

## Previous HSE Questions from the chapter "BIOMOLECULES"

1. Which vitamin is responsible for blood clotting? (1)
2. Describe primary and secondary structure of proteins. (2) [SAY 2018]
3. Which among the given vitamins is water soluble?  
a) A b) B c) D d) E (1)
4. State two differences between globular and fibrous proteins. (2) [March 2018]
5. a)  $\alpha$ -D-(+) glucose and  $\beta$ -D-(+) glucose are:  
i) Metamers ii) Anomers iii) Geometrical isomers iv) Functional group isomers (1)  
b) What is denaturation of proteins? (1)  
c) Differentiate between nucleoside and nucleotide. (1) [SAY 2017]
6. Which of the following is a polysaccharide?  
i) Maltose ii) sucrose iii) fructose iv) cellulose (1)  
b) Explain the amphoteric behaviour of amino acid. (2) [March 2017]
7. Proteins are Biomolecules.  
a) What is denaturation of protein? (1)  
b) Match the following:  

Vitamin A	Glucose
Starch	Zymase
Aldohexose	Night blindness
Enzyme	Amylose
	Fructose

(2) [SAY 2016]
8. Cane Sugar, Glucose and Starch are Carbohydrates.  
a) Represent the structure of Glucose. (1)  
b) Write a method to prepare Glucose from Starch. Write the chemical equation of the reaction. (1)  
c) Suggest any two uses of Carbohydrates. (1) [March 2016]
9. a) Match the following structures of proteins in column I with their characteristic features in column II

Column I	Column II
i) Primary structure	a) Spatial arrangement of polypeptide sub units
ii) Secondary structure	b) Structure of amino acids
iii) Tertiary structure	c) Folding of peptide chains
iv) Quaternary structure	d) Sequence of amino acids
	e) Fibrous or globular nature

(2)
- b) What is denaturation of proteins? (1) [SAY 2015]
10. Carbohydrates are broadly divided into monosaccharides, oligosaccharides and polysaccharides.  
a) Write one example each of monosaccharide and oligosaccharide. (1)  
b) i) Write any one method of preparation of glucose. (1)  
ii) What is a peptide linkage? (1) [March 2015]
11. Biomolecules are formed by certain specific linkages between simple monomeric units. Write the names of linkages and monomeric units in the following class of biomolecules.  
i) Starch  
ii) Protein  
iii) Nucleic acid (1 x 3 = 3) [March 2014]
12. a) Name a fat soluble vitamin. Suggest a disease caused by its deficiency. (1)

- b) what do you mean by the following:
- Secondary structure of proteins.
  - Nucleosides. (1 x 2 = 2) [SAY 2014]
13. Name the products obtained in the following reactions.
- $C_6H_{12}O_6$  Bromine water → ..... (½)
  - $C_6H_{12}O_6$  HI/heat → ..... (½)
  - What is invert sugar? (1)
  - Name two poly saccharides. (1) [SAY 2013]
14. a) Amino acids can be classified into essential amino acids and non essential amino acids.
- What is the basis of such classification? (1)
  - Write one example each for essential and non essential amino acids. (1)
  - Write any two differences between DNA and RNA. (1) [March 2013]
15. Proteins are important polymers of biological systems.
- What is denaturation of proteins? (1)
  - Give two examples of denaturation. (1) [SAY 2012 & March 2009]
16. a) Carbohydrates are classified into monosaccharides, oligosaccharides and polysaccharides.
- What is the basis of such classification? (1½)
  - Give an example for an oligosaccharide. (½)
  - Vitamin 'C' is a vitamin found in fruits and vegetables. It cannot be stored in our body. Why? (1) [March 12]
17. Proteins are the polymers of  $\alpha$ -aminoacids. The structure and shape of proteins can be discussed at four levels, namely primary, secondary, tertiary and quaternary.
- Give an account of the structure and shape of proteins considering the above four levels. (3) [SAY 2011]
18. a) Names of carbohydrates, their properties and structural patterns are given below. Match them properly. (2)

Glucose	Disaccharide	d-1,4 link
Sucrose	Reducing	Galactoxide
Lactose	Insoluble (in water)	1,6-linkage
Amylopectin	Non-reducing	Fructoxide
	Trisaccharide	Anomers present
	Monosaccharide	2-glucose units linked

- b) Proteins have polypeptide bonds. What are polypeptides? (1) [March 2011]
19. Carbohydrates are classified into three classes - monosaccharides, oligosaccharides and polysaccharides.
- What are polysaccharides? (1)
  - Give two examples of polysaccharides? (1)
  - What is invert sugar? (1)
  - What is the basic structural difference between Starch and Cellulose? (1) [March 2010]
20. Sucrose is fermented by yeast to ethyl alcohol. What are the enzymes used in this conversion? (2) [SAY 2008]
21. Glucose is commercially prepared from a polysaccharide.
- Which is the polysaccharide used for the production of glucose? (1)
  - Name the process involved in the formation of glucose in the above method? (1) [March 2008]

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