EXERCISE

Q1. Select the right answer from the choices given with each question.

1) Biochemistry covers the practical application of:

a) Medicine
b) Agriculture
c) Nutrition
d) All of these

2) Macromolecules are of how many types?

a) Three
b) Four
c) Five
d) Six

3) The general formula for carbohydrates is:

a) $N_n(H_2O)_n$
b) $P_n(H_2O)_n$
c) $C_n(H_2O)_n$
d) $H_n(CO_2)_n$

4) Most organic matter on earth is made up of:

a) Carbohydrates
b) Lipids
c) Olive Oils
d) Proteins

5) The no. of carbon atoms in hexose is:

a) One
b) Four
c) Olive Oils
d) Proteins

6) The long chains of Amino Acids are called:

a) Oils

b) Polypeptide

c) Proteins

d) Monopeptides

7) Proteins are used in both forms of:

a) Catabolism

b) Anabolism

c) Enzymes

d) Metabolism

8) What is TRUE about enzymes?

a) They make biochemical reaction to proceed spontaneously.

b) They lower the activation energy of a reaction.

c) They are not very specific in their choice of substrates.

d) They are needed in large quantities.

9) To what category of molecules do enzymes belong?

a) Carbohydrates

b) Lipids

c) Nucleic acids

d) Proteins

10) What is TRUE about cofactors?

a) Break hydrogen bonds in proteins.

b) Help facilitate enzyme activity.

c) Increase activation energy

d) Are composed of proteins.

11)Prosthetic groups are:

a) Required by all enzyme. b) Loosely attached with enzymes

c) Proteinous nature d) Tightly bound to enzyme.

12)Lipids are generally defined in terms of:

a) Solubility b) Structure

c) Molarity d) All of these

13) DNA and RNA are made up of:

a) Peptides b) Nucleotides

c)Neurons d) None of these

14) _____ of the human body weight is mineral matter?

a) 5% b) 10%

c) 50% d) 100%

15) _____ is needed for vitamin C utilization:

a) Acid b) Iron

c) Phosphorus d) Calcium

16) The component of blood that carries oxygen in the body is:

a) Fats b) Myoglobin

c) Hemoglobin d) Amino Acid

17) Most RNA molecules are:

a) Independent b) Double Stranded

c) Single Stranded d) Multiple Stranded

18) _____ are the major component of soap:

a) Fatty Acids b) Palm Oils

c) Proteins d) Saccharides

19) The mineral, related with the formation of bones and teeth is:

a) RNA b) Phosphorus

c) Iron d) Sulphur Answers

Answers

1)	d)	2)	b)	3)	c)	4)	d)	5)	c)
6)	c)	7)	d)	8)	b)	9)	d)	10)	b)
11)	d)	12)	b)	13)	b)	14)	a)	15)	
16)	c)	17)	c)	18)	b)	19)	b)		

Q2. Give brief answers for the following questions.

Q1. What do you understand by the word Biochemistry?

Answer

Biochemistry

Please see answer of QI of chapter notes.

Q2. Briefly state the functions of carbohydrates.

Answer

Functions of Carbohydrates

Major functions of carbohydrates are as follows:

i) Energy stores, fuels and metabolic intermediaries.

ii) Ribose and deoxyribose sugars are part of the structural framework of RNA and DNA.

iii) The cell walls of bacteria are mainly made up of polysaccharides (Type of carbohydrates).

iv) Cellulose (a type of carbohydrate) makes up most of the plant cell walls.

v) Carbohydrates are linked to many proteins and lipids (fats), where they are vitally involved in cell interactions.

Q3. Name the classes and Sub—classes of Proteins.

Answer

There are three major classes and thirteen sub—classes which are as follows:

A) Simple Proteins:

a) Albumins b) Globulins c) Glutelins

d) Histones e) Scleroproteins

B) Conjugated Proteins:

a) Nucleoproteins b) Mucoproteins

c) Glycoproteins d)Phosphoprotein

C) Derived Proteins:

a) Proteins b) Proteases

c) Peptones d) Peptides

Q4. In a range of 0—35^{0}C, the rate of reaction of an enzyme is proportional to temperature. Justify it.

Answer

Most of the enzymes which are performing function in human body the range of their optimum temperature ranges 35 — 38^{0}C.

The activity of enzymes decreases when we move from 35 to O^{O}C and it becomes zero at O^{O}C.

Q5. How does PH affect enzyme activity?

Answer

PH affect enzyme activity:

Please see answer of Q31 of chapter notes.

Q6. Describe lock and key mechanism of enzyme action.

Answer

Please see answer of Q30 of chapter notes.

Q7. What is the main use of enzymes in paper industry?

Answer

The main use of enzymes in paper industry is to break starch to lower its viscosity that aids in making paper.

Q8. Define cofactor and co-enzymes.

Answer

Cofactors or co — enzymes are the non — protein components of the en4tme. These are actually inorganicinos and complex organic or metallo — organic molecules which includes Fe^{2+} (chrome oxidase) Zn^{2+} (carbonic anhydrase) and Mg^{2+} (glucose 6 — phosphate) and many enzymes contain vitamins as their cofactors or co — like nicotinamide adenine dinucleotide contains nicotinamide vitamin and thiamine pyrophosphate contains vitamin B.

Q9. Shortly explain the only property that all the lipids have in common.

Answer

They insoluble in water but dissolve in organic solvent.

Q10. Explain the structural components of DNA and RNA.

Answer

Please see answer of Q57 of chapter notes.

Q11. Define Lipids and state the difference between fat and oil.

Answer

Lipids

Lipids are the organic compounds of animals and plants origin and are triglycerides of fatty acids and glycerol.

Difference between fat and oil

Fat	Oil
i) Fats are mostly obtained from animal sources. ii) Fats have single bond between C — C thus maximum number of hydrogen atoms are attached hence called as saturated fats.	i) Oils are mostly obtained from plant sources. ii) Oils have some double bonds between C = C, thus less number of hydrogens are attached compared to fats that's why they are called unsaturated fats.

Q12. Briefly state how vitamin D is formed in human body?

Answer

Vitamin D is produced through the action of ultraviolet irradiation (UV) on its precursor 7 — dehydrocholesterol, this molecule occurs naturally in the skin of animals and milk. Vitamin D can be made by exposure of the skin to UVB or by exposing milk directly to UV.

Q13. State the difference between the chemical structures of DNA and RNA.

Answer

Please see answer of Q58 of chapter notes.

Q14. Briefly state why minerals are important for human life.

Answer

Please see answer of Q62 of chapter notes.

Q15. Name different routes for the loss of Zinc from human body.

Answer

About half of the Zinc from the human body is eliminated through gastrointestinal tract. Considerable amount of Zinc excretion occurs through urine and surface losses (desquamated skin, hair, sweat etc)

Q3. Give detailed answers for the following questions.

Q1. Describe different classes of carbohydrates.

Answer

Please see answer of Q3 of Chapter notes.

Q2. Explain the structures of proteins.

Please see answer of Q 19 of Chapter notes.

Q3. Briefly describe the factors that affect the activity of the enzymes.

Answer

Please see answer of Q31 of Chapter notes.

Q4. What is the nutritional importance of lipids?

Answer

Please see answer of Q48 of Chapter notes.

Q5. Explain the structure of Nucleic acids.

Answer

Please see answer ofQ57 of Chapter notes.

Q6. Describe four important minerals and their sources.

Answer

Please see answer of Q77, Q80, Q66 and Q67 of chapter notes.