CHEMISTRY

BOOKS - NTA MOCK TESTS

BIOMOLECULES TEST

Multiple Choice Questions

1. The pyrimidine bases present in DNA are

A. Cytosine and Uracil

B. Cytosine and Thymine

C. Cytosine and Guanine

D. Cytosine and Adenine

Answer: B

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2. The Glycosidic linkages and Peptide linkages are present in:

A. Carbohydrates, proteins

B. Carbohydrates, fats

C. Fats, proteins

D. Fats, vitamins

Answer: A

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3. Which one of the following base in not present in DNA?

A. adenine

B. cytosine

C. uracil

D. thymine

Answer: C

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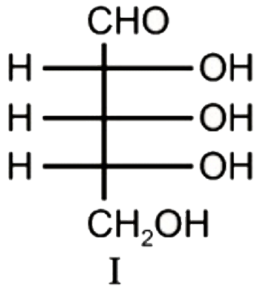
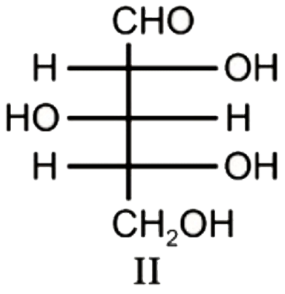
4. Two aldopentoses 'X' and 'Y' give the same osazone derivative 'X' is oxidised to an optically active aldaric acid in the presence of dilute nitric acid. Ruff degradation of 'Y' gave a

tetrose, which was similarly oxidised to an optically active aldaric acid, Assign the structures of 'X' and 'Y' from the following list.



I



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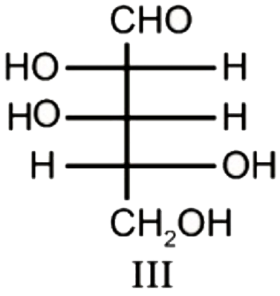

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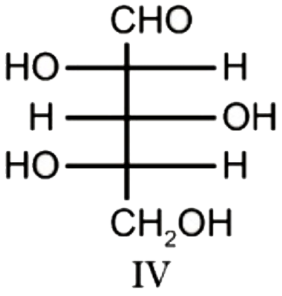

IV

A. X = I, Y = IV

B. X = IV, Y = I

C. X = III, Y = II

D. X= II, Y = III

Answer: C

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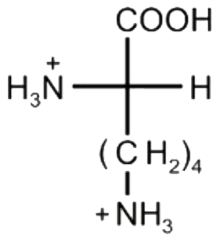
5. Which of the following major species present in a solution of lysine at pH = 3.5 ?

A. 

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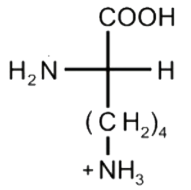

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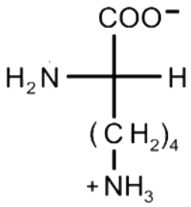

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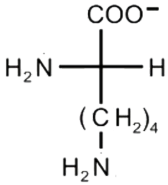

Answer: A

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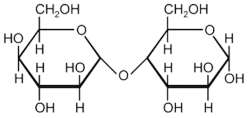
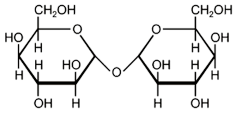
6. Which of the following will reduce Tollen's reagent?

A. 

B. 

C. Both of them are correct

D. None of these

Answer: A

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7. Hydrolysis of sucrose gives

A. Two molecules of glucose

B. Two molecules of fructose

C. One molecule each of glucose and fructose

D. One molecule each of glucose and mannose

Answer: C

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8. DNA multiplication is called

A. Translation

B. Transduction

C. Transcription

D. Replication

Answer: D

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9. The aqueous solution of D-glucose contains two forms of D-glucopyranose, which are :

A. Tautomers

B. Anomers

C. Epimers

D. Enantiomers

Answer: B

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10. The incorrect statement regarding cellulose is -

A. It is a polymer of D-glucose

B. It has β -1,4-glucosidic linkage

C. It is used for making rayon fibre

D. It can be obtained by polymerization of D-glucose

Answer: D

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11. The Strecker synthesis of α -amino acids begins with the reaction of an aldehyde with ammonium chloride and potassium cyanide. This is followed by an acid-catalyzed hydrolysis, that gives the amino acid. What functional group is hydrolyzed in the second step ?

A. An ester

B. A nitrile

C. An amide

D. An imine derivative

Answer: B

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12. Formation of a and β methyl glucosides by glucose, on heating with CH_3OH ,in presence of dry HCl gas indicates the presence of a/an

A. aldehyde group.

B. CH_2OH group

C. hemiacetal group.

D. acetal group.

Answer: C

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13. Glucose on reaction with Br_2 water gives

A. Glucaric acid

B. Gluconic acid

C. Saccharic acid

D. Citric acid

Answer: B

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14. Which of the following is a trisaccharide?

A. Stachyose

B. Sucrose

C. Raffinose

D. Ribose

Answer: C

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15. Glucose on reaction with Fehling solution gives

A. Cupric oxide

B. Cuprous oxide

C. Saccharic acid

D. Both Cuprous oxide and Saccharic acid

Answer: B

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16. Cellulose the most important constituent of plant cell wall is made up of -

A. Branched chain of glucose molecules linked by a $\alpha(1 \rightarrow 6)$ glycosidic bonds at the site of branching

B. Unbranched chain of glucose molecules linked by $\alpha(1 \rightarrow 4)$ glycosidic bonds

C. Branched chain of glucose molecules linked by $\beta(1 \rightarrow 4)$ glycosidic bond in

straight chain and $\alpha(1 \rightarrow 6)$ glycosidic bond at the site of branching

D. Unbranched chain of glucose molecules linked by $\beta(1 \rightarrow 4)$ glycosidic bonds

Answer: D

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17. Which one of the following statements is incorrect for the Sucrose?

A. It is not reducing sugar

B. It is obtained from cane sugar

C. It gives aspartame when it is heated at

$210^\circ C$

D. On hydrolysis, it give equal quantities of

D-glucose and D - fructose

Answer: C

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18. Maltose on hydrolysis gives

A. Mannose + glucose

B. Galactose + glucose

C. Glucose

D. Mannose + fructose

Answer: C

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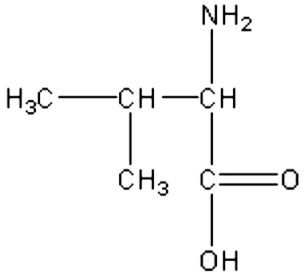
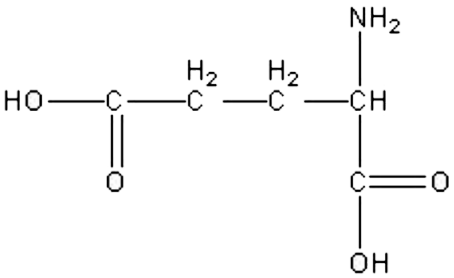
19. Amino acids are classified as acidic, basic, or neutral depending upon the relative number of amino and carboxyl acid groups in their molecule. Which among the following are

acidic?

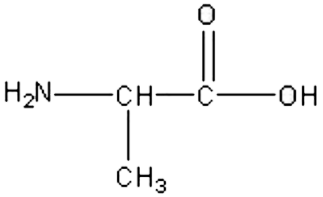
(a)



(b)



(c)



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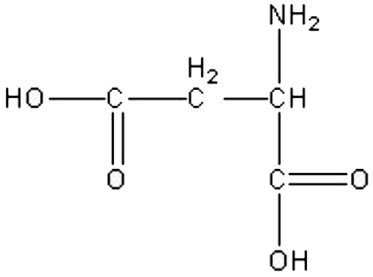

A. a and b but not c and d

B. b and c but not a and d

C. b and d but not a and c

D. a and d but not b and c

Answer: C

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20. Invert sugar on hydrolysis forms equimolar mixture of

A. D-(+) glucose and D-(-) fructose.

B. L-(+) glucose and D-(-) fructose.

C. D -(+)glucose and L.(-) fructose.

D. D .(-)glucose and L. (-)fructose.

Answer: A

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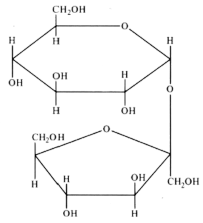
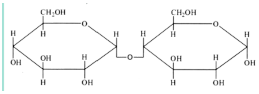
21. Which of the following is incorrect about sucrose?

A. It is a non-reducing sugar

B. It does not undergo mutaroation

C. 

D. 

Answer: D

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22. D-glucose reacts with phenylhydrazine to make osazone. How many moles of phenylhydrazine is used for this reaction per molecule of D-glucose?

A. 1

B. 2

C. 3

D. 7

Answer: C

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23. Reducing property of monosaccharide is due to the presence of

A. OH group.

B. Keto group.

C. Acetal group.

D. Anomeric hydroxyl group.

Answer: D

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24. What does 'D' and (+) signifies in D - (+) glucose?

A. D represents conformation and (+) represents the laevorotatory nature of molecule.

B. D represents conformation and (+) represents the dextrorotatory nature of molecule.

C. D represents configuration and (+) represents the laevorotatory nature of molecule.

D. D represents configuration and (+) represents the dextrorotatory nature of molecule.

Answer: D

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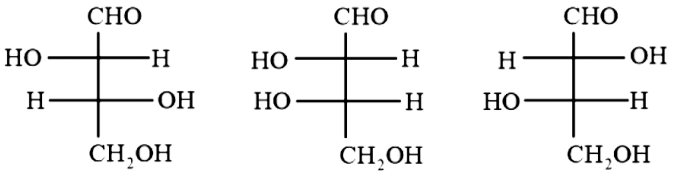
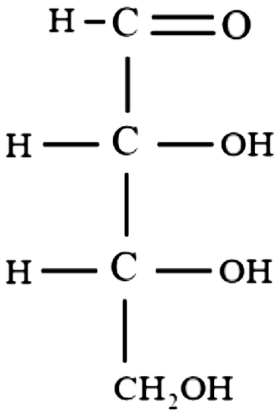
25. The corresponding order of names of four aldoses with configuration given below, respectively is:





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

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

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

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

Answer: D

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26. Which of the following will form the same osazone when treated with excess of phenylhydrazine?

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

B. D-glucose, D-fructose and D-mannose

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

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

Answer: B

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27. Hydrolysis of sucrose is called:

A. esterification

B. saponification

C. inversion

D. decarboxylation

Answer: C

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28. Glycogen is branched chain polymer of $\alpha - D -$ D-glucose units in which chain is formed by $C_1 - C_4$ glycosidic linkage where branching occurs by formation of $C_1 - C_6$ glycosidic linkage. Structure of glycogen is similar to

A. amylose

B. glucose

C. cellulose

D. amylopectin

Answer: D

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29. A disaccharide consisting of two $\alpha - D -$ glucose units in which C_1 of one glucose is linked to C_4 of another glucose unit is

A. maltose

B. sucrose

C. lactose.

D. cellulose

Answer: A

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30. The isoelectric point is a

A. specific temperature

B. suitable concentration of amino acid.

C. hydrogen ion concentration that does not allow migration of amino acid under electric field.

D. melting point of an amino acid under the influence of electric field.

Answer: C

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