Biomolecules

Very Short Answer Type Questions

1. Medicines are either man made (i.e., synthetic) or obtained from living organisms like plants, bacteria, animals etc. and hence the latter are called natural products. Sometimes natural products are chemically altered by man to reduce toxicity or side effects. Write against each of the following whether they were initially obtained as a natural product or as a synthetic chemical.
   - a. Penicillin _____
   - b. Sulfonamide _____
   - c. Vitamin C _____
   - d. Growth Hormone _____

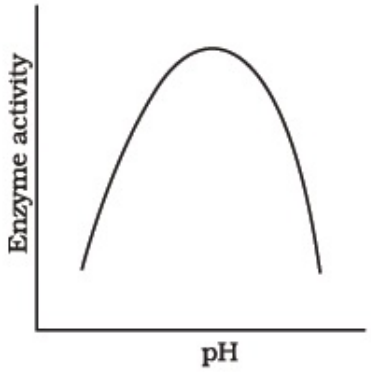
2. Select an appropriate chemical bond among ester bond, glycosidic bond, peptide bond and hydrogen bond and write against each of the following.
   - a. Polysaccharide _____
   - b. Protein _____
   - c. Fat _____
   - d. Water _____

3. Write the name of any one aminoacid, sugar, nucleotide and fatty acid.
4. Reaction given below is catalysed by oxidoreductase between two substrates A and A', complete the reaction.
   A reduced + A' oxidised →
5. How are prosthetic groups different from co-factors?
6. Glycine and Alanine are different with respect to one substituent on the α -carbon. What are the other common substituent groups?
7. Starch, Cellulose, Glycogen, Chitin are polysaccharides found among the following. Choose the one appropriate and write against each.
   - Cotton fibre _____
   - Exoskeleton of cockroach _____

- Liver _____
- Peeled potato _____

Short Answer Type Questions

1. Enzymes are proteins. Proteins are long chains of aminoacids linked to each other by peptide bonds. Aminoacids have many functional groups in their structure. These functional groups are, many of them at least, ionisable. As they are weak acids and bases in chemical nature, this ionization is influenced by pH of the solution. For many enzymes, activity is influenced by surrounding pH. This is depicted in the curve below, explain briefly.



2. Is rubber a primary metabolite or a secondary metabolite? Write four sentences about rubber.
3. Schematically represent primary, secondary and tertiary structures of a hypothetical polymer say for example a protein.
4. Nucleic acids exhibit secondary structure, justify with example.
5. Comment on the statement "living state is a non-equilibrium steady- state to be able to perform work".

Long Answer Type Questions

1. Formation of enzyme-substrate complex (ES) is the first step in catalysed reactions.

Describe the other steps till the formation of product.

2. What are different classes of enzymes? Explain any two with the type of reaction they catalyse.
3. Nucleic acids exhibit secondary structure. Describe through Watson- Crick Model.
4. What is the difference between a nucleotide and nucleoside? Give two examples of each with their structure.
5. Describe various forms of lipid with a few examples.