BIOLOGY

BOOKS - NCERT BIOLOGY (ENGLISH)

BIOMOLECULES

Mcqs

1. It is said that elemental composition of living organisms and that of inanimate objects (like earth's crust) are similar in the sense

that all the major elements are present in both. Then what would be the difference between these two groups ?

Choose a correct answer from the following.

A. Living organisms have more gold in them than inanimate objects

B. Living organisms have more water in their body than inanimate objects

C. Living organisms have more carbon, oxygen and hydrogen per unit mass than inanimate objects

D. Living organisms have more calcium in them than inanimate objects

Answer: C

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2. Many elements are found in living organisms either free or in the form of compounds. One of the following is not found in living organisms.

A. Silicon

B. Magnesium

C. Iron

D. Sodium

Answer: A

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3. Amino acids have both an amino group and a carboxy group in their structure. Which amongst the following is an amino acid ?

A. Formic acid

B. Glycerol

C. Glyolic acid

D. Glycine

Answer: D

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4. An amino acid under certain conditions have both positive and negative charges

simultaneously in the same molecule. Such a form of amino acid is called

A. acidic form

B. basic form

C. aromatic form

D. zwitterionic form

Answer: D

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5. Which of the following sugars have the same number of carbon as present in glucose ?

A. Fructose

B. Erythrose

C. Ribulose

D. Ribose

Answer: A

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6. An acid soluble compound formed by phyosphorylation of nucleoside is called

A. nitrogen base

B. adenine

C. sugar phosphate

D. nucleotide

Answer: D

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7. When we homogenise any tissue in an acid the acid soluble pool represents

A. cytoplasm

B. cell membrane

C. nucleus

D. mitochondria

Answer: A

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8. The most abundant chemical in living organisms could be

A. protein

B. water

C. sugar

D. nucleic acid

Answer: B

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9. A homopolymer has only one type of building block called monomer repeated 'n' number of times. A heteropolymer has more than one type of monomer. Proteins are heteropolymers usually made of

A. 20 types of monomers

B. 40 types of monomers

C. 30 types of monomers

D. only one type of monomer

Answer: A

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10. Proteins perform many physiological functions. For example, some functions as enzymes. One of the following represents an additional function that some proteins discharge

A. Antibiotics

B. Pigment conferring colour to skin

C. Pigments making colours of flowers

D. Hormones

Answer: D

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11. Glycogen is a homonpolymer made up of

A. glucose units

B. galactose units

C. ribose units

D. amino acids

Answer: A

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12. The number of 'ends' in a glycogen molecule would be

A. Equal to the number of branches plus one

B. Equal to the number of branch points

C. One

D. Two, one on the left side and another on the right side

Answer: A

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13. The primary structure of a protein molecule has

A. two ends

B. one end

C. three ends

D. no ends

Answer: A

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14. Which of the following reactions is not enzyme-mediated in biological system ?

A. Dissolving CO_2 in water

B. Unwinding the two strands of DNA

C. Hydrolysis of sucrose

D. Formation of peptide bond

Answer: A

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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. Sulphonamide

C. Vitamin-C

D. Growth hormone

Answer:

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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

Answer:

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3. Write the name of any one amino acid, sugar, nucleotide and fatty acid.

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4. Reaction given below is catalysed by oxidorecductase between two substrates A and A' complete the reaction.

A reduced + A' oxidised $\rightarrow$

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5. How are prosthetic groups different from co-factors?

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6. Glycine and alanine are different with respect to one substituent on the α-carbon. What are the other common substituent groups ?

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7. Starch, cellulose, glycogen, chitin are polysaccharides found among the following. Choose the one appropriate and write against each.

Cotton fibre .....

Exooskeleton of cockroach .....

Liver .....

Peeled potato .....

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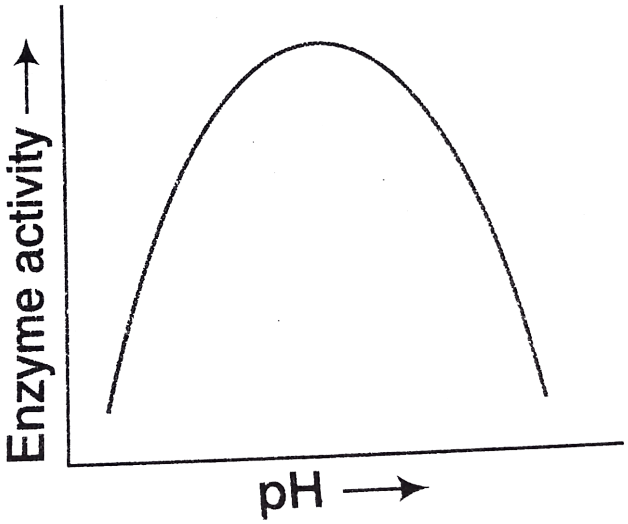
Short Answer Type Questions

1. Enzymes are proteins, Proteins are long chains of amino acids linked to each other by peptide bonds. Amino acids 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 ionisatio is infuluenced by pH of the solution. For many enzymes, activity is influenced by surrounding pH. This is depicted in the curve below, explain

briefly.



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2. Is rubber a primary metabolite or a secondary metabolite? Write four sentences about rubber.

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3. Schematically represent primary, secondary and tertiary structures of a hypothetical polymer say for example a protein.

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4. Nucleic acids exhibit secondary structure, justify with example.

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5. Comment on the statement 'living state is a non-equilibrium steady state to be able to perform work :

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Long Answer Type Questions

1. Formation of Enzyme substrate complex (ES) is the first step in the caalysed reactions.

Describe the other steps till the formation of product.

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2. What are different classes of enzymes? Explain any two with the type of reactions they catalyse.

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3. Nucleic acid exhibit secondary structure. Describe through Watson-Crick model.

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4. What is the difference between a nucleotide and nucleoside ? Give two examples of each with their structure.

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5. Describe various forms of lipid with a few examples.

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