

# QB365 Question Bank Software Study Materials

## Biomolecules Important 2 Marks Questions With Answers (Book Back and Creative)

12th Standard

Chemistry

Total Marks : 40

2 Marks

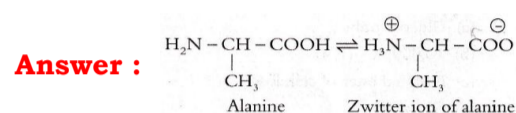
20 x 2 = 40

- 1) Name the Vitamins whose deficiency cause i) rickets ii) scurvy

**Answer :** i) Rickets - Vitamin - D (Cholecalciferol - (D<sub>3</sub>) Ergocalciferol - (D<sub>2</sub>)

ii) Scurvy (bleeding gums) - vitamin - C (Ascorbic acid)

- 2) Write the Zwitter ion structure of alanine



- 3) Give two difference between Hormones and vitamins.

**Answer :**

HORMONE	VITAMIN
Synthesized in animal bodies	Synthesised in plants
Produced in ductless (endocrine glands)	Have to be supplied in diet except (Vitamin D)
These are not stored in body but are continuously produced	These remain stored in the body to keep away diseases
Eg: Androgen, Estrogen, thyroxine etc.	Eg: Vitamin A (Retinol) Vitamin C (Ascorbic acid)

- 4) Write a note on denaturation of proteins.

**Answer :** (i) Each protein has a unique three-dimensional structure formed by interactions such as disulphide bond, hydrogen bond, hydrophobic and electrostatic interactions. These interactions can be disturbed when the protein is exposed to a higher temperature, certain chemicals such as urea, alteration of pH, ionic strength etc., It leads to the loss of the three-dimensional structure partially or completely. The process of a losing its higher order structure without losing the primary structure, is called denaturation. When a protein denatures, its biological function is also lost.

(ii) Since the primary structure is intact, this process can be reversed in certain proteins. This can happen spontaneously upon restoring the original conditions or with the help of special enzymes called cheperons (proteins that help proteins to fold correctly).

(iii) Example: coagulation of egg white by action of heat.

- 5) How are vitamins classified?

**Answer :** Vitamins are classified into two groups based on their solubility in water or in fat.

**(a) Fat soluble vitamins:**

These vitamins absorbed best when taken with fatty food and are stored in fatty tissues and livers. These vitamins do not dissolve in water. Hence they are called fat soluble vitamins. Vitamin A, D, E & K are fatsoluble vitamins.

**(b) Water soluble vitamins:**

Vitamins B (B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>5</sub>, B<sub>6</sub>, B<sub>7</sub>, B<sub>9</sub> & B<sub>12</sub>) and C are readily soluble in water. On the contrary to fat soluble vitamins, these can't be stored. The excess vitamins present will be excreted through urine and are not stored in our body. Hence, these two vitamins should be supplied regularly to our body.

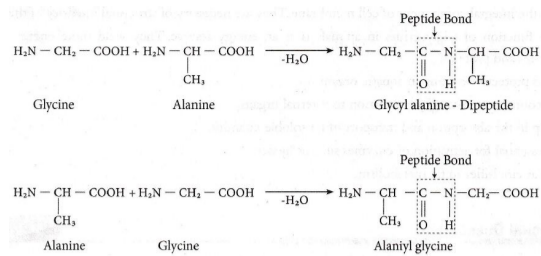
- 6) What are hormones? Give examples

**Answer :** (i) Hormone is an organic substance (e.g. a peptide or a steroid) that is secreted by one tissue. It limits the blood stream and induces a physiological response (e.g. growth and metabolism) in other tissues. It is an intercellular signalling molecule.

(ii) e.g. Testosterone, Thyroxine, Estrogen, Insulin, Oxytocin etc.

(ii) e.g. TESTOSTERONE, THYROIDINE, ESTROGEN, INSULIN, OXYTOCIN ETC.

7) Write the structure of all possible dipeptides which can be obtained from glycine and alanine



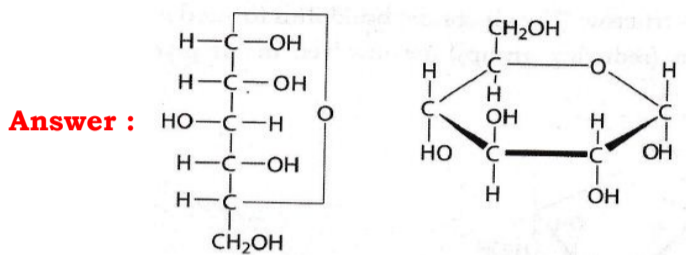
**Answer :**

∴ Two dipeptides structures are possible from glycine and alanine. They are glycyl alanine and Alanyl glycine.

8) Define enzymes

**Answer :** (i) Enzymes are naturally occurring simple or conjugated proteins which act as biological catalysts in living systems.  
(ii) E.g. Carbonic anhydrase, Lactase, Sucrose

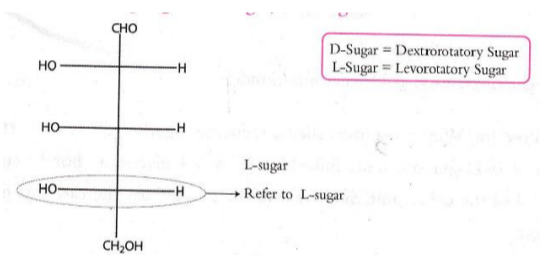
9) Write the structure of α-D (+) glucopyranose



α-D (+) glucopyranose

10) Is the following sugar, D - sugar or L - sugar?

**Answer :**



(a) C<sub>4</sub> carbon of the given sugar contains H and OH on the same configuration like C<sub>4</sub> carbon in L-Glyceraldehyde. Therefore the sugar is L-sugar.

(b) Because the H and OH on C<sub>4</sub> carbon are in the same configuration as the H and OH on C<sub>4</sub> carbon in L-Glyceraldehyde

11)  $6CO_2 + 6H_2O \xrightarrow{\text{Sunlight}} C_6H_{12}O_6 + 6O_2$   
Name the above process.

**Answer :** Photosynthesis.

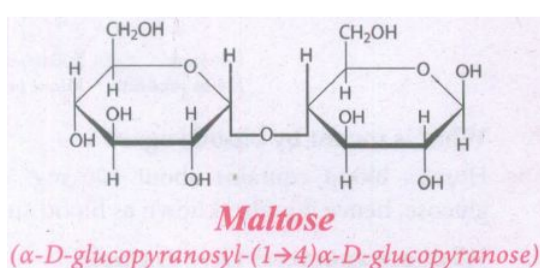
12) What are anomers? Give example.

**Answer :** Anomers are cyclic monosaccharide differing from each other in the configuration of C<sub>1</sub> if they are aldoses or in the configuration of C<sub>2</sub> if they are ketoses.

E.g. α and βD - glucose.

13) Draw the structure of maltose.

**Answer :**



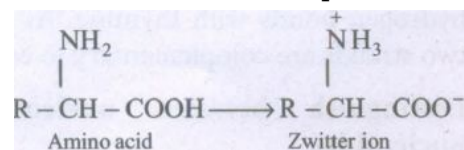
14) Write a note on homo and heteropolysaccharides with examples.

**Answer :** (i) Homopolysaccharides are composed of only one type of monosaccharides. E.g. Starch, cellulose and glycogen.

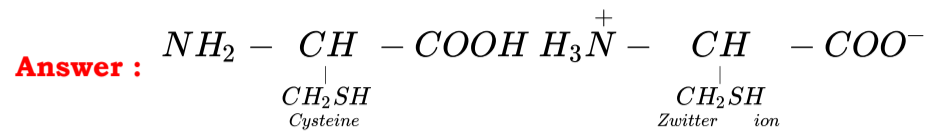
(ii) The heteropolysaccharides are composed of more than one. E.g. Hyaluronic acid, heparin.

15) What do you mean by zwitter ion?

**Answer :** Due to the presence of an acidic and a basic group in the same molecule, amino acids exist in an ionic form called a Zwitter ion where the proton of -COOH group is transferred to the -NH<sub>2</sub> group

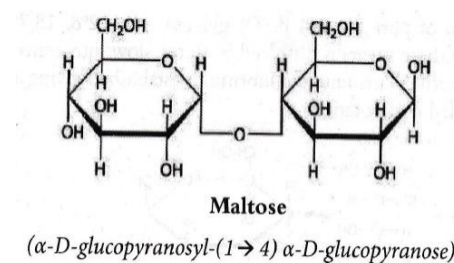


16) Give an example of an amino acid containing sulphur. Write its zwitter ion form.



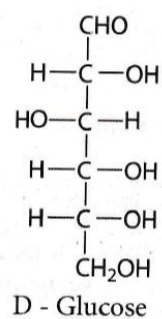
17) Write a note on the structure of maltose

**Answer :** Maltose consists two molecules of α-D-glucose units linked by an α-1,4 glycosidic bond between anomeric carbon of one unit and C-4 of the other unit. Since one of the glucose has the carbonyl group intact, it is also acts as a reducing sugar.



18) What is meant by Fischer projection formula?

**Answer :** Fischer has devised a projection formula to relate the structure of a carbohydrate to one of the two enantiomeric forms of glyceraldehyde. This is called Fischer projection formula.



19) Some numbers in B vitamins are missing (cg : B<sub>4</sub>, B<sub>5</sub>, B<sub>10</sub>& B<sub>11</sub>) Why?

**Answer :** The missing numbers in B vitamins are considered as vitamins but are no longer considered as such, and the number that were assigned to them now form the gaps.

20) Write the structure of the following:

α - D - glucopyranose and

β - D - glucopyranose

