DPP
DAILY PRACTICE PROBLEMS

Class : XIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 4

Topic :- Biomolecules

1 **(c)**
Mannitol is **a sugar alcohol**.

2 **(b)**
Almost all enzymes are proteinaceous in nature

3 **(b)**
Nucleic acids exhibit a wide variety of secondary structures. For example, one of the secondary structures exhibited by DNA is the famous Watson-Crick model. This model says that DNA exists as a double helix. The two strands of polynucleotides are antiparallel *i.e.*, run in the opposite direction. The backbone is formed by the sugar-phosphate-sugar chain. The nitrogen bases are projected more or less perpendicular to this backbone but face inside

4 **(c)**
Feedback inhibition is an enzyme regulatory mechanism, where the end product functions as an allosteric inhibitor, if its concentration crosses a threshold value.

5 **(a)**
Molecules are constantly being changed into some other biomolecules and also made from some other biomolecules. This breaking and making is through chemical reactions constantly occurring in living organisms. Together all these chemical reactions are called metabolism. Each of the metabolic reactions results in the transformation of biomolecules. A few example for such metabolic transformations are removal of CO_2 from amino acids making an amino acids into an amine, removal of amino group in a nucleotide base; hydrolysis of a glycosidic bond in a disaccharide, etc.

6 **(d)**
In the solid state, an amino acid ordinarily exist as Zwitter ion, which is formed by the transfer of protons from α — COOH group to — NH_2 group. Essential amino acids are those, which our body can not manufacture of its own that's why these are required in diet, while non-essential amino acids required in diet, while non-essential amino acids are those, which are not required in our diet essentially.

7 **(b)**

The shape of a protein in its functional mode is its teritiary structure, determined largely by primary structure, positively charged regions attract and bind to negatively charged regions and hydrophobic *R* groups interact and form water-free pockets inside the folded protein. Cysteines may link to protein, together with **disulphide bonds**.

8 **(c)**

Maltose is a disaccharide that given two molecules of glucose on hydrolysis. It is found during germination of starchy seeds. It is produced commercially from starch hydrolyzing enzyme, diastase.

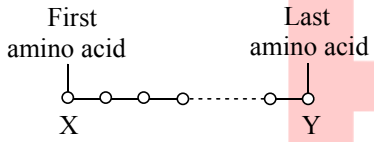
9 **(d)**

Albumin is a simple water soluble protein composed of nitrogen, carbon, hydrogen, oxygen and sulphur, occurring in animal and vegetable juices.

10 **(a)**

$X \rightarrow N$-terminal amino acid

$Y \rightarrow C$-terminal amino acid



11 **(b)**

All statements are correct. Only IV is wrong. After performing elemental analysis of a plant tissue, animal tissue, microbial paste (living matter) and of a piece of earth's crust (animate object), it was found that all living and non-living systems are made-up of same chemicals *i.e.*, elements (*e.g.,* carbon, hydrogen, oxygen and several others)
Most living organisms have relatively high abundance of carbon and hydrogen than in earth's crust

12 **(a)**

Cystine is a dimeric amino acid formed by the oxidation of two cysteine residues, which covalently link to make a disulphide bond.

13 **(d)**

All the statements about enzymes are correct

14 **(a)**

Amino acid	Symbol
Phenylalanine	F
Proline	P
Tryptophan	W
Methionine	M

15 **(c)**

Peroxidase and catalase, catalyze the break down of hydrogen peroxide to water and oxygen

16 **(a)**

Sugar and amino acids are **primary** metabolites. Sugars are building blocks of starch, glycogen, etc., while amino acids are the building blocks of proteins.

17 **(c)**

Competitive inhibition is seen, when the substrate and the inhibitor compete for active site.

18 **(d)**

Enzymes are thermolabile and their activity increases rapidly from 0°C — 35°C. In most of the animals, the optimum temperature is between 25°C — 40°C for most of the enzymes. Many enzymes stop activity at 60°C and are denaturated.

19 **(c)**

Cellulose is made up of unbranched chain of glucose molecule linked by β-1, 4 glycosidic bond.

20 **(c)**

Except glycine, all the amino acids contain asymmetric carbon. It is simplest amino acid. Cysteine and cystine contain sulphur.

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**c**	**b**	**b**	**c**	**a**	**d**	**b**	**c**	**d**	**a**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**b**	**a**	**d**	**a**	**c**	**a**	**c**	**d**	**c**	**c**