



BIOLOGY

BOOKS - MBD

Biomolecules

Example

1. Define cellular pool.



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2. Name four major elements of life.



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3. Name the chemical used for grinding of animal tissue for chemical analysis organic compounds.



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4. Name any two primary metabolite



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5. List any two drugs which are secondary metabolites.



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6. How many chemicals may be present in a cell?



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7. In which ratio hydrogen and oxygen are present in water?



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8. Name any two sulphur containing amino acids.



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9. Which kind of bond is present in water?





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10. Write the general formula of carbonhydrates.



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11. Define carbonhydrates.



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12. How are carbohydrates produced?



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13. What are monosaccharides.



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14. What is the common sugar present in animals?



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15. Which is other name given to carbohydrates?



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16. Give two examples each of hexoses and pentoses.



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17. What is glycosidic bond?



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18. What are reducing sugars ?



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19. Name the following:

an animal starch



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20. Name the following:

food storage polysaccharide



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21. Name the following:

natural source of cellulose



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22. Name the following:

plants which secrete muacilage.



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23. What are polysacchairdes?



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24. Name two common homopoly saccharides.



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25. Name two common heteropoly saccharides.



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26. Name the most abundant carbohydrate in nature.



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27. Name the process by which macromolecules form/ breakdown from into macromolecules monomer.



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28. Is chitin similar to cellulose?



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29. Name two structural proteins.



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30. Name a proteins having high affinity for oxygen.



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31. How many kinds of nucleotides are in DNA molecule?



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32. What the nucleotides do in DNA molecule?



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33. How DNA is formed ?



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34. What are enzymes?



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35. What is coenzyme?



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36. What is apoenzyme?



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37. What is co-factor?



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38. What are the terms given to molecule on which enzymes act



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39. What are the terms given to enzymes which act:
outside the cell?



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40. What is the turnover number of an enzyme?



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41. Name of the following:

two co-enzymes



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42. Name of the following:

fastest acting enzyme



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43. Name of the following:

enzymes secreted by salivary glands



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44. Name of the following:

who proposed the lock and key theory?



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45. Name of the following:

two inhibitors of enzymes reactions.



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46. What is feedback inhibition?



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47. What is the turnover number of an enzyme?



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48. How are glycans named?



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49. Name the scientist who first isolated nucleic acids.



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50. Who discovered the presence of two type of nucleic acids?



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51. Nitrogenous bases found in nucleic acids are.....



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52. what are the two forms of DNA?



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53. Name one element invariable found in proteins but not in carbohydrates and fats.



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54. Fill in the blanks

Genetic material in viruses isor



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55. Fill in the blanks

A protein molecule is a polymer of



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56. Fill in the blanks

Nucleic acids are polymers of



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57. Fill in the blanks

RNA is associated with



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58. keratin is a protein present in A. Blood B.
Skin C. Lymph D. Egg



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59. True or False

Proteins are polypeptides



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60. True or False

Trypsin is present at pancreatic juice



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61. True or False

The biomolecules with mol. Wt. more than one thousand dalton are called macromolecules.



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62. True or False

Fatty acids and glycerol are linked with glycosidic bond.



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63. True or False

Enzymes act by lowering the activation energy.



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64. True or False

Protein is imagined as a lime, the left end represented by carboxylic group and right end by amino group.



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65. Give the technical terms used for the following:

Biomolecules with mol. Wt. less than one thousand dalton.





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66. Give the technical terms used for the following:

Long chains of sugars which are acid insoluble pellets.



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67. Give the technical terms used for the following:

name the Energy currency in a living system which is a bond energy.



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68. Give the technical terms used for the following:

The degradation path ways during metabolism

.



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69. Give the technical terms used for the following:

Non-proteinic constituents of complex enzyme.



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70. What are macromolecules? Give examples.



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71. Illustrate a glycosidic, peptide and a phospho-diester bond.



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72. What is meant by tertiary structure of proteins?



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73. Find and write down structures of 10 interesting small molecular weight biomolecules. Find if there is any industry which manufactures the compounds by isolation. Find out who are the buyers.



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74. Find if there is any industry which manufactures the compounds by isolation Find out who are buyers.





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75. Proteins have primary structure. If you are given a method to know which amino acid is at either of the two termini (ends) of a protein, can you connect this information to purity or homogeneity of a protein?



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76. Find out and make a list of proteins used as therapeutic agents. Find other applications

of proteins (e.g., Cosmetics etc.)



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77. Explain the composition of triglyceride.



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78. Can you describe what happens when milk is converted into curd or yoghurt, from your understanding of proteins.



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79. Can you attempt building models of biomolecules using commercially available atomic models (Ball and Stick models).



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80. Attempt titrating an amino acid against a weak base and discover the number of dissociating (ionizable) functional groups in the amino acid.



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81. Draw the structure of the amino acid, alanine.



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82. What are gums made of? Is Fevicol different?



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83. Find out a qualitative test for proteins, fats and oils, amino acids and test any fruit juice, saliva, sweat and urine for them.



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84. Find out how much cellulose is made by all the plants in the biosphere and compare it with how much of paper is manufactured by man and hence what is the consumption of plant material by man annually. What a loss of vegetation!



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85. Describe the important properties of enzymes.



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86. Medicines are either man made 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.

Penicillin.....



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87. Medicines are either man made 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.

Sulfonamide



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88. Medicines are either man made 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.

Vitamin C.....



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89. Medicines are either man made 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.

Growth hormone



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90. Select an appropriate chemical bond among ester bond, glycosidic bond. Peptide bond and hydrogen bond and write against each of the following:

Polysaccharide



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91. Select an appropriate chemical bond among ester bond, glycosidic bond. Peptide bond and hydrogen bond and write against each of the

following:

Protein



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92. Select an appropriate chemical bond among ester bond, glycosidic bond. Peptide bond and hydrogen bond and write against each of the following:

fats



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93. Select an appropriate chemical bond among ester bond, glycosidic bond. Peptide bond and hydrogen bond and write against each of the following:

fats



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



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95. Reaction given below is catalysed by oxidoreductase between two substrates A and A', complete the reaction.



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



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97. 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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98. Starch, cellulose, Glycogen, Chitin are polysaccharides found among the following.

Choose the one appropriate and write against

each.

Cotton Fibre



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99. Starch, cellulose, Glycogen, Chitin are polysaccharides found among the following.

Choose the one appropriate and write against each.

Exoskeleton of Cockroach



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100. Starch, cellulose, Glycogen, Chitin are polysaccharides found among the following. Choose the one appropriate and write against each.

Liver



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101. Starch, cellulose, Glycogen, Chitin are polysaccharides found among the following. Choose the one appropriate and write against

each.

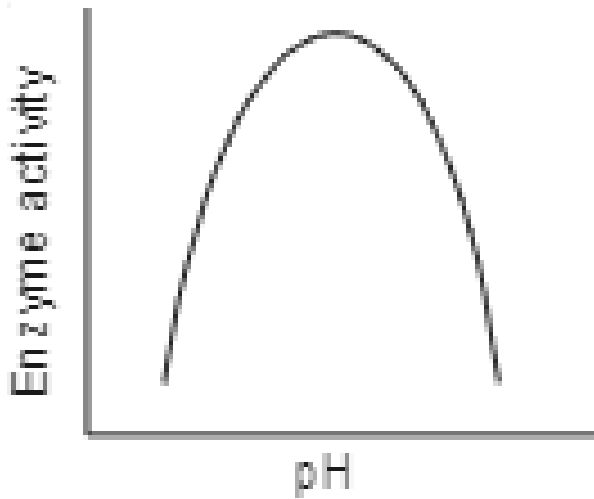
Peeled potato



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102. Enzymes are proteins. These 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 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.



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103. Is rubber a primary metabolite or a secondary metabolite?



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



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



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106. Comment on the statement "living state is a non-equilibrium steady-state to be able to perform works."



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107. Formation of enzyme-substrate complex (ES) is the first step till the formation of product.



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108. What are different classes of enzymes? Explain any two with type of reaction they catalyse.



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109. Nucleic acids exhibit secondary structure, Describe through Watson- Crick Model.



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110. What is the difference between nucleoside and nucleotide ?



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111. Describe various forms of lipids with a few examples.



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112. List any three elements present in plant tissue, animal tissue, microbial paste and earth's crust.



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113. Name the acid in which a thick slurry of living tissue can be prepared using a mortar and pestle for chemical analysis.



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114. What is retentate?



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115. Give technical words for acid-soluble and acid-insoluble fractions.



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116. Name the bio-molecule present in the acid insoluble fraction.



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117. How much per cent of water and proteins present in total cellular mass?



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118. Give examples of toxin.



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119. Give three examples of polymeric substances.



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120. Name any four secondary metabolites useful for human welfare.



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121. Name the bio-molecule present in the acid insoluble fraction.



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122. Make a list of any five inorganic constituents of living tissue.



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123. Name any four compound commonly present in living tissues.



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124. Name the three functional groups which provide chemical and physical properties to amino acids.



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125. Name any four secondary metabolites.



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126. Draw the Zwitterionic form of amino acid.



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127. Give an example of non-competitive inhibition.



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128. Give an example of non-competitive inhibition.



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129. What do you mean by turn over of biomolecules?



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130. What do you understand by biomolecules?



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131. Write a note on water.





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132. Discuss mineral as important constituent of protoplasm. Discuss their role.



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133. What role do minerals play in maintaining the structure of animals?



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134. Explain ionizable nature of amino acids.

Which form is called Zwitterionic form?



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135. Make a table showing average composition of cells.



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136. What is fructose?



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137. What is the normal blood sugar level of healthy person?



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138. What is the starting point in the production of food and why?



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139. Classify carbohydrates on the basis of molecular organisation.



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140. why are starch and glycogen more suitable than glucose as storage products.



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141. Represent the structures of polysaccharides by simple sketches.



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142. List the monomers of: Starch, Gum, Cellulose and Chitin.



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143. Write short notes on compound lipids.



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144. Name the essential fatty acids. Why are they so called?



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145. What is an amphipathic lipid? Cite an example.



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146. Write importance of phospholipids.



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147. Classify amino acids on the basis of charge.



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148. Explain secondary structure of proteins.



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149. Discuss tertiary level structure of proteins.



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150. List four functions of protein and name one proteins which perform these functions.



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151. Can a chemical reaction take place without enzyme? Comment.



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152. Whjat is a nucleotide?



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153. What is the difference between nucleoside and nucleotide ?



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154. Which type of bonds stabilize the tertiary structure of a protein?



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155. Define Michaelis constant (K_m) value of an enzyme.



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156. Distinguish between

Oligosaccharides and poly-saccharides.



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157. Distinguish between

Reducing sugars and non-reducing sugars.



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158. Distinguish between

Saturated and unsaturated lipids



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159. Distinguish between

hydrophilic and hydrophobic



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160. Distinguish between

oil and ghee



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161. Distinguish between

Essential and non-essential amino acids



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162. Distinguish between

Isomer and polymer.



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163. What is RNA? Write functions of ribose nucleic acid.



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164. Write a note on messenger RNA.



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165. Sketch t-RNA and explain.



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166. Write a short note in rRNA.



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167. What are enzymes? Why are enzymes called biocatalysts? Define substrate and product.



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168. Describe the important properties of enzymes.



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169. Differentiate between simple and conjugate enzymes.



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170. Explain exo and endo-enzymes with example.



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171. What does an enzyme do in terms of energy requirement of a reaction? What would happen if the enzyme did not play this role?



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172. Discuss the effect of enzyme concentration on the enzymatic activity.



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173. What is the effect of pH changes on enzymatic activity?



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174. Briefly describe the effect of substrate concentration.



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175. What is the effect of change in temperature on enzymatic activity?



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176. What role does temperature play in preservation of food? Explain.



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177. Explain how enzymes influence rate of chemical reaction in a living cell.



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178. Explain mechanism of enzyme action.



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179. how temperature affecting enzyme action?



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180. Briefly explain allosteric inhibition.



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181. Differentiate competitive inhibition and allosteric inhibition.



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182. What are true fats? Give example.



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183. What are phospholipids? Mention their importance.



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184. What is cholesterol? Write its utility.



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185. Explain food storage polysaccharides.



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186. Discuss structural polysaccharides.



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187. How are phospholipid arranged in the cell membrane?



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188. Write short notes on

Steroids



Watch Video Solution

189. Write short notes on

Wax.



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190. What is the structure of DNA?



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191. name three main different types of RNA?

Write functions.



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192. Proteins are known as biological polymers.

Explain.



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193. why are starch and glycogen more suitable than glucose as storage products.



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194. Enzymes make life possible'. Comment on this statement.



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195. When does a co-factor becomes a prosthetic group?



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Exercise

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



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



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3. List any two drugs which are secondary metabolites.



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4. Draw the Zwitterionic form of amino acid.



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5. What are gums made of? Is Fevicol different?



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6. Draw structural formulae of uracil and glucose.



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7. Explain the composition of triglyceride.



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8. Give characteristics of liquids



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



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



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11. List any six properties of water.



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12. Explain the structure of nucleotide.



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13. What are amino acids?



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