

REVISION TEST SERIES - 5

Class XII

CHEMISTRY

Time : 1½ hrs.

Marks : 35

SET A

SECTION - A

7 × 1 = 7

- The most convenient method to prepare primary amine containing one carbon atom less is
 - Gabriel Phthalimide Synthesis
 - Reductive animation of aldehydes
 - Hofmann bromamide reaction
 - Reduction of isonitriles
- Which of the following amides will give ethylamine on reaction with sodium hypobromide?
 - Butanamide
 - Propanamide
 - Acetamide
 - Benzamide
- Primary and secondary amines are distinguished by
 - Br₂/ROH
 - HClO
 - HNO₂
 - NH₃
- On oxidation with a mild oxidising agent like Br₂/H₂O, the glucose is oxidized to
 - Saccharic acid
 - Glucaric acid
 - Gluconic acid
 - Valeric acid
- Which of the following is an example of an aldopentose?
 - D-Ribose
 - Glyceraldehyde
 - Fructose
 - Erythrose
- Carbohydrates are stored in human body as the polysaccharide.
 - Starch
 - Glycogen
 - Cellulose
 - Amylose
- Which parts of amino acid molecules are linked through hydrogen bonds in the secondary structure of proteins?
 - NH₂ group
 - COOH group
 - $\begin{array}{c} -C- \\ || \\ O \end{array}$ and -NH- groups
 - None of the above

In the following questions (No. 8-9) a statement of Assertion followed by a statement of Reason is given. Choose the correct answer out of the following choices. 2 × 1 = 2

- If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
- If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
- Assertion is true but reason is false
- Assertion is false but reason is true.

8. Assertion (A) : N, N - Diethyl benzene sulphonamide is insoluble in alkali.
Reason (R) : Sulphonyl group attached to nitrogen atom is strong electron withdrawing group.
9. Assertion (A) : Glycine must be taken through diet.
Reason (R) : It is not an essential amino acid.

SECTION - B

4 × 2 = 8

10. What is the role of HNO_3 in the nitrating mixture used for nitration of benzene?
11. Why does acylation of $-\text{NH}_2$ group of aniline reduces its activating effect?
12. Name the sugar present in milk. How many monosaccharide units are present in it? What are such oligosaccharides called?
13. In nucleoside, a base is attached at 1' position of sugar moiety. Nucleotide is formed by linking of phosphoric acid unit to the sugar unit of nucleoside. At which position of sugar unit is the phosphoric acid linked in a nucleoside to give a nucleotide?

SECTION - C

3 × 3 = 9

14. Write the chemical equations involved when $\text{C}_2\text{H}_5\text{NH}_2$ is treated with the following reagents:
i) CH_3COCl /pyridine ii) $\text{C}_6\text{H}_5\text{SO}_2\text{Cl}$ iii) $\text{CHCl}_3 + \text{KOH}$
15. How do you convert the following :
- i) $\text{C}_6\text{H}_5\text{CONH}_2$ to $\text{C}_6\text{H}_5\text{NH}_2$
ii) Aniline to phenol
iii) Ethane nitrile to Ethanamine
16. i) Which one of the following is a disaccharide:
Starch, Maltose, Fructose, Glucose?
ii) What is the difference between fibrous protein and globular protein?
ii) Write the name of vitamin whose deficiency causes bone deformities in children.

OR

- i) What is the difference between acidic amino acids and basic amino acids?
ii) Which one of the following is a monosaccharide :
starch, maltose, fructose, cellulose
iii) Write the name of the vitamin whose deficiency causes bleeding of gums.

SECTION - D (COMPETING BASED QUESTIONS)

1 × 4 = 4

17. Read the following passage and answer the questions.

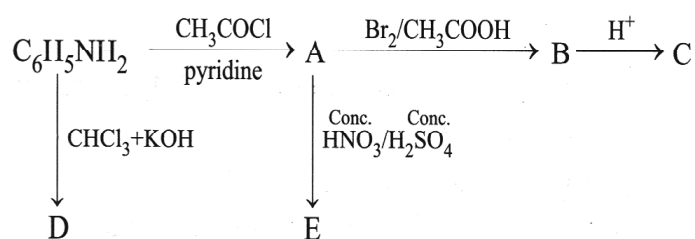
Living system are made up of complex molecules called Biomolecules. Carbohydrate, proteins, enzymes, nucleic acids, lipids, hormones ATP, DNA and RNA play an important role in our daily life. Carbohydrates provide us energy. Protein help in growth and maintenance of body. Nucleic acids, RNA helps in protein synthesis, DNA helps in transfer of genetic characteristics. Fat are source of energy and protect our vital organs.

- i) Why are carbohydrates optically active?
- ii) Name two acidic amino acids.
- iii) Name a protein which has quarternary structure.
- iv) What are products of hydrolysis of fats?

SECTION - E

1 × 5 = 5

18. Identify A to E in the following sequence of reaction.



OR

- a) Write the structures of the main products when aniline reacts with
 - i) $\text{Br}_2(\text{aq})$
 - ii) HCl
 - iii) $(\text{CH}_3\text{CO})_2\text{O}/\text{pyridine}$
- b) Arrange the following in increasing order of boiling points :
 $\text{C}_2\text{H}_5\text{NH}_2$, $\text{C}_2\text{H}_5\text{OH}$, $(\text{CH}_3)_3\text{N}$.
- c) Give a simple test to distinguish between the following pair of compounds.
 $(\text{CH}_3)_2\text{NH}$ and $(\text{CH}_3)_3\text{N}$

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SET B

SECTION - A

7 × 1 = 7

- Amides may be converted into amines by a reaction named after.
 - Hofmann Bromide
 - Claisen
 - Perkin
 - None of these
- Tertiary amines have lowest boiling points amongst isomeric amines because
 - they have highest molecular mass
 - they do not form hydrogen bonds
 - they are more polar in nature
 - they are most basic in nature
- The strongest base among the following is
 - $C_6H_5NH_3$
 - $P-NH_2C_6H_4NH$
 - $M-NO_2C_6H_4NH_2$
 - $C_6H_5CH_2NH_2$
- Starch is composed of two polysaccharides which are
 - amylopectin and glycogen
 - amylose and glycogen
 - amylose and amylopectin
 - cellulose and glycogen
- Which of the following treatment will convert starch directly into glucose?
 - Heating with dilute H_2SO_4
 - Fermentation by diastase
 - Fermentation by zymase
 - Heating with dilute NaOH
- The conversion of Maltose into glucose is possible by the enzyme.
 - Zymase
 - Lactase
 - Maltase
 - Diastase
- The heterocyclic base which is present in DNA but not present in RNA is
 - Uracil
 - Thymine
 - Adenine
 - Cytocine

In the following questions (No. 8-9) a statement of Assertion followed by a statement of Reason is given. Choose the correct answer out of the following choices. 2 × 1 = 2

- If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
- If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
- Assertion is true but reason is false
- Assertion is false but reason is true.

8. Assertion (A) : Only a small amount of HCl is required in the reduction of nitro compounds with iron scrap and HCl in the presence of steam.

Reason (R) : FeCl_2 formed gets hydrolysed to release HCl during the reaction.

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

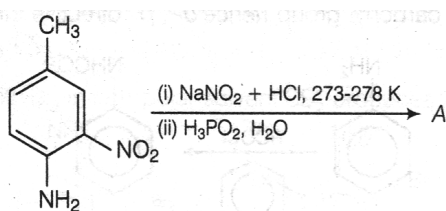
Reason (R) : Vitamin D is fat soluble vitamin.

SECTION - B

4 × 2 = 8

10. Why is NH_2 group of aniline acetylated before carrying out nitration?

11. Give the structure of 'A' in the following reaction.



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

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

SECTION - C

3 × 3 = 9

14. Write chemical equations involved when aniline is treated with the following reagents :

i) $\text{Br}_2(\text{aq})$

ii) $\text{CHCl}_3 + \text{KOH}$

iii) HCl

15. How do you convert the following :

i) Aniline to Benzene

ii) Ethanamide to Methanamine

iii) Nitrobenzene to Aniline

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

starch, maltose, fructose, glucose

ii) Write one difference between α -helix and β -pleated sheet structures of protein.

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

OR

i) What is the basic structural difference between glucose and fructose?

ii) Write the product formed when glucose is treated with HI.

iii) What type of linkage is responsible for the formation of proteins?

SECTION - D (COMPETING BASED QUESTIONS)

1 × 4 = 4

17. Read the following passage and answer the questions.

Table shows carbohydrates and artificial sweeteners and their relative sweetness. Study the table and answer the questions based on table and related concepts.

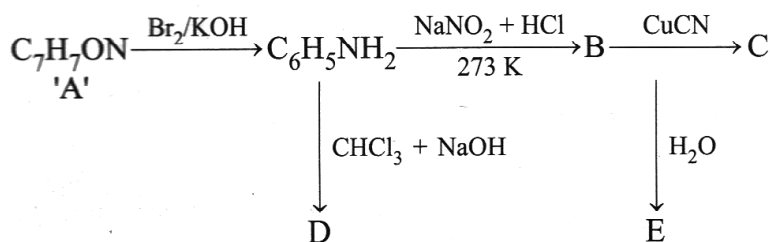
Carbohydrate	Relative Sweetness
Lactose	16
Maltose	32
Galactose	32
Glucose	74
Sucrose	100
Fructose	173
Sachharine	500 time than sugar
Aspartame	160 times than sugar
Alitame	2000 times than sugar
Sucralose	650 times than sugar

- Which is sweetest sugar and why?
- What is the difference between glucose and fructose?
- Why are artificial sweetener better than sugar for diabetic patients?
- What are non-reducing sugar? Select the non-reducing sugar from the table?

SECTION - E

1 × 5 = 5

18. Identify A, B, C, D and E in the following sequence of reaction.



OR

- Write the structure of the main products when benzene diazonium chloride reacts with the following reagents.
 - KI
 - $\text{CH}_3\text{CH}_2\text{OH}$
 - Cu/HCl
- Arrange the following in the increasing order of their basic character in aqueous solution: CH_3NH_2 , $(\text{CH}_3)_2\text{NH}$, $(\text{CH}_3)_3\text{N}$
- Give a simple test to distinguish between the following pair of compounds. $\text{C}_6\text{H}_5\text{NH}_2$ and CH_3NH_2