazone formed
5. (Z) C ₅ H ₁₀ O ₄	n-pentane	Triacetate	C ₅ H ₁₀ O ₅	2 mole	Osazone formed

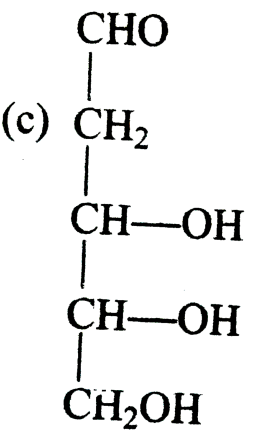
Compound 'Z' is :



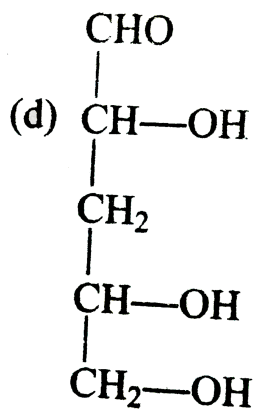
A.



B.



C.



D.

Answer: D

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Study the Observation

Compounds	Red P + HI	Ac ₂ O/pyridine	Br ₂ + H ₂ O	HIO ₄	Ph—NH—NH ₂
(X) C ₅ H ₁₀ O ₅	Isopentane	Tetraacetate	C ₅ H ₁₀ O ₆	4 mole	No Osazone
(Y) C ₅ H ₁₀ O ₄	Isopentane	Triacetate	C ₅ H ₁₀ O ₅	1 mole	Osazone formed
(Z) C ₅ H ₁₀ O ₄	n-pentane	Triacetate	C ₅ H ₁₀ O ₅	2 mole	Osazone formed

6.

Which of the following are the reducing sugars?

A. X and Y

B. X and Z

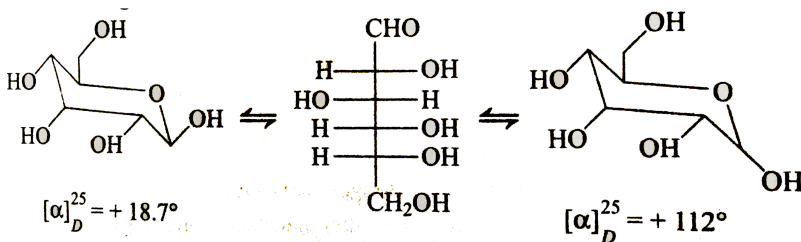
C. Y and Z

D. all of these

Answer: D

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7. D(+) Glucose has melting point $146^{\circ}C$ and specific rotation $[\alpha]_D^{25}$ is $+122^{\circ}C$. Another D(+) Glucose has melting $150^{\circ}C$ and specific rotation $[\alpha]_D^{25}$ is $+18.7^{\circ}C$. The two form have significantly different optical rotation but when an aqueous solution of either form is allowed to stand, its rotation changes. The specific rotation of one form decrease and rotation of other increases until both solution show the same value $+52.7^{\circ}$. The change in rotation towards an equilibrium value is called mutarotation.



Mutarotation is characteristic feature of

A. Epimer

B. Enantiomer

C. Anomer

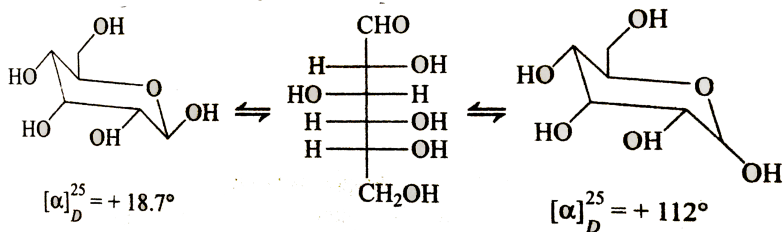
D. Ring chain isomer

Answer: C



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8. D(+) Glucose has melting point $146^{\circ}C$ and specific rotation $[\alpha]_D^{25}$ is $+122^{\circ}C$. Another D(+) Glucose has melting $150^{\circ}C$ and specific rotation $[\alpha]_D^{25}$ is $+18.7^{\circ}C$. The two form have significantly different optical rotation but when an aqueous solution of either form is allowed to stand, it rotation changes. The specific rotation of one form decrease and rotation of other increases until both solution show the same value $+52.7^{\circ}$. The change in rotation towards an equilibrium value is called mutarotation.



What percentage of β -D-(+) glucopyranose found at equilibrium in the aqueous solution?

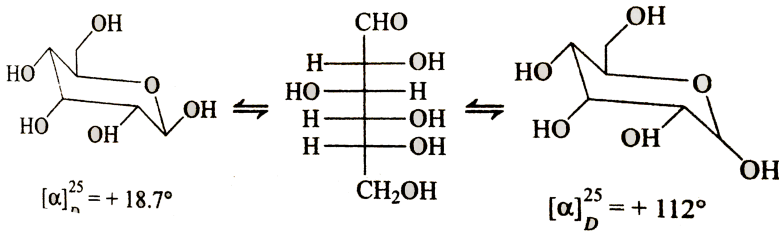
- A. 0.5
- B. $\approx 100\%$
- C. 0.38
- D. 0.64

Answer: D

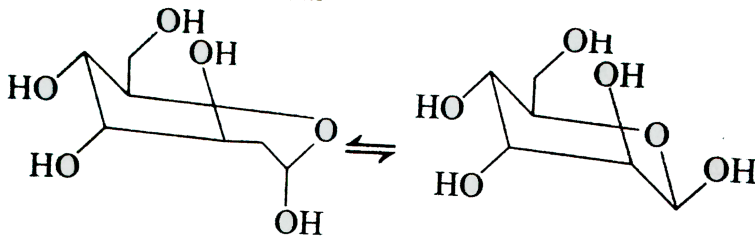
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9. D(+) Glucose has melting point $146^\circ C$ and specific rotation $[\alpha]_C^{25}$ is $+122^\circ C$. Another D(+) Glucose has melting $150^\circ C$ and specific rotation $[\alpha]_D^{25}$ is $+18.7^\circ C$. The two form have significantly different optical

rotation but when an aqueous solution of either form is allowed to stand, its rotation changes. The specific rotation of one form decreases and the rotation of the other increases until both solutions show the same value $+52.7^\circ$. The change in rotation towards an equilibrium value is called mutarotation.



For mannose the mutarotation can be shown in brief as follows:



- A. α -form
- B. β -form
- C. open chain
- D. none of these

Answer: B

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10. Protein are nitrogeneous organic compound having very high molecular mass. They are polyamides formed from α -amino acid. The bond formed between two amino acid is called peptide bond $-\overset{\text{O}}{\underset{\text{O}}{\parallel}}\text{C} - \text{NH} -$. The product obtained by this peptide bond formation are called peptide and they may be divided as di, tri ,tetra, penta peptide.

Consider following statements concerning protein

1. All amino acids which are constituents of proteins of α -amino acid.
2. α -amino acids are all optically active and have L-configuration
3. An especially favourable conformation for the peptide linkage in protein is the α -helix arrangement.
4. α -amino acids are connected by ester linkage.

Which of the following statement are correct?

A. 1 and 3

B. 1 and 2

C. 2 and 3

D. 2,3 and 4

Answer: A



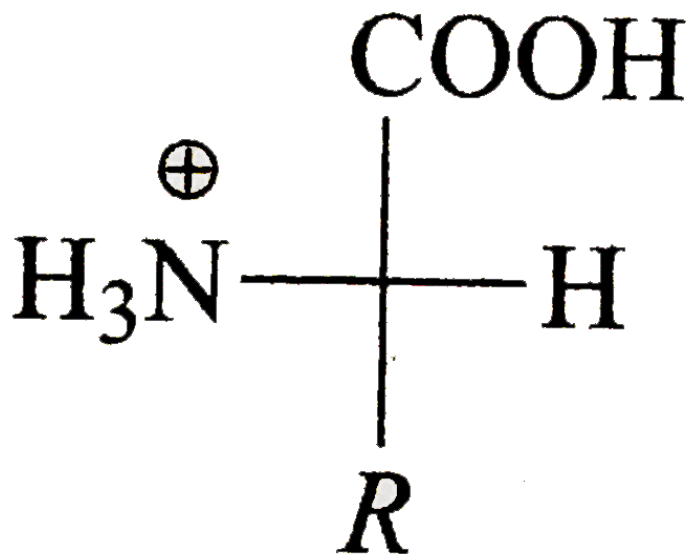
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11. Protein are nitrogeneous organic compound having very high molecular mass. They are polyamides formed from α -amino acid. The bond formed between two amino acid is called peptide bond

$-\overset{\text{O}}{\underset{\text{O}}{\parallel}}\text{C} - \text{NH} -$. The product obtained by this peptide bond formation

are called peptide and they may be divided as di, tri ,tetra, penta peptide.

The given structure of amino acid will exist at which pH?



A. 0

B. 6

C. 7

D. 12

Answer: A



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12. Protein are nitrogeneous organic compound having very high molecular mass. They are polyamides formed from α -amino acid. The bond formed between two amino acid is called peptide bond $-\overset{\overset{O}{||}}{C}-NH-$. The product obtained by this peptide bond formation are called peptide and they may be divided as di, tri ,tetra, penta peptide.

Which statement are correct about peptide bond?

1. $-\overset{\overset{O}{||}}{C}-NH-$ group is planar.
2. $C-N$ bond length in protein is longer than usual bond length of $C-N$ bond.
3. $C-N$ bond length in protein is samller than usual bond length of $C-N$ bond

A. 2 and 3

B. 1 and 2

C. 2 only

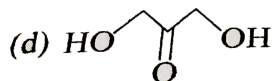
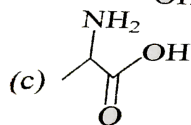
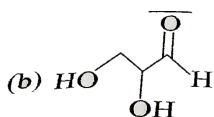
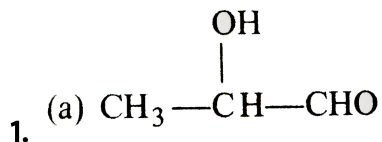
D. 1 and 3

Answer: D

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Match The Column

Column (I)



Column (II)

P. Carbohydrate

Q. Amino acid

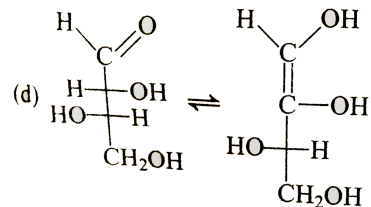
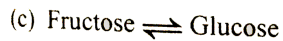
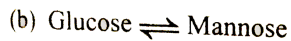
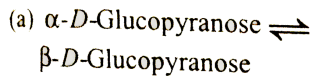
R. Positive Tollen's test

S. Ninhydrin test

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2. Match the following columns

Column (I)



Column (II)

P. Lobry De Bruyn Alberda van Ekenstein transformation

Q. Mutarotation

R. Tautomerisation

S. Epimerisation

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Column (I)

Column (II)

(a) Sucrose P. 1,2-glycosidic linkage

3. (b) Cellulose Q. 1,4-glycosidic linkage

(c) Maltose R. Polysaccharide

(d) Starch S. Disaccharide

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4.

Column (I)

Column (II)

(a) Glucose

P. Reduces Tollen's reagent

(b) Fructose

Q. Exhibits mutarotation in mild alkaline medium

(c) Mannose

R. Produces tetraacetate derivative on treatment w.

(d) Glucopyranoside

S. Gets oxidised by Br_2, H_2O

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Column (I)

Column (II)

(a) Maltose

P. Invert sugar

5. (b) Sucrose

Q. Reducing sugar

(c) Lactose

R. Glycosidic linkage

(d) Fructose

S. Disaccharide

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Column (I)

Column (II)

(a) Cellulose

P. Polymer

6. (b) Protein

Q. Nitrogen containing

(c) Lipid

R. Stored food in human

(d) Nucleic acid

S. Ester

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