



CHEMISTRY

BOOKS - CBSE COMPLEMENTARY MATERIAL CHEMISTRY (HINGLISH)

BIOMOLECULES

Multiple Choice Question

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

- A. it is an aldohexose
- B. on heating with HI it forms n-hexane
- C. it is present in furanose form
- D. it does not give 2, 4-DNP test

Answer: C



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2. Which of the following acids is a vitamin?

- A. aspartic acid

B. ascorbic acid

C. asiphic acid

D. saccharic acid

Answer: B



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3. Which of the following base is not present in RNA ?

A. adenin

B. uracil

C. thymine

D. cytosine

Answer: C



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4. Which of the following 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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5. Which of the following is non-reducing sugar ?

A. glucose

B. sucrose

C. maltose

D. lactose

Answer: B



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

A. peptide bond

B. dative bond

C. glycosidic bond

D. phosphodiester bond

Answer: A



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7. In DNA the complementary bases are

A. adenine and thymine , guanine and cytosine

B. adenine and thymine , guanine and uracil

C. adenine and guanine , thymine and cytosine

D. uracil and adenin , cytosine and guanine

Answer: A



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8. Deficiency of vitamin B_1 causes the disease

:

A. convulsions

B. beri - beri

C. cheilosis

D. sterility

Answer: B



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9. If one strand of DNA has the sequence ATCGTATG , the sequence in the complementary strand would be

A. TCCGAA

B. TACGTA

C. TACGAA

D. TAGCTA

Answer: C



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

A. The sugar component RNA is arabinose
and sugar in DNA is ribose

B. The sugar component in RNA is
2'deoxyribose 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. The sugar component in RNA is ribose and sugar component in DNA is 2'-deoxyribose.

Answer: D



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

A. vitamin C

B. vitamin D

C. vitamin K

D. vitamin E

Answer: A



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

A. C'_5 and C'_2 respectively of sugar molecule

B. C_2^1 and C_5^1 respectively of sugar molecule

C. C'_3 and C_5^1 respectively of sugar molecule

D. C_5^1 and C_1^1 respectively of sugar molecule

Answer: C



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13. The two function groups present in a typical carbohydrate are



Answer: C



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

A. 1st

B. 2nd

C. 3rd

D. 4th

Answer: B



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15. Which of the following is called invert sugar ?

A. lactose

B. sucrose

C. maltose

D. glucose

Answer: B



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16. Carbohydrates which give two molecules of mono-saccharides are called disaccharides.

These are:

A. maltose

B. cellulose

C. maltase

D. lactose

Answer: A::D



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17. Starch is mixture of:

A. amylopectin

B. amylose

C. maltose

D. lactose

Answer: B::C



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18. Which of the following contain transition metal ?

A. Vitamin B -12

B. Chlorophyl

C. Haemoglobin

D. RNA

Answer: A::C



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19. Which of the following has glycosidic linkage ?

A. Maltose

B. Anylose

C. galactose

D. sucrose

Answer: A::B::D



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20. Fibrous protein are present in:

A. myosin

B. albumin

C. collagen

D. fibroin

Answer: A::C::D



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1. Assertion : A solution of sucrose in water is dextro rotatory but on hydrolysis in presence of little HCl it becomes laevorotatory.

Reason : Sucrose on hydrolysis gives unequal amount of glucose and fructose as a result sign of rotation changes.

A. Assertion and reason both are CORRECT and reason is the CORRECT explanation of the assertion.

B. Assertion and reason both are wrong statements.

C. Assertion is correct statement but reason is wrong statement.

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

Answer: C



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2. Assertion : Fructose does not contain aldehyde group but still reduce Tollen's reagent.

Reason : In the presence of base, fructose undergoes rearrangement to form glucose and mannose.

A. Assertion and reason both are CORRECT and reason is the CORRECT explanation of the assertion.

B. Assertion and reason both are wrong statements.

C. Assertion is correct statement but reason is wrong statement.

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

Answer: A



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Matching Column Type

1. Match the carbohydrate in Column I with its characteristic given in Column II

Column-I

- (A) Lactose
- (B) Starch
- (C) Sucrose
- (D) Fructose

Column-II

- (p) Ketohexose
- (q) Disaccharide
- (r) Polysaccharide
- (s) on hydrolysis gives β -D-glucose and β -D-galactose

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

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

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

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

Answer:



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2. Match the carbohydrate in Column I with its characteristic given in Column II

Column-I

- (A) Keratin
- (B) Haemoglobin
- (C) Riboflavin
- (D) Glycine

Column-II

- (p) protein
- (q) β -pleated protein
- (r) α -amino acid
- (s) Water soluble vitamin

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

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

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

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

Answer:

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3. The no. of chiral carbon present in

$\beta - D - (+) -$ glucose is:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|

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Very Short Answer Type Question

1. Name polysaccharides which is stored in the liver of animals.



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2. What structural feature is required for a carbohydrate to behave as reducing sugar ?



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3. Give the significance of (+) sign in the name D-(+)-glucose.



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4. Glucose is an aldose sugar but it does not react with sodium hydrogen sulphite. Give reason.



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5. Why is sucrose called invert sugar ?



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6. Name the amino acid which is not optically active.



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7. Give reason :

Amylase present in the saliva becomes inactive in the stomach.



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8. Which forces are responsible for the stability of α -helical structure of proteins ?



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9. Which nucleic acid is responsible for carrying out protein synthesis in the cell ?



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10. 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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11. What type of linkage holds together the monomers of DNA and RNA ?



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12. Give the Haworth projection of D-glucopyranose.



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13. Name the vitamin responsible for coagulation of blood.



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



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15. What is native state of protein ?



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16. Why is cellulose not digested in human body ?



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



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18. Name two diseases caused due to deficiency of enzymes.



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19. Give one example of : (a) water soluble, (b) fat soluble vitamins.



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20. Name a protein which is insoluble in water.



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21. Name the deficiency disease resulting from lack of Vitamin 'A' in the diet.





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22. Mention two important functions of carbohydrates in plants.



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23. Name two different type of RNA molecules found in the cells of organisms.



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



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25. Why are carbohydrates generally optically active ?



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



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27. What are the products of hydrolysis of lactose ?



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



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29. If one strand of DNA has the sequence 5' - G-G-A-C-T-A-C-T-3', what is the sequence of bases in the complementary strand ?



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30. What are monosaccharides?



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31. What is the difference between native protein and denatured protein ?



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32. Amino acids are amphoteric in nature. Explain.



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Short Answer I Type Question

1. Define the following terms in relation to proteins :

Peptide linkage



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2. Define the following terms in relation to proteins :

Denaturation



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



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4. Explain what is meant by :

(i) Biocatalyst



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5. Explain the following terms :

Invert sugar



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6. Explain the following terms :

Polypeptides



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7. Explain what is meant

(i) Glycosidic linkage



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8. Name the products of hydrolysis of sucrose.

Why is sucrose not a reducing sugar ?



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9. State clearly what are known as nucleotides and nucleosides.



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10. Describe what do you understand by primary structure and secondary structure of proteins.



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11. What is essentially the difference between α -form of glucose and β -form of glucose? Explain.



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12. What are anomers ? Give the structures of two anomers of glucose.



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13. Write the hydrolysed product of :

(i) Maltose (ii) Cellulose



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14. Acetylation of glucose with acetic anhydride gives glucose penta-acetate. Write the structure of penta acetate.



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15. Explain why glucose penta acetate does not react with hydroxylamine ?



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16. What are vitamins ? How are they classified ?



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17. Write the products of oxidation of glucose with :

Bromine water



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18. Write the products of oxidation of glucose

with :

Nitric acid



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



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20. Name the disease caused by deficiency of vitamin D.

A. Night blind ness

B. Scurvy

C. Rickets

D. Beriberi

Answer: C



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21. Why cannot vitamin *C* be stored in our body ?



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22. Name the constituents of starch and what is the difference between them ?



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



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24. Give reason :

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



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25. Give reason :

The monoamino monocarboxylic acids have

two p Ka values.



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



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27. Describe two important functions of nucleic acids.



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Short Answer II Type Question

1. Deficiency of which vitamin causes scurvy ?



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2. What type of linkage is responsible for the formation of proteins ?



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3. Write the product formed when glucose is treated with HIO₄



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4. Differentiate between the following :

Secondary and tertiary structure of protein



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5. Differentiate between α -helix and β pleated structure of proteins.



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6. Differentiate between globular and fibrous proteins.



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7. Name the four bases present in DNA.



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8. Which of them is not present in RNA ?



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9. Give the structure of a nucleotide of DNA.



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



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



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12. Write chemical name and source of vitamin

C.



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13. Give the chemical name and sources of :

Vita min B₁



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