



BIOLOGY

BOOKS - MAXIMUM PUBLICATION

BIOMOLECULES

Exercise

1. 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:



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2. Aminoacids, as the name suggests, have both an amino group and a carboxyl group in their structure. In addition, all naturally occurring aminoacids (those which are found in proteins) are called L-aminoacids. From this, can you guess from which compound can the simplest aminoacid be made?

A. Formic acid

B. Methane

C. Phenol

D. Glycine

Answer:



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

A. Cytoplasm

B. Cell membrane

C. Nucleus

D. Mitochondria

Answer:



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4. Many organic substances are negatively charged e.g., acetic acid, while others are positively charged e.g., ammonium ion. An amino acid under certain conditions would have both positive and negative charges

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

- A. Positively charged form
- B. Negatively charged form
- C. Neutral form
- D. Zwitterionic form

Answer:



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5. Sugars are technically called carbohydrates, referring to the fact that their formulae are only multiple of $C(H_2O)$. Hexoses therefore have six carbons, twelve hydrogens and six oxygen atoms. Glucose is a hexose. Choose from among the following another hexose.

A. Fructose

B. Erythrose

C. Ribulose

D. Ribose

Answer:



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6. Fill the gap :- Inhibition of succinic dehydrogenase by Malonate is an example for



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7. Name the phospholipid found in cell membrane.



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8. The metabolic pathway from glucose to lactic acid which occurs in 10 metabolic steps is called ____



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9. Energy currency in living systems is ____



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10. Find the odd one out. Rubber, Amino Acids, Drugs, Pigments



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11. Arrange the following Carbohydrates in the order of increasing complexity of chemical structure. Glucose, Oligosaccharides, Lactose, Starch.



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12. One full turn of the DNA double helix would involve.

- A. 8 base pairs
- B. 10 base pairs
- C. 20 base pairs
- D. 12 base pairs

Answer:



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13. Match the column A with B and C.

A - Monomer	B - chemical bond	C - Polymer
Glucose	phosphor diester	Nucleic acid
Amino acids	Glycoside	Carbohydrate
Nucleotide	Peptide	Protein



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14. Add suitable word in the gap. a) A protein molecule is a polymer of __ b) Nucleic acids are polymers of c) DNA has instead of uracil. d) Single stranded structure is found in ___

A. Aminoacids

B. Nucleotides

C. Thymine

D. RNA

Answer:

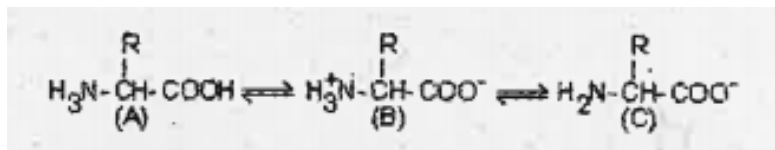


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15. The structure of amino acids in solutions of different PH are given above. Identify the

structure

'B'.



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16. $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$ Name the enzyme catalyse this reaction



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17. Observe the table and fill the blanks from the brackets (Collagen, Cholesterol, chitin, Lecithin)

Protein	Carbohydrates	Fats
Trypsin
.....	Glycogen



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18. Building blocks of proteins are amino acids and that of polysaccharides are monosaccharides. Many polysaccharides are called homopolymers but all proteins are

known as heteropolymers. a) Do you agree with the above statement? Give reason.



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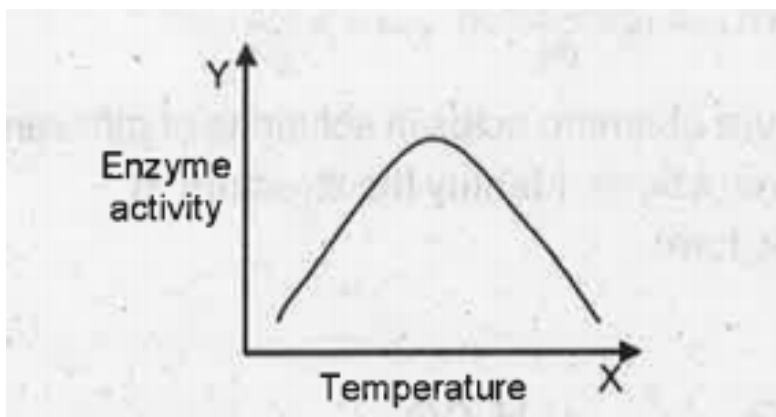
19. Building blocks of proteins are amino acids and that of polysaccharides are monosaccharides. Many polysaccharides are called homopolymers but all proteins are known as heteropolymers. b) Give one example for a homopolymer.



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20. Classify the following as polypeptide and polysaccharide. (Insulin, Glycogen, Chitin, Paper)

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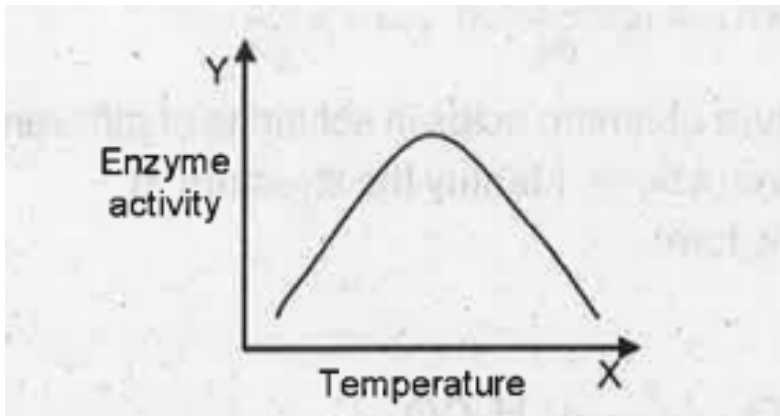
21.

Observe the graph and comment.



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22. List out the factors which influence enzyme



activity



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23. Write the general names of the following

a) Enzymes catalyzing the linking together of two compounds



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24. Write the general names of the following

b) Enzymes that catalyze removed of groups from substrates by mechanism other than hydrolysis leaving double bonds.

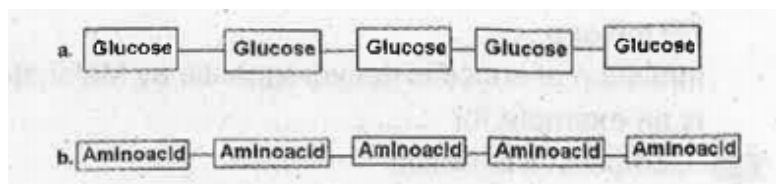


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25. Find out the differences between DNA and RNA and fill the table given below.

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26. Two polymers are given. In this chain how are monomers linked ?



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27. The following graph shows the relationship between substrate concentration and rate of enzymatic reaction. What is the effect of substrate concentration on rate of reaction ?
And identify A.



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28. The following graph shows the relationship between substrate concentration and rate of enzymatic reaction. What is the effect of

substrate concentration on rate of reaction ?

And identify A.



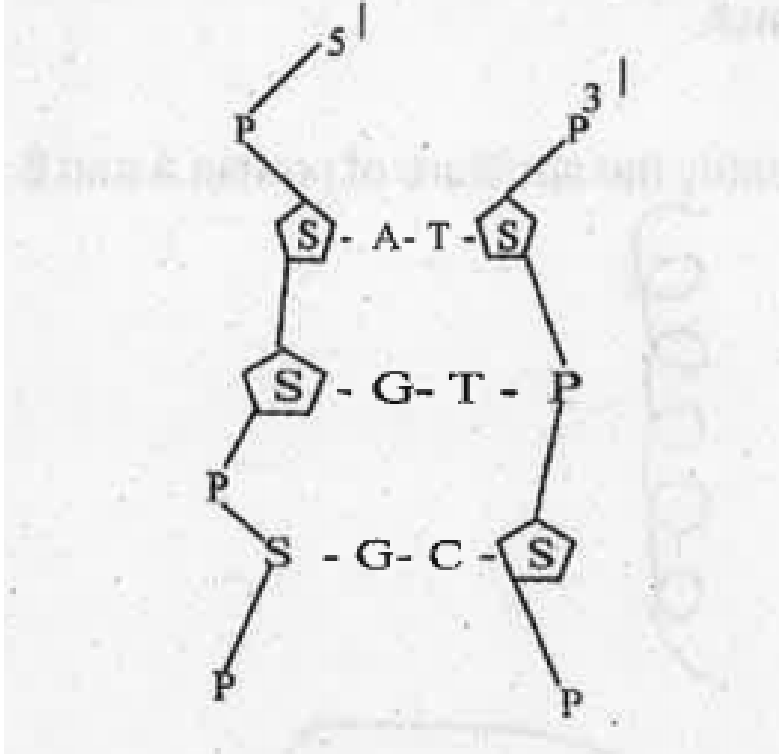
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29. Identify the class of enzyme which catalyse the following reaction



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30. A portion of DNA double helix is given below. Copy the diagram and make correction



if any.



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31. Adenine Guanine, thymine, Cytosine, Uracil,
are the nitrogen bases present in the living

organisms. Write their nucleosides and nucleotides.



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32. Prepare a graph showing the action of temperature on enzyme activity



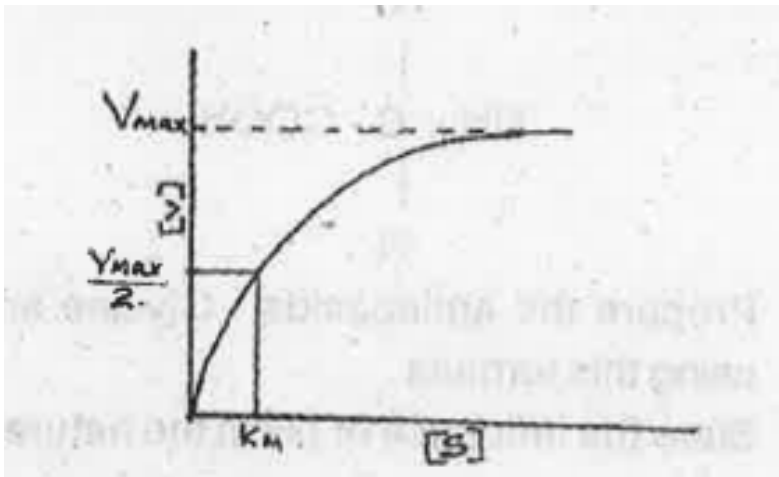
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33. What is optimum temperature ?



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34. If we add more substrate after reaching V_{max} What will be the effect in the reaction



rate ?



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35. The table shows the percentage composition of different elements of a living matter and a non living matter represented as X and Y. Identify X and Y.

Element	% composition of	
	X	Y
Hydrogen	0.14	0.5
Carbon	0.03	18.5
Oxygen	46.6	65.0
Calcium	36	1.5
Silicon	27.7	Negligible

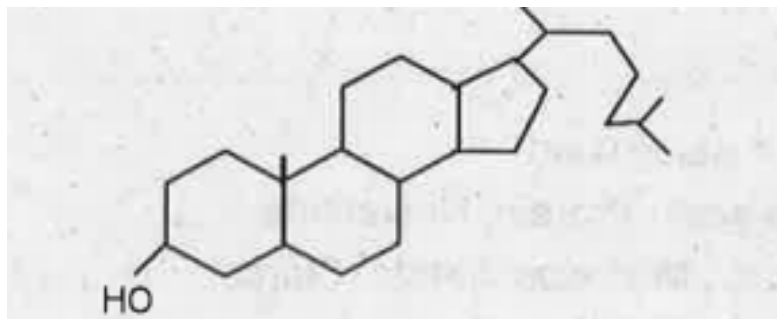


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36. Fatty acids could be saturated or unsaturated. Give an account on it.

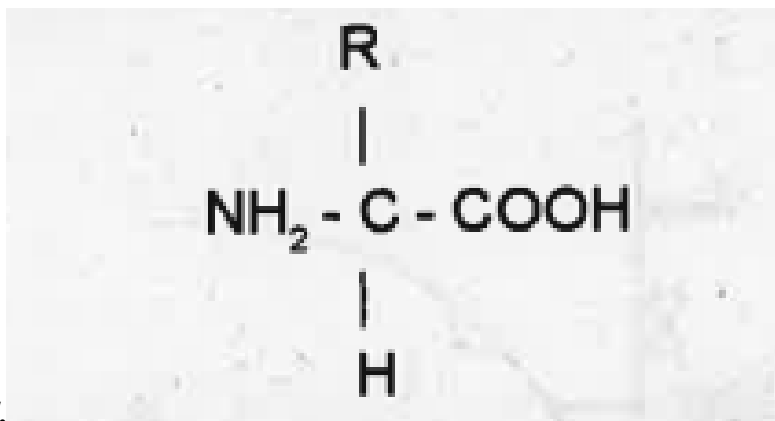
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37. Identify the structure.



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38. General Formula of amino acid is given



below.

Prepare the aminoacids - Glycine and Serine using this formula



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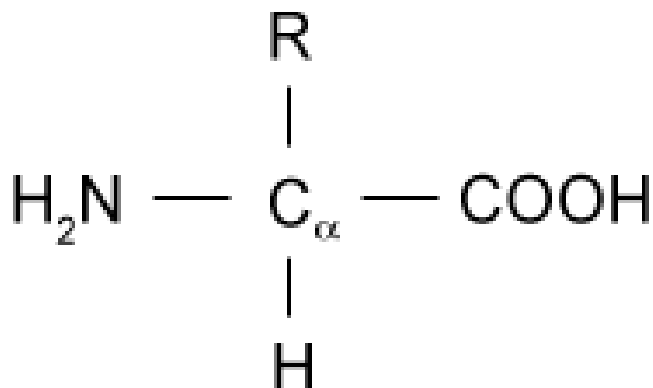
39. General Formula of amino acid is given

below. State the influence of pH in the nature

of

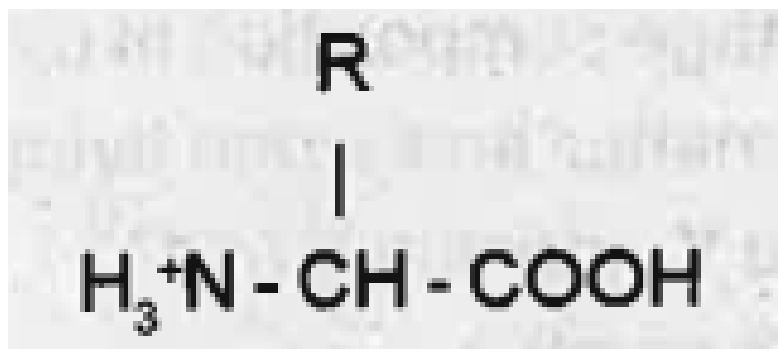
amino

acid.



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40. Chemical structure of an Amino acid is

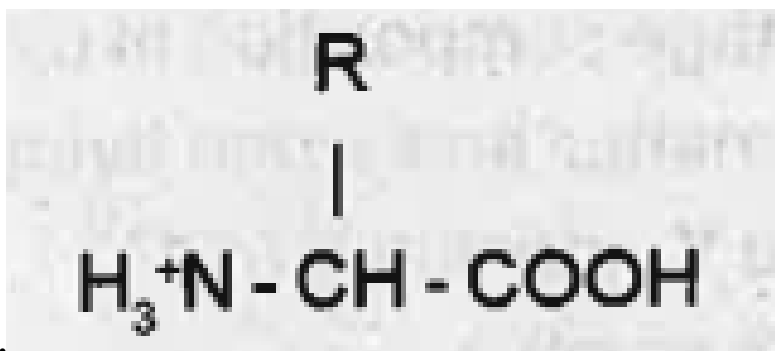


given.

Prepare its Zwitter Ionic form.

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41. Chemical structure of an Amino acid is



given.

What happens to the Zwitter Ion if it is placed acidic medium?

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42. Write the missing word. Amino acid
Protein, Nucleotide:.....



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43. Write the missing word. Glucose
Monosaccharide, Starch:.....



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44. Write the missing word. Adenine : Thymine,
Guanine:.....



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45. Write the missing word. Animals: Glycogen.
Plants:.....



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46. Write an example for a protein with quaternary structure.



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47. Proteins carry out many functions in living organisms. List them. Some protein functions as enzymes



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48. Give an example for the following
Phospholipids



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49. Give an example for the following
Saturated fatty acid



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50. Give an example for the following
Nucleoside



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51. Give an example for the following
Nucleotide

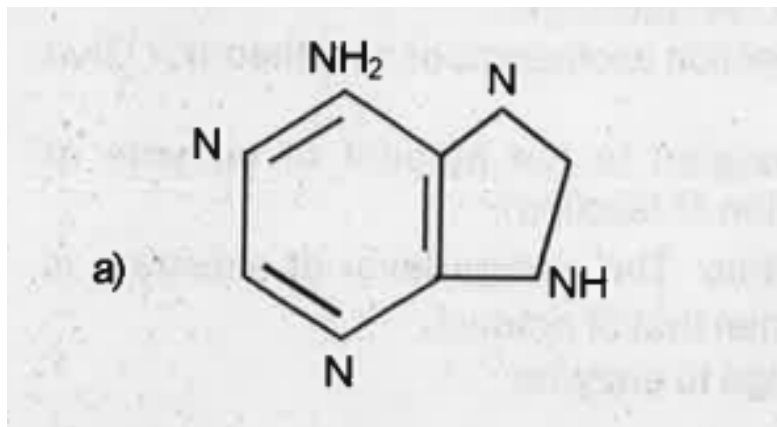


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52. B-DNA is the most common DNA. Write the salient features of this DNA.

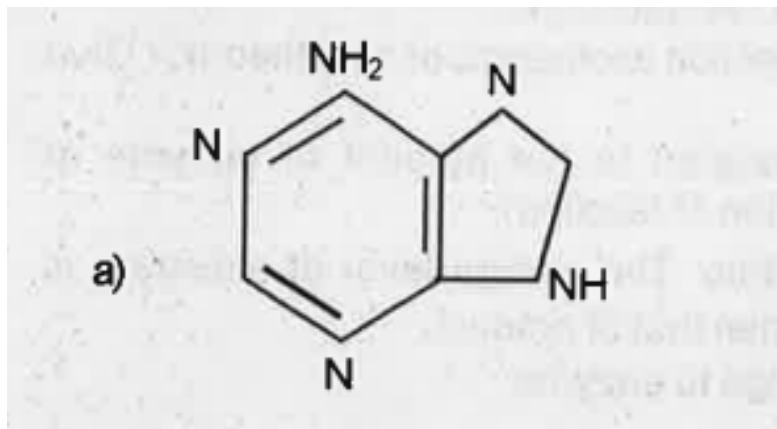
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53. Identify the structure.



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54. Identify the structure.



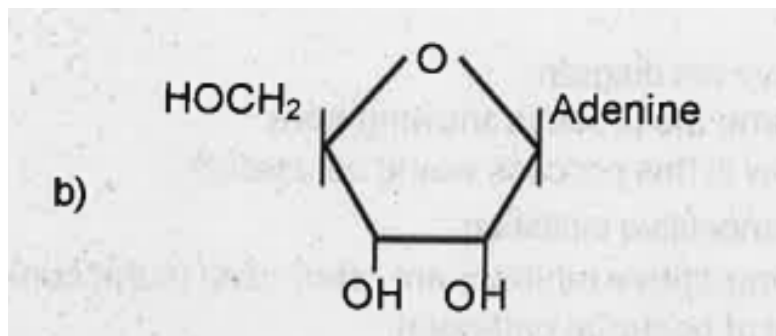
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55. The given structure showing the molecule give ready energy for biological activities.

Identify

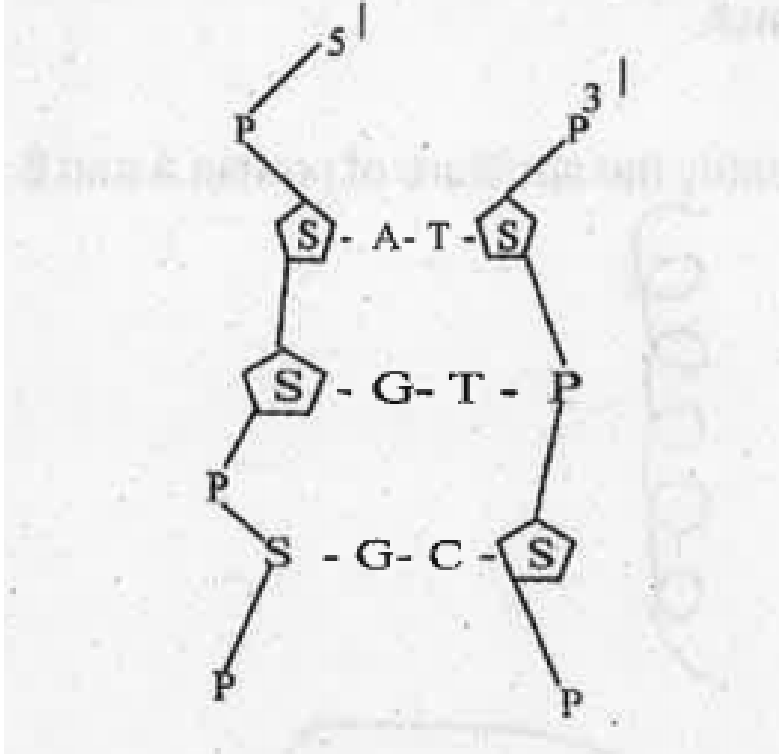
the

structure.



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56. A portion of DNA double helix is given below. Copy the diagram and make correction



if any.



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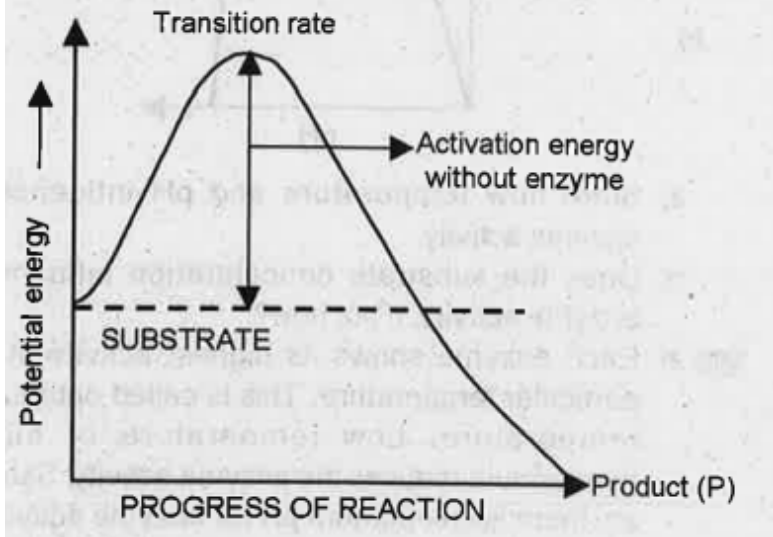
57. Classify the given terms into two columns and give appropriate headings. rubber,

Glucose, amino acids, drugs, gums,
spices, cholesterol, Fatty acids



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58. Progress of a chemical reaction and potential energy changes associated with it is plotted as curve.



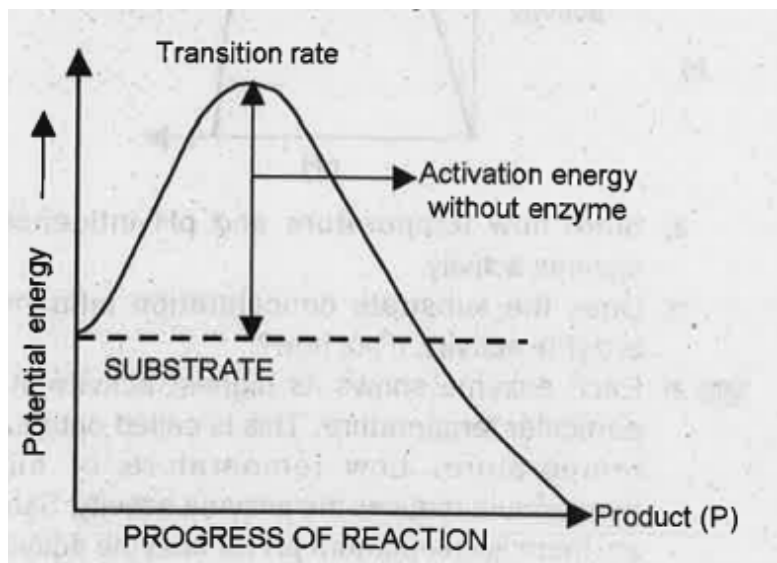
What

happens to the activation energy of the substrate, when enzyme is added to the reaction system?



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59. Progress of a chemical reaction and potential energy changes associated with it is plotted as _____ curve.

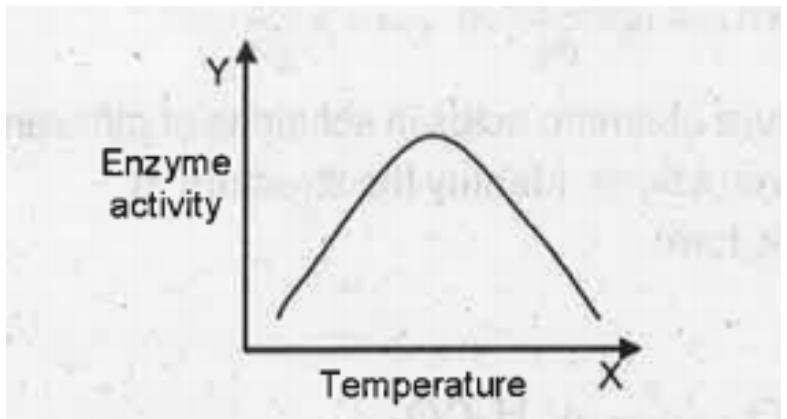


What

happens to the activation energy of the substrate, when enzyme is added to the reaction system?



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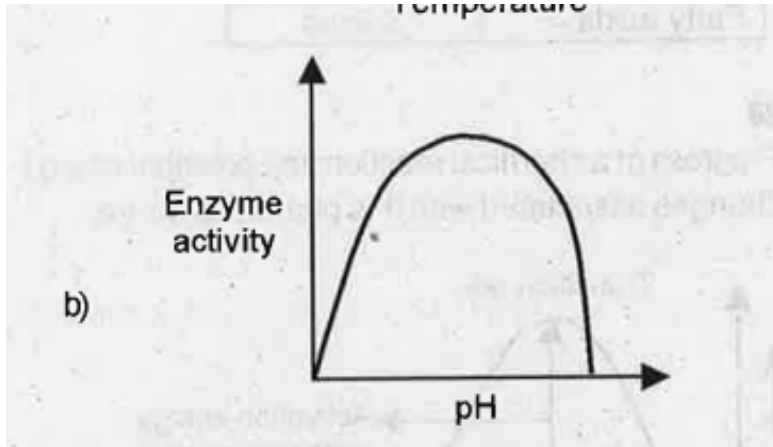
60.

Observe the graph and comment.



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61. Observe the given graph a and b.



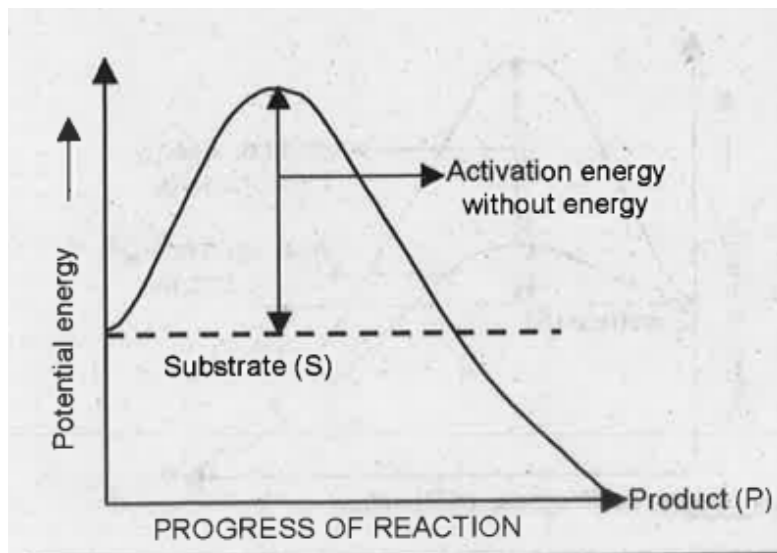
Does

the substrate concentration influence enzyme activity. If so, how?



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62. The graph shows the relation between potential energy and progress of reaction. Observe the graph and answer the questions. What happens to the amount of enzyme at completion of reaction?

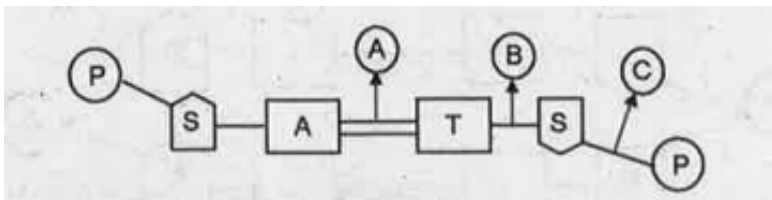


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63. Fill in the blank columns with the correct terms/sentences. 

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64. Structure of a nucleotide pair in DNA is showing below. Identify the bonds A, B and C.



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65. Give examples. Prosthetic group



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66. Give examples. Co-enzyme



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67. Give examples. Metal ion required for enzyme activity.



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68. Give one word The nucleic acids that behave like enzymes



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69. Give one word The organic compound tightly bound to the apo enzyme.



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70. Give one word The non protein organic compound that are not tightly bound to the apoenzyme.



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71. Give one word The protein portion of the enzyme.




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72. Identify the bonds marked A,B and C. 




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73. Observe the structure. Identify the bond formed between amino acids. 



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74. Observe the structure. How many types of amino acids are present in animal body?





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75. Observe the structure. In nutrition some amino acids are required. Write a note on it.



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76. Give name The most abundant protein in animal.



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77. Give name The most abundant protein in the whole of the biosphere



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78. Give name A polymer of fructose.



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79. Give name - Paper made from plant pulp is.....





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80. Give name Complex polysaccharide present in the exoskeleton of Arthropods

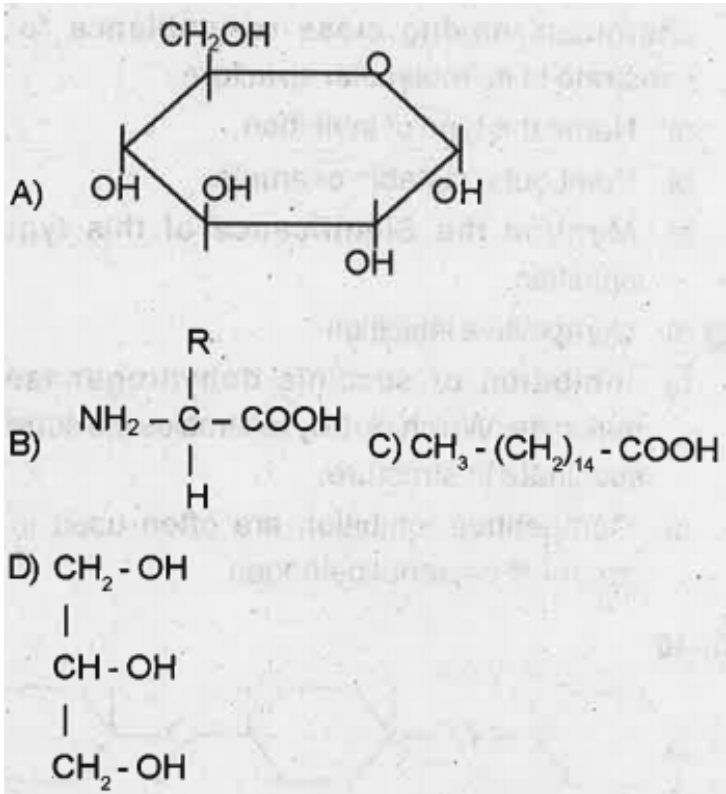


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81. Give name - Polysaccharide with helical structure



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82.

Identify the structures A, B, C and D.

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83. Name the molecule formed by the esterification of one 'D' molecule and three 'C'molecule.



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84. Match the column A and B. 



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85. The activity of the enzyme is inhibited by certain chemicals having close resemblance to the substrate in its molecular structure. Name the type of inhibition



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86. The activity of the enzyme is inhibited by certain chemicals having close resemblance to the substrate in its molecular structure. Point out a suitable example






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87. The activity of the enzyme is inhibited by certain chemicals having close resemblance to the substrate in its molecular structure. Mention the Significance of this type of Inhibition.




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88. The figure shows the bonding of a biomolecule. Identify the monomer 



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89. The figure shows the bonding of a biomolecule. Name the bond between the molecules 



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90. The figure shows the bonding of a biomolecule. Name the macromolecule formed





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91. Name the macromolecule formed

Base	Nucleoside	Nucleotide
Adenine	Adenosine	Adenylic acid
Guaninea....	Guanylic acid
....b....	Cytidine	Cytidilic acid
Thyminec....d....



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92. Give one word The protein portion of the enzyme.





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93. Non protein constituents called cofactors are bound to the enzyme to make the enzyme catalytic activity. What happens to the catalytic activity when the cofactor is removed from the enzyme ?



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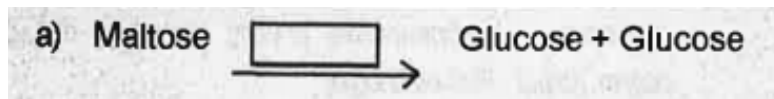
94. Non protein constituents called cofactors are bound to the enzyme to make the enzyme

catalytic activity. Mention any two kinds of cofactors with examples



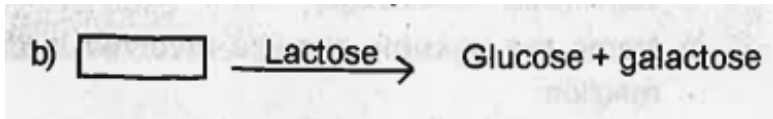
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95. The breakdown of biomacromolecules in the duode num is mentioned below. Fill the blank boxes with correct terms.



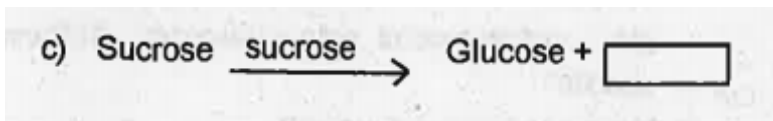
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96. The breakdown of biomacromolecules in the duode num is mentioned below. Fill the blank boxes with correct terms.



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97. The breakdown of biomacromolecules in the duode num is mentioned below. Fill the blank boxes with correct terms.





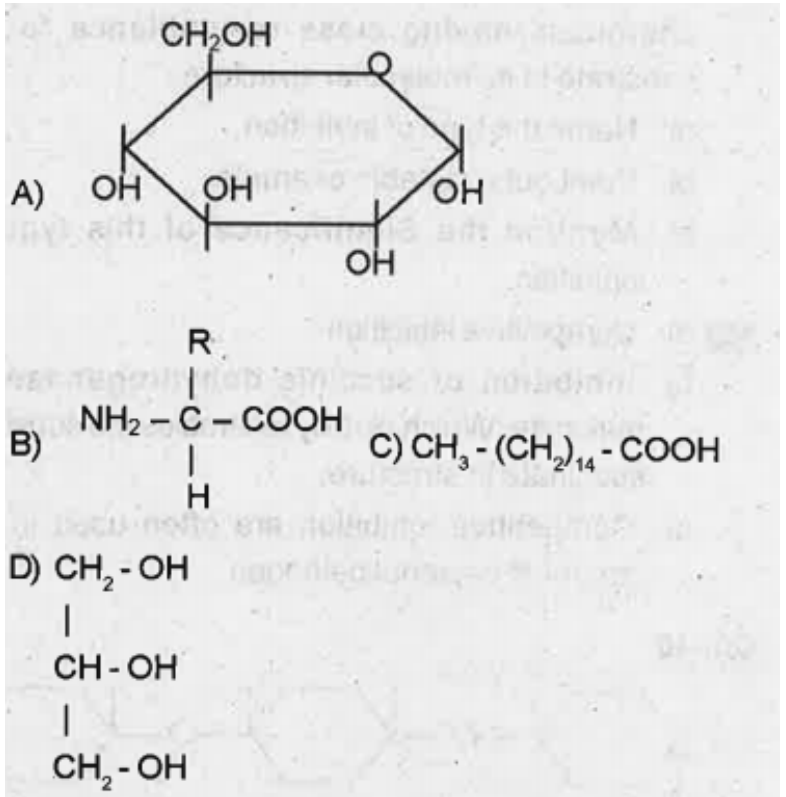
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98. The breakdown of biomacromolecules in the duode num is mentioned below. Fill the blank boxes with correct terms.

d) Di and monoglycerides → fatty acids+ glycerol



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99.

Identify the structures A, B, C and D.



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100. Name the molecule formed by the esterification of one 'D' molecule and three 'C'molecule.



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101. Carbohydrate: Sugars :: Proteins : ...



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102. Prepare an equation for a chemical reaction using the following components. Carbonic anhydrase, carbonic acid, water, carbondioxide.



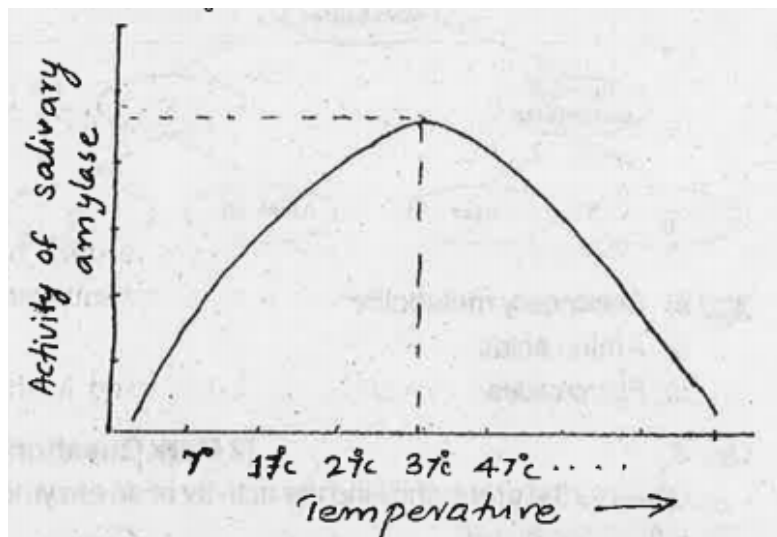
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103. Analyse the graph showing the activity of salivary amylase Which is the optimum temperature for salivary amylase obtained

from

the

graph.



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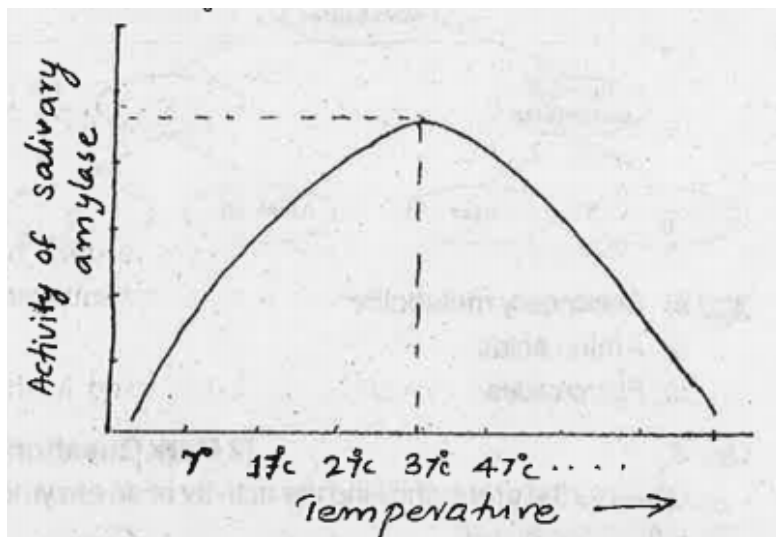
104. Analyse the graph showing the activity of salivary amylase. Why the activity declines

below

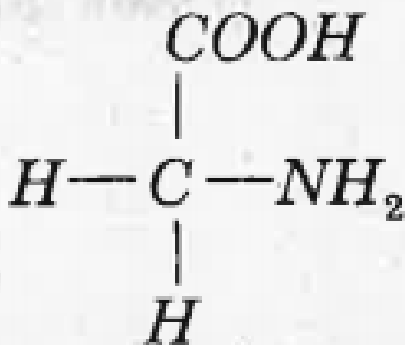
the

optimum

value?



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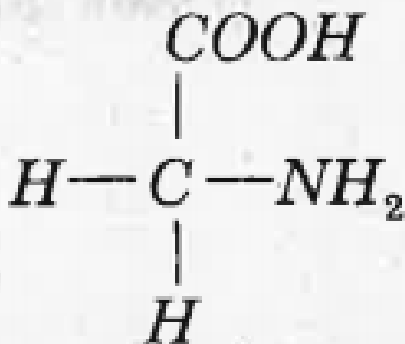


105.

Identify this compound.



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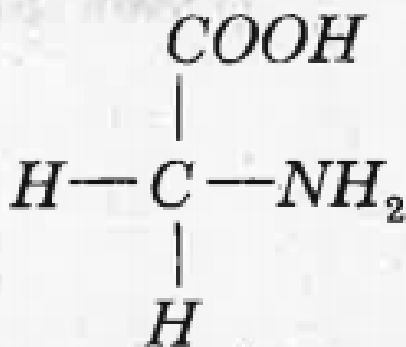


106.

Name the bond produced when another biomolecule of the same category combines with this.



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107.

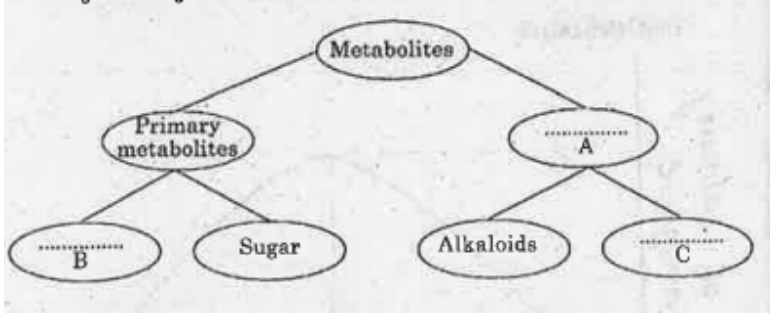
If a

number of such molecules are bonded together, what will be the resultant molecule?



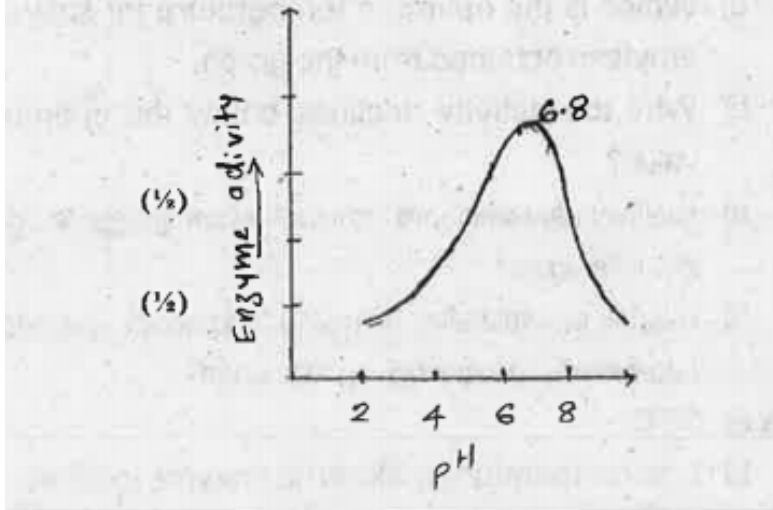
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108. Observe the following representation and fill up the blanks appropriately



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109. Observe the graph showing the activity of an enzyme influenced by pH.



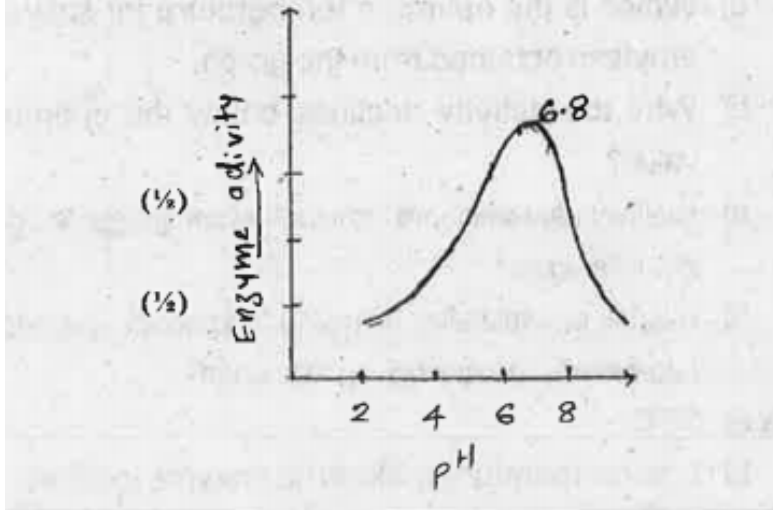
Name

the possible enzyme involved in this reaction.



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110. Observe the graph showing the activity of an enzyme influenced by pH.



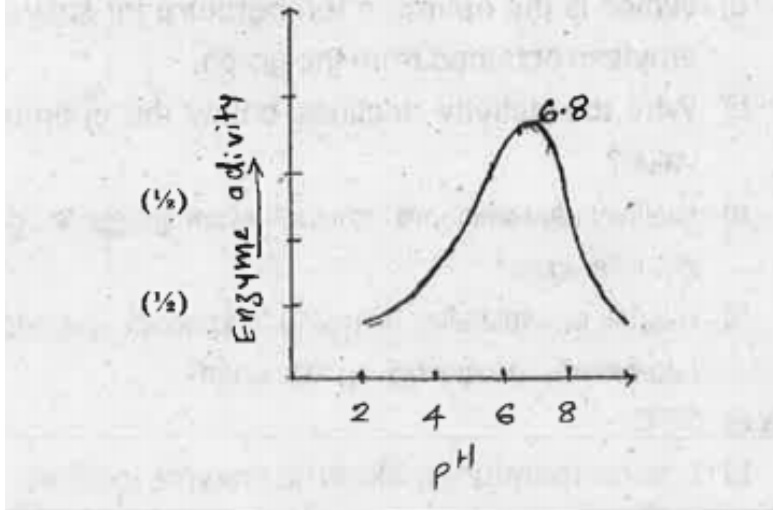
Where is

its site of action?



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111. Observe the graph showing the activity of an enzyme influenced by pH.

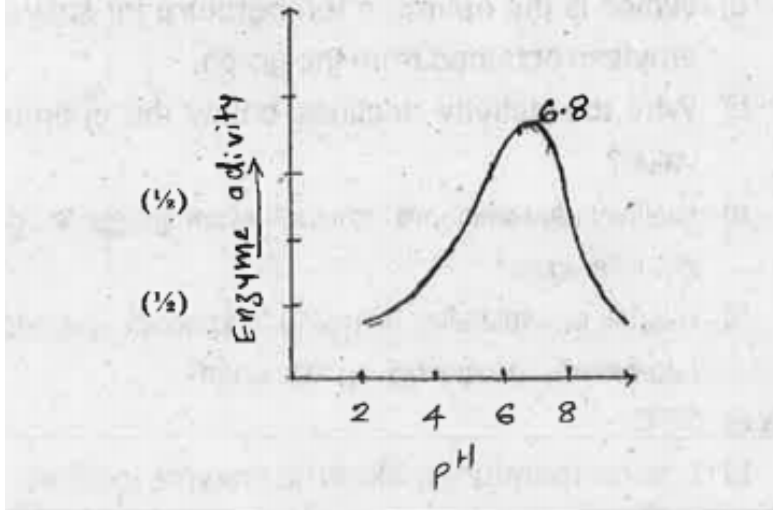


Mention

any other factor which affects this enzyme activity that results in a similar pattern of graph

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112. Observe the graph showing the activity of an enzyme influenced by pH.



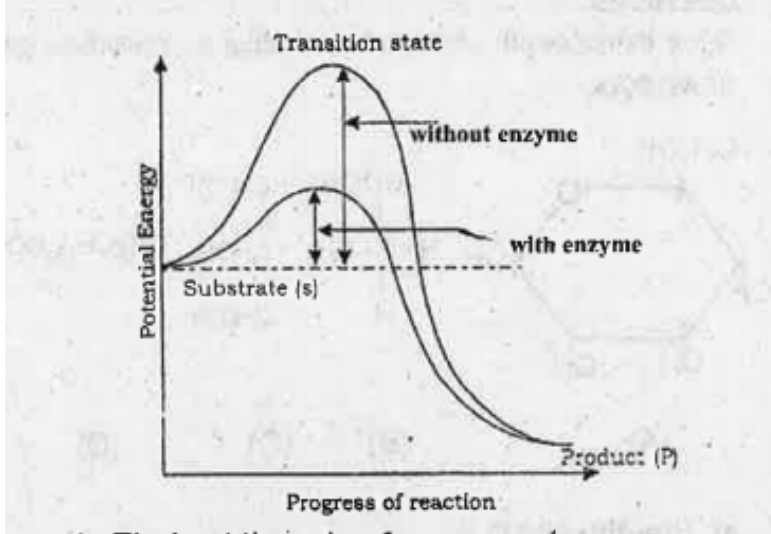
Name

another similar enzyme acting on the same substrate.



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113. Observe the graph and answer the following:



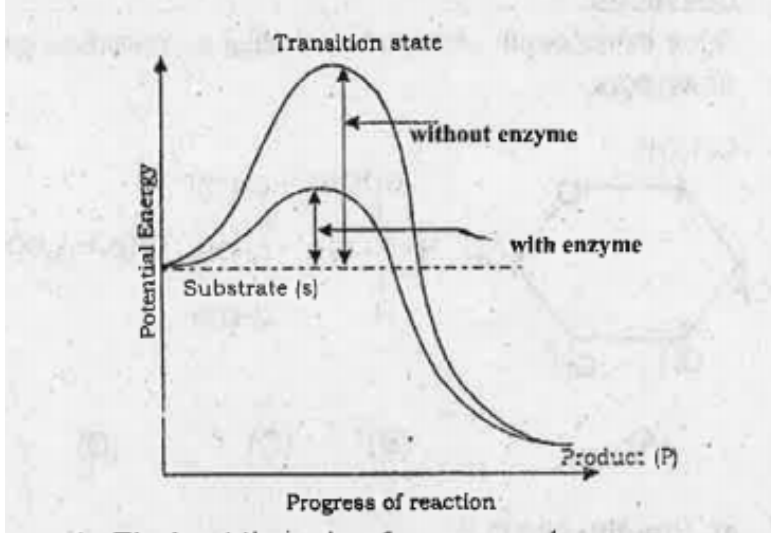
Find out

the role of enzyme,



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114. Observe the graph and answer the following:



Mention

any two factors that influence the activity of an enzyme and state their influence.

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115. Name the chemical bonds formed between the following : Amino acids in a protein

molecule



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116. Name the chemical bonds formed between the following : Sugar and phosphate in nucleic acids.



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117. Distinguish between cofactor and coenzyme with an example for each.



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118. Why are proteins heteropolymers?



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119. Identify the protein from the given list of biomacromolecules and write its function.

(Cellulose, Starch, Antibody, Inulin)



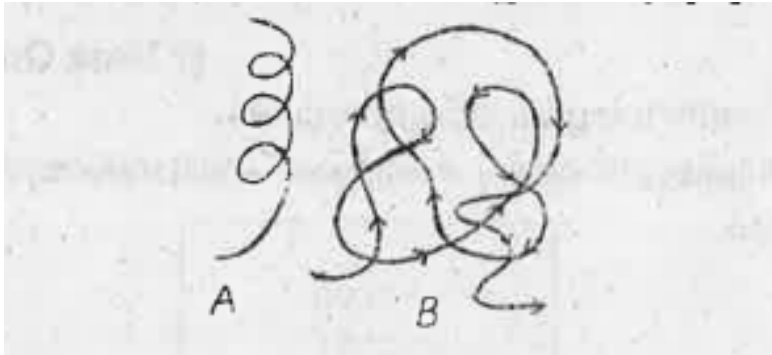
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120. Identify the type of protein structures of

'A'

and

'B'



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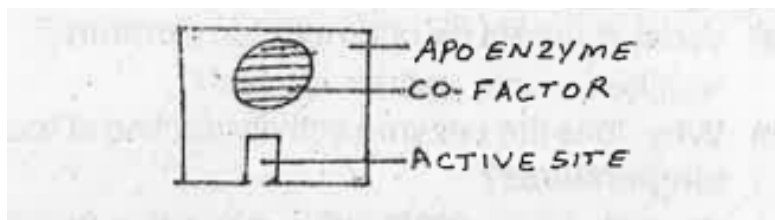
121. Symbolic representation of a functional enzyme is given below, Write one difference between a co-factor and an Apoenzyme





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122. Symbolic representation of a functional enzyme is given below,



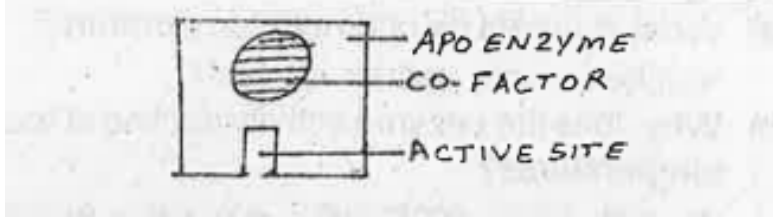
Name

the different types of co-factors.



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123. Symbolic representation of a functional enzyme is given below,

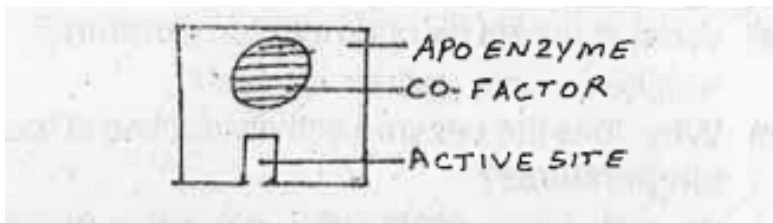


What is

the -factor for the enzyme, Carboxypeptidase?

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124. Symbolic representation of a functional enzyme is given below,

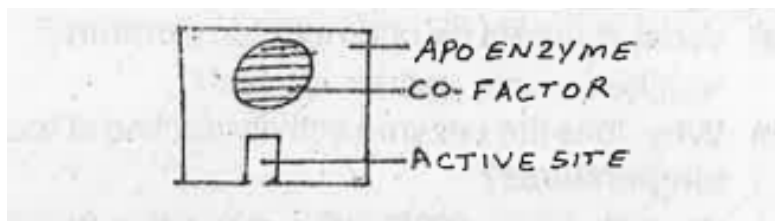


Name

the different types of co-factors.

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125. Symbolic representation of a functional enzyme is given below,



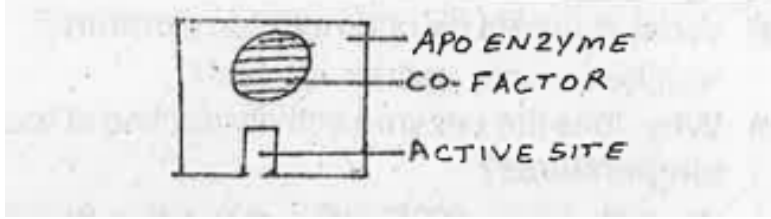
Name

the different types of co-factors.



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126. Symbolic representation of a functional enzyme is given below,



What is

the -factor for the enzyme, Carboxypeptidase?

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127. Identify the protein structures. (A) and (b) from the following figure. 

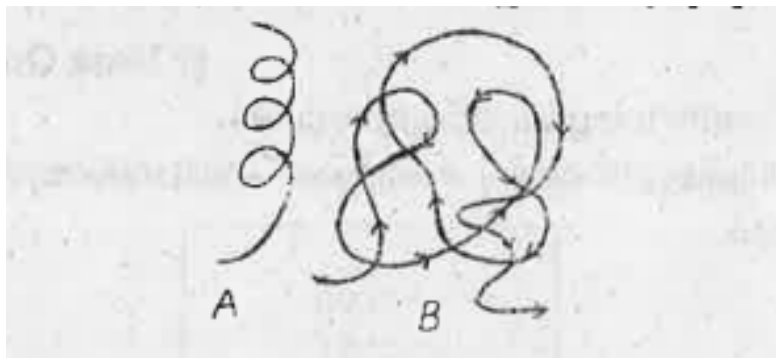
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128. Identify the type of protein structures of

'A'

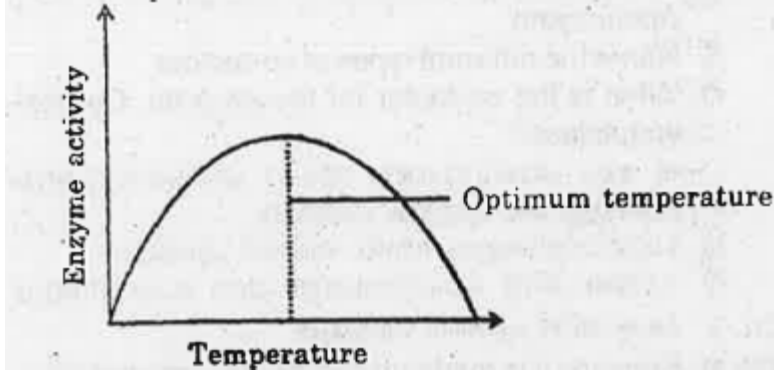
and

'B'



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129. Analyze the graph showing the activity of an enzyme, influenced by temperature.



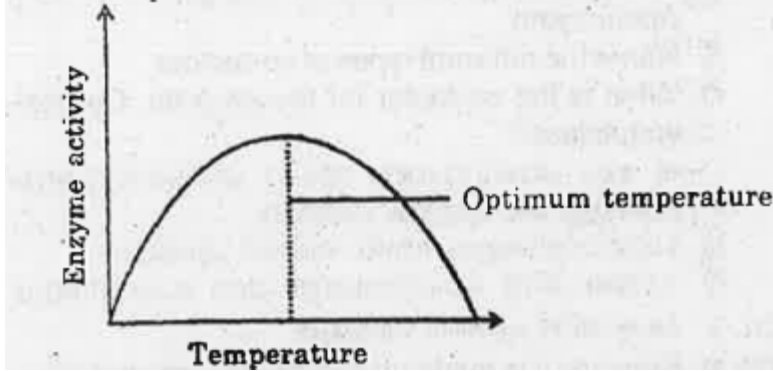
What is

meant by optimum temperature?



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130. Analyze the graph showing the activity of an enzyme, influenced by temperature.



Why

does the enzyme activity decline at too high temperatures?

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131. Complete the following sequence with appropriate words. Amino acids:..(a)... bond: Proteins.. (b).. Glycosidic bond: Polysaccharides

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132. Metabolites are organic compounds constantly utilized in various metabolic activities in the cells. What are the two types of metabolites in cells?



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133. Metabolites are organic compounds constantly utilized in various metabolic

activities in the cells. Given an example for each type of metabolites.



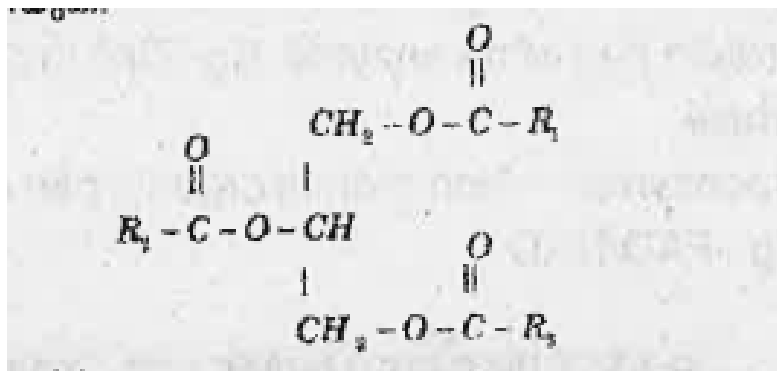
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134. Enzymes are biocatalysts which regulate various biochemical reactions. Illustrate the following reactions. $E + S \rightleftharpoons ES \rightarrow E + P$



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135. Identify the given biomolecule that comes under fat.



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136. Name the biomacromolecule (polymer) in which the peptide bond is present.

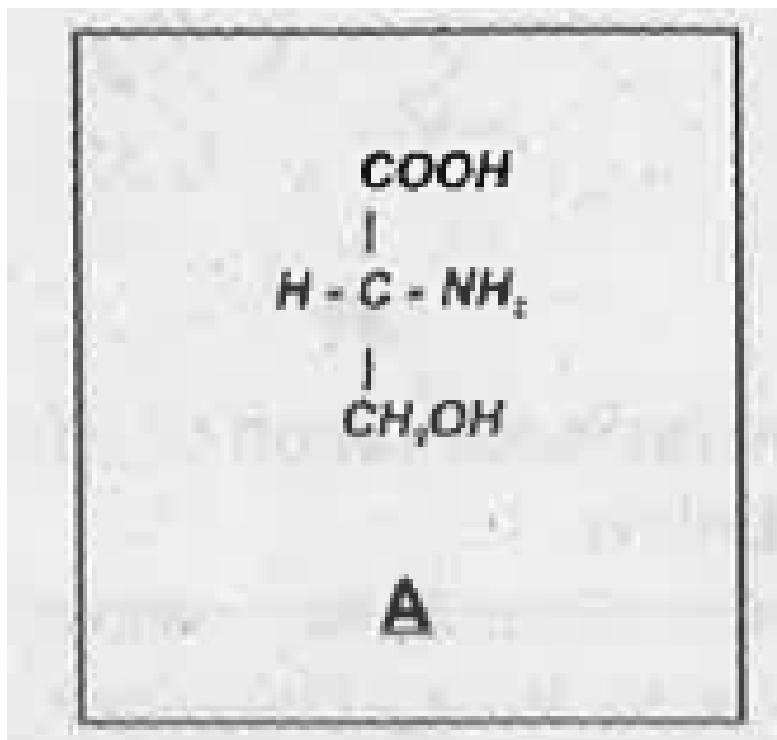
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137. Name the chemical bonds formed between the following : Sugar and phosphate in nucleic acids.



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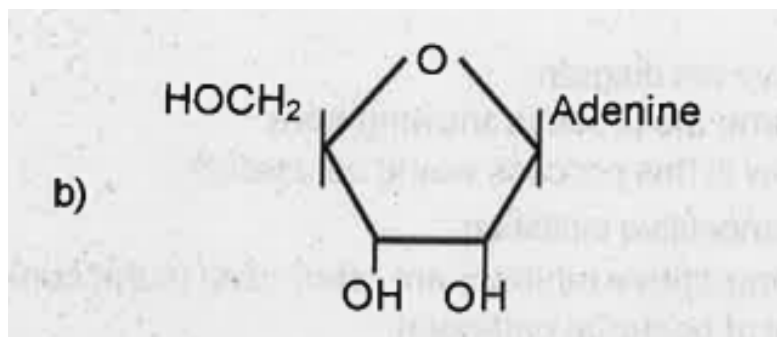
138. Identify the given biomolecules.



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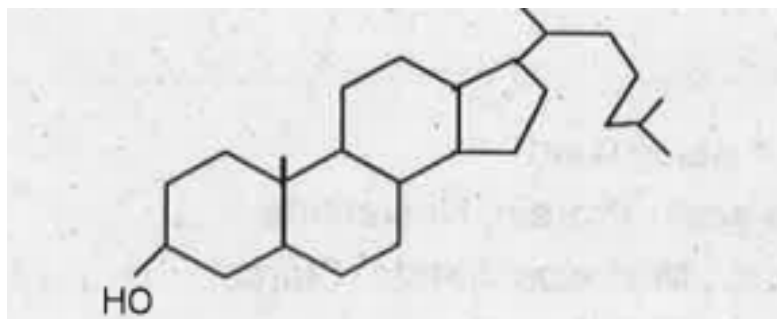
139. The given structure showing the molecule give ready energy for biological activities.

Identify the structure.



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140. Identify the structure.



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141. Select the wrongly matched pair from the following:

Collagen
substance

കൊളാജൻ
സബ്സ്റ്റൻസ്

Insulin

ഇൻസുലിൻ

Antibody

ആന്റിബോഡി

Trypsin

ട്രിപ്സിൻ

Intercellular ground

ഇന്റർസെല്ലുലാർ ഗ്രൗണ്ട്

Hormone

ഹോർമോൺ

Sensory reception

സെൻസറി റിസപ്ഷൻ

Enzyme

രാസാഗ്നി



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142. 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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143. 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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144. Explain the composition of triglyceride.



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145. Can you describe What happens when milk is converted into curd or yoghurt, from your understanding of proteins?



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



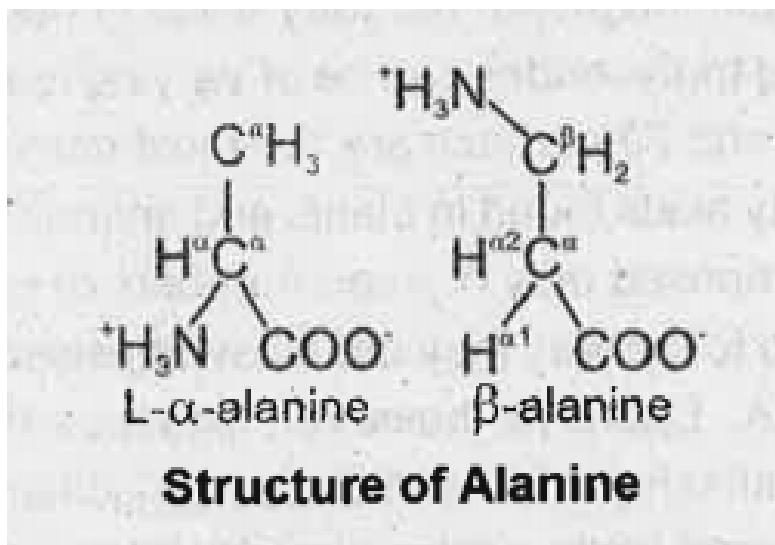
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147. Attempt titrating an amino acid against a weak base and discover the number of dissociating (ionizable) functional groups in the amino acid.



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148. Draw the structure of the amino acid,



alanine.



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



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150. Explain the basic structure of a nucleotide.



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151. Enzyme often have additional parts in their structures that are made up of molecules other than proteins. When this additional chemical part is an organic molecule, it is called

A. cofactor

B. coenzyme

C. substrate

D. Both (a) and (b)

Answer: A



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152. Nucleotides are formed by

A. sugar and phosphate

B. purine, pyrimidine and phosphate

C. purine, pyrimidine, sugar and phosphate

D. pyrimidine, sugar and phosphate

Answer: B



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153. The effectiveness of an enzyme is affected

least by -

A. Temperature

B. Concentration of the substrate

C. Original activation energy of the system

D. Concentration of the enzyme

Answer: C



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154. Which is an organic compound found in most cells?

A. Glucose

B. Water

C. Sodium chloride

D. Oxygen

Answer: A



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155. Enzymes that catalyse inter-conversion of optical, geometrical or positional isomers are

A. ligases

B. lyases

C. hydrolases

D. isomerases

Answer: D



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156. Which one of the following is wrongly matched?

A. Fungi - Chitin

B. Phospholipid - Plasma membrane

C. Enzyme- Lipopolysaccharide

D. ATP-Nucleotide derivative

Answer: C



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157. An organic substance bound to an enzyme and essential for its activity is called

A. coenzyme

B. holoenzyme

C. apoenzyme

D. isoenzyme

Answer: A



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158. The 'Repeating unit of glycogen is

A. fructose

B. mannose

C. glucose

D. galactose

Answer: C



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159. Feedback inhibition of enzymes is affected by which

A. Enzyme

B. Substrate

C. End products

D. Intermediate end products

Answer: C



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160. The enzyme, which combines with non-protein part

A. coenzyme

B. holoenzyme

C. apoenzyme

D. prosthetic group

Answer: B



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161. Benedict's reagent test is conducted to confirm the presence of

A. polysaccharides like starch

B. lipids

C. reducing sugars

D. proteins

Answer: C



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162. Which disaccharide has different linkage?

A. Maltose

B. Starch

C. Sucrose

D. Lactose

Answer: C



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163. Select the wrong statement

A. The building blocks of lipids are amino acids

B. Majority of enzymes contain a non-protein part called the prosthetic group

C. The thylakoids are arranged one above the other like a stack of coins forming a granum

D. Crossing over occurs at pachytene stage of meiosis-I

Answer: A



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164. Which of the following is a disaccharide?

A. Glucose

B. Fructose

C. Sucrose

D. Galactose

Answer: C



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165. Lactose is composed of following components.

A. glucose and fructose

B. glucose and glucose

C. glucose, fructose and galactose

D. glucose and galactose

Answer: D



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166. The simple polyhydroxy ketone molecule containing 3-7 carbons is a

A. disaccharide

B. monosaccharide

C. polysaccharide

D. dipeptide

Answer: B



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167. How many of the twenty two amino acids are essential for children?

A. 6

B. 8

C. 10

D. 7

Answer: C



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168. Starch and cellulose are compounds of many units of

A. glycerol

B. amino acids

C. simple sugars

D. fatty acids

Answer: C



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