

Multiple Choice Questions

- Which one of the following is not lipid?
 (A) Cholesterol (B) Wax (C) Keratin (D) Terpenes
- Of the total dry weight of the living cells proteins constitute over:
 (A) 30 % (B) 40 % (C) 50 % (D) 60 %
- The most abundant organic compound in mammalian cell:
 (A) Water (B) Lipids (C) Proteins (D) Carbohydrates
- Conjugated histone proteins are:
 (A) Structural Only (B) Regulatory only
 (C) Transport proteins (D) Structural and Regulatory
- The amino acids are mainly different from each other due to the type and nature of:
 (A) Amino group (B) R-group (C) Carboxyl group (D) Peptide bond
- The molecule formed by two amino acids is called:
 (A) Peptide bond (B) Dipeptide
 (C) Poly peptide linkage (D) Peptide linkage
- Keratin is an example of Fibrous Protein present in:
 (A) Blood (B) Muscle (C) Nail and Hair (D) Bones
- Total number of amino acid in insulin are:
 (A) 50 (B) 151 (C) 141 (D) 51
- The most abundant organic compound in the cells is the:
 (A) Carbohydrate (B) Protein (C) ATP (D) Lipid
- Peptide bond is a:
 (A) N-H link (B) C-O link (C) C-N link (D) C-H link
- Insulin is a protein consisting of two polypeptide chains of amino acids held together by:
 (A) Peptide bonds (B) Covalent bonds (C) Glycosidic bonds (D) Disulfide bonds
- How many water molecules are formed when glycylalanine is formed:
 (A) 4 (B) 3 (C) 2 (D) 1
- The number of proteins in the human body is over:
 (A) 25,000 (B) 20,000 (C) 10,000 (D) 15,000
- Iron containing protein is:
 (A) Cytochrome (B) Ferredoxin (C) Plastocyanin (D) Plastoquinone
- Hemoglobin is a:
 (A) Fibrous proteins (B) Globular proteins (C) Coiled proteins (D) Double protein
- Which of the following is not a fibrous protein:

- (A) Keratin (B) Myocin **(C) Hormones** (D) Fibrin
17. In the - α helix protein structure each turn of the helix has amino acids.
(A) 6-6 (B) 5-6 (C) 4-6 **(D) 3-6**
18. Globular proteins differ from fibrous protein in:
(A) Having amino acids (B) Being non - crystalline
(C) Being soluble in aqueous medium (D) Their repeating units joined by peptide
19. Enzymes , antibodies , hormones and hemoglobin are examples:
(A) Carbohydrates **(B) Globular proteins** (C) Fibrous proteins (D) Lipids
20. Haemoglobin is an example of which functional class of proteins:
(A) Contractile (B) Structural **(C) Transport** (D) Regulatory
21. Type of bond associated with maintaining primary structure of protein is:
(A) Hydrogen bond (B) Ester bond (C) Peptide bond **(D) Disulphide bond**
22. Type of bond principally associated with maintaining alpha helix shape of protein:
(A) Disulphide bond (B) Ester bond **(C) Hydrogen bond** (D) Peptide bond
23. Which of the following structure is best represents structure of haemoglobin:
(A) Tertiary **(B) Quaternary** (C) Secondary (D) Primary
24. Helical shape of polypeptide is due to presence within molecule:
(A) Hydrogen bond (B) Covalent bond (C) Disulphide bond (D) Peptide bond
25. Amino acids are linked to each other by:
(A) Hydrophobic **(B) Peptide bond** (C) Glycosidic (D) Ester bond
26. The breaking of the terminal phosphate of ATP release energy about:
(A) 17.3 K cal (B) 3.7 K cal **(C) 7.3 K cal** (D) 2 K cal
27. Which of the following kinds of atoms do not occur in carbohydrates:
(A) Nitrogen (B) Hydrogen (C) Carbon **(D) Oxygen**
28. The percentage by weight of RNA in a bacterial cell is:
(A) 3 % (B) 2 % **(C) 6 %** (D) 0.25 %
29. The potential source of chemical energy for cellular activities:
(A) C-N bond **(B) C-H bond** (C) C-C bond (D) C-O bond
30. Which of the following is a group of organic compounds?
(A) Lipids, nucleic acids and nitric acid (B) Carbon dioxide, acids , bases
(C) Carbohydrates, lipids , nucleic acids (D) Proteins, acids, lipids
31. Of the total weight of a bacterial cell , carbohydrates constitute only:
(A) 4 % **(B) 3 %** (C) 2 % (D) 1 %
32. 18 % of the total weight of a mammalian cell is the:
(A) Water (B) Carbohydrates **(C) Proteins** (D) Lipids
33. The total weight of a mammalian cell , DNA forms:

- (A) 1.1 % (B) 6 % (C) 1 % (D) 0.25 %
33. RNA constitutes 1.1 % of the total weight of a:
(A) Fungal cell (B) Algal cell (C) Bacterial cell (D) Mammalian cell
35. All the chemical reactions taking place within a cell are collectively called:
(A) Commensalism (B) Catabolism (C) Metabolism (D) Anabolism
36. In bacterial cells the water percentage is:
(A) 50 % (B) 60 % (C) 70 % (D) 40 %
37. Percentage of carbohydrates in mammalian cell is:
(A) 2 % (B) 3 % (C) 1 % (D) 4 %
38. In free state , glucose is present in:
(A) Cellulose (B) Glycogen (C) Dates (D) Amylose
39. Most abundant carbohydrate in nature is:
(A) Agar (B) Glycogen (C) Starch (D) Cellulose
40. Cotton is a pure:
(A) Both C & B (B) Cellulose (C) Glycogen (D) Polysaccharide
41. For the synthesis of 10 gm of glucose , plants use solar energy of about:
(A) 717.6 K cal / gm (B) 550 K cal / gm (C) 717.6 K cal / gm (D) 574 K cal / gm
42. Our blood normally contains glucose:
(A) 0.06 % (B) 0.8 % (C) 0.6 % (D) 0.08 %
43. Which one of the following is not a carbohydrate?
(A) Cellulose (B) Wax (C) Starch (D) Glycogen
44. Animals obtain carbohydrates mainly from:
(A) Glycogen (B) Sucrose (C) Starch (D) Glucose
45. Which one of the following is not a Lipid?
(A) Cholesterol (B) Chitin (C) Cutin (D) Rubber
46. A heterogeneous group of compounds related to fatty acids is:
(A) Nucleic Acid (B) Carbohydrate (C) Proteins (D) Lipid
47. Lipids are insoluble in:
(A) tetra chloride (B) Alcohol (C) Water (D) Chloroform
48. How many types of amino acids are present in the living cells and tissues?
(A) 170 (B) 150 (C) 25 (D) 20
49. An amino acid contains an amino group and a carboxyl group attached to the same:
(A) Carbon atom (B) Nitrogen atom (C) Oxygen atom (D) Hydrogen atom
50. A compound formed by the combination of a nitrogenous base and a pentose sugar is called
(A) Linnaeus (B) Chetton (C) Miescher (D) Sanger

51. Nucleotide is formed by the combination of a nucleoside and a:
- (A) Butyric acid (B) Hydrochloric acid (C) Glutamic acid (D) Phosphoric acid
52. Nucleic acids have special affinity for:
- (A) Alkaline proteins (B) Basic proteins (C) Acidic proteins (D) Neutral proteins

Fill in the blanks.

- The sum of all the chemical reactions taking place within a cell is called
- is the basic element of organic compounds.
- All the amino acids have an amino group and a carboxyl group attached to the same atom.
- is the most abundant carbohydrate in nature.
- Adenine and guanine are double ringed bases and are called

Answers

- | | | |
|----------------------|-------------------|------------------|
| 1. Metabolism | 2. Carbon | 3. Carbon |
| 4. Cellulose | 5. Purines | |

Chapter : 02

Biological Molecules



Subjective

Q8: Define Biochemistry. Why study of biochemistry is essential in the field of biology or in the study of living organisms?

Ans: Biochemistry is a branch of Biology, which deals with the study of chemical components and the chemical processes in living organisms. Importance of Biochemistry: A basic knowledge of biochemistry is essential for understanding anatomy and physiology, because all of the structures of an organism have biochemical organization. Photosynthesis, respiration, digestion, muscle contraction can all be described in biochemical terms.

Q2: Name the most important organic and inorganic compounds in living organisms.

Ans: Most important organic compounds in living organisms are carbohydrates, proteins, lipids and nucleic acids. Among inorganic substances are water carbon dioxide, acids, bases and salts.

Q3: Differentiate between Metabolism, Catabolism and Anabolism.

Ans: **Metabolism:** All the chemical reactions taking place within a cell are collectively called metabolism.

Metabolism = Anabolism + Catabolism

Energy is taken and released simultaneously.

Anabolism: Those reactions in which substances are combined to form complex substances are called anabolic reactions. Anabolic reactions need energy.

Catabolism: The breakdown of complex molecules into simpler ones, such reactions are called catabolic reactions. Energy is released during catabolic reactions.

Q4: Why carbon is considered as the basic element of organic compounds?

Ans: Carbon is considered as the basic element of organic compounds, because it is tetravalent. Due to its unique properties, carbon occupies the central position in the skeleton of life. It can react with oxygen, hydrogen, nitrogen, phosphorus and sulphur forming covalent bonds. It is also important due to following associations.

Carbon-Hydrogen Bond: It is potential source of chemical energy for cellular activities.

Carbon-Oxygen Bond: Carbon Oxygen association in glycosidic linkages provides stability to complex carbohydrate molecules.

Carbon-Nitrogen Bond: Carbon combines with nitrogen in amino acids linkages to form peptide bonds and forms proteins which are very important due to their diversity in structure and functions.

Q5: What is the percentage of water in bone cells and brain cells of human?

Ans: Human tissue contain about 20 percent water in bone cells and 85 percent water in brain cells.

Q6: Water is excellent solvent for polar substances. Justify this statement.

Ans: Due to its polarity, water is an excellent solvent for polar substances. Ionic substances when dissolves in water, dissociate into positive and negative ions. Non-ionic substances having charged groups in their molecules are dispersed in water. Almost all the reactions in cell occur in aqueous media.

Q7: What is the function of non-polar substances?

Ans: Non-polar organic molecules such as fats, are insoluble in water and help to maintain membranes which make compartments in the cell.

Q8: Define specific heat capacity of water.

Ans: The number of calories required to raise the temperature of 1g of water from 15-16 °C is 1. This is called specific heat capacity of water.

Q9: How water works as a temperature stabilizer for living organisms?

Ans: Water has great ability of absorbing heat with minimum of change in its own temperature. This is because much of the energy is used to break hydrogen bonds. Water thus works as temperature stabilizer for organisms in the environment and hence protects living material against sudden thermal changes.

Q10: How heat of vaporization of water is beneficial in daily life?

Ans: The specific heat of vaporization of water is 574 K cal/kg, which plays an important role in the regulation of heat produced by oxidation. It also provides cooling effect to plants when water is transpired, or to animals when water is respired.

Q11: What is the concentration of H⁺ and OH⁻ ions in pure water at 25 °C?

Ans: At 25°C the concentration of each H⁺ and OH⁻ ions in pure water is about 10⁻⁷ mole/litre of each.

Q12: How water act as an effective lubricant?

Ans: Water is effective lubricant that provides protection against damage resulting from friction. For example, tears protect the surface of eye from the rubbing of eyelids, water also forms a fluid cushion around organs that helps to protect them from trauma.

Q13: List some important functions of carbohydrates.

Ans: Carbohydrates occur abundantly in living organisms. They are found in all organisms and in almost all parts of the cell. Carbohydrates play both structural and functional roles. Simple carbohydrates are the main source of energy in cells. Some carbohydrates are the main constituent of cell walls in plants and microorganisms. Cellulose of wood, cotton and paper, starches present in cereals, roots, tubers, cane sugar and milk sugar are all examples of carbohydrates.

Q14: What are carbohydrates?

Ans: The word carbohydrate literally means hydrated carbons. They are composed of carbon, oxygen and hydrogen.

Formula:

- Their formula is $C_n(H_2O)_n$.

Chemical Definition:

- Chemically, carbohydrates are defined as polyhydroxy aldehydes, or complex substances which on hydrolysis yield polyhydroxy aldehyde or ketone subunits.

Q15: What is hydrolysis?

Ans: Hydrolysis involves the breakdown of large molecules into smaller ones utilizing water molecules.

Q16: Carbohydrates are classified into how many groups?

Ans: Carbohydrates are classified into three groups:

- Mono saccharides.
- Oligosaccharides.
- polysaccharides

Q17: What are Mono-saccharides? Give some of its properties and examples

Ans: Mono saccharides are simple sugars. They are sweet in taste, are easily soluble in water, and cannot be hydrolyzed into simple sugar. Chemically they are either polyhydroxy aldehydes or ketones. The sugar with aldehyde group is called also sugar and with keto group is called keto sugar.

Examples: Are glyceraldehyde, ribose and glucose, etc.

Q18: How glucose is prepared / produced naturally?

Ans: Glucose is naturally produced in green plants which take carbon dioxide from air and water from the soil to synthesize glucose. Energy is consumed in this process which is provided by sunlight. That is why this process is called photosynthesis.

Q19: How much glucose our blood contains?

Ans: Our blood normally contains 0.08% glucose.

Q20: How much energy is used to synthesize 10g of glucose?

Ans: 717.6 K cal of solar energy is required for the synthesis of 10g of glucose.

Q21: What are digosaccharides? Give some examples of important disacchraides.

Ans: These are comparatively less sweet in taste, and less soluble in water. On hydrolysis oligosacchardies yield from to to ten mono saccharides. The one yielding two mono saccharides are known as disaccharides, those yielding three are known as trisaccharides and so on. The covalent bond between two mono saccharides is called glycosidic bond.

Q22: What are polysaccharides? Name some biologically important polysaccharides.

Ans: Poly saccharides are the most complex and most abundant carbohydrate in nature. They are usually branched and tasteless. They are formed by several mono saccharides units linked by glycosidic bonds. Polysaccharides have high molecular weights and are only sparingly soluble in water. Some biologically important poly saccharides are starch, a gas, glycogen, cellulose, dextrans, pectin and chitin.

Q23: Differentiate between amylase and amylopectin.

Ans: **Amylose:**

- Amylose starches have unbranched chains of glucose and
- Are soluble in hot water

Amylopectin:

- Amylopectin starches have branched chains and
- Are insoluble in hot or cold water

Q24: Differentiate between starch, cellulose and glycogen.

Ans: **Starch:**

- Is found in fruits, grains and tubers. It is the main source of carbohydrates for animals. On hydrolysis, it yields glucose molecules. Starches are of two types, amylose and amylopectin.
- Amylose starches have branched chains of glucose and are soluble in hot water. Amylopectin starches have branched chains and are insoluble in hot or cold water. Give blue color with iodine.

Cellulose:

- It is most abundant in nature. Cotton is pure form of cellulose. It is the main constituent of cell wall of plants and is highly insoluble in water. On hydrolysis, it also yields glucose molecules. Cellulose gives no color with iodine.
- It is not digested in human digestive system. In the herbivores, it is digested because of micro-organism in their digestive tract. These micro-organisms secrete an enzyme called cellulase for its digestion.

Glycogen:

- It is also called animal starch. It is the chief form of carbohydrate stored in animal body. It is abundantly in liver and muscles, though found in all animal cells. It is insoluble in water and it also yields glucose on hydrolysis. Gives red color with iodine.

Q25: What are lipids?

Ans: The lipids are heterogenous group of compounds related to fatty acids. They are insoluble in water but soluble in organic solvents such as ether, alcohol, chloroform and benzene. Lipids include fats, oils, waxes, cholesterol and related compounds.

Q26: What is the use of lipids in daily life?

Ans: Lipids as hydrophobic compounds are components of cellular membranes. They are used to store energy. Some lipids provide insulation against atmospheric heat and cold and also act as water proof material waxes, in the exoskeleton of insects and cutin, an additional protective layer on the cuticle of epidermis of some plants organs. e.g., leaves fruits, seeds etc., protect them.

Q27: Give the classification of lipids.

Ans: Lipids have been classified as acylglycerols, waxes, phospholipids, sphingolipids, glycolipids, and terpenoids lipids including carotenoids and steroids.

Q28: What are acylglycerols?

Ans: Acylglycerols are composed of glycerol and fatty acids. The most widely spread acylglycerol is triacylglycerol also triglycerides or neutral lipids. Chemically acylglycerol can be defined as esters of fatty acids and alcohol.

An ester is the compound produced as the result of a chemical reaction of an alcohol with an acid and a water molecule is released.

Q29: What are waxes? What is the importance of waxes?

Ans: Waxes are widespread as protective coatings on fruits and leaves Some insects also secrete wax. Chemically, waxes are mixtures of long chain alkanes and alcohols, ketones and esters of long chain fatty acids.

Importance:

Waxes protect plants from water loss and abrasive damage. They also provide barrier for insects, birds and animals such as sheep.

Q30: What are phospholipids?

Ans: Phospholipids are derivatives of phosphoric acid, which are composed of glycerol, fatty acids and phosphoric acid. Nitrogenous bases such as choline ethanolamine and serine are important components of phospholipids.

They are widespread in bacteria, animal and plant cells and are frequently associated with membranes. Phosphatidylcholine is one of the common phospholipids.

Q31: What are terpenoids?

Ans: Terpenoids are a very large and important group of compounds which are made up of simple repeating simple units, isoprenoid units. This unit by condensation in different ways give rise to compounds such as rubber, carotenoids, steroids terpenes etc.

Q32: What are proteins?

Ans: Proteins are the most abundant organic compounds to be found in cells and comprise over 50% of their total dry weight.

Q33: Illustrate the important functions performed by proteins.

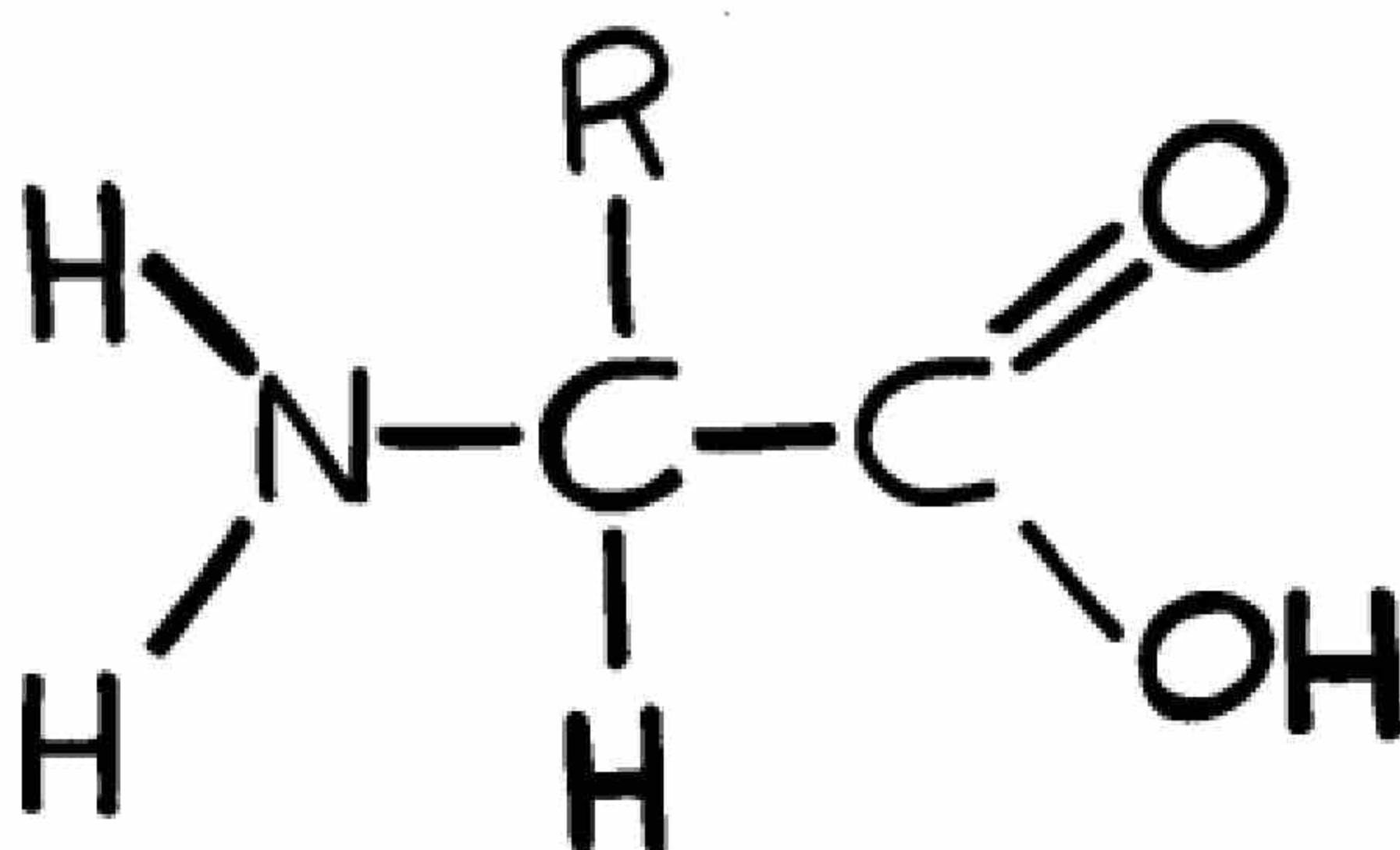
Ans: Illustrate the important functions performed by proteins:

- **Building Structures of Cell:** Proteins build many structures of the cell.
- **As Enzymes:** All enzymes are proteins in this way they control the whole metabolism of the cell.

- **As Hormones:** As hormones, proteins regulates metabolic processes.
- **As carriers:** Some proteins work as carriers and transport specific substances such as oxygen, lipids, ions etc.
- **As Antibodies:** Some proteins called antibodies, defend the body against pathogens.
- **Blood Clotting Proteins:** They prevent loss of blood from the body after an injury.
- **Movement of Organs:** Movement of organs and organisms, and movement of chromosomes during anaphase of cell division are caused by proteins.

Q34: What are amino acids? Give its general formula.

Ans: Proteins are polymers of amino acid, the compounds containing nitrogen oxygen and hydrogen. All the amino acids have an amino group (-NH₂) and a carboxyl group(-COOH) attached to the same carbon atom, also known as alpha carbon.



Q35: How peptide bond is formed between two amino acids?

Ans: The linkage between the hydroxyl group of carboxyl group of one amino acid and the hydrogen of amino group of another amino acid release H₂O and C-N link to form a bond called peptide bond.

The resultant compound of glycylalanine has two amino acid subunits and is a dipeptide. A dipeptide has an amino group at one end and a carboxyl group at the other end of the molecule.

Q36: Who was the first scientist who determined the sequence of amino acids in a protein molecule?

Ans: F.Sanger was the first scientist who determined the sequence of amino acids in a protein molecules. After ten years, of careful work he concluded, that insulin is composed of 51 amino acids in two chain.

One of the chains had 21 amino acids and the other had 30 amino acids and they were held together by disulphide bridges. Haemoglobin is composed of four chains, two alpha and two beta chains. Each alpha chain contain 141 amino acids, while beta chain contains 146 amino acids.

Q37: What is ribosomal RNA?

Ans: It is the major portion of RNA in the cell, and may be up to 80% of the total RNA. It is strongly associated with the ribosomal protein where 40 to 50% of it is present. It acts as a machinery for the synthesis of proteins. On the surface of the ribosomal the mRNA and tRNA molecules interact to translate the information from genes into a specific protein.

Q38: Why are fats considered as high energy compounds?

Ans: Because of higher proportions of C-H bonds and very low proportion of oxygen, lipids store double the amount of energy as compared to the same amount of any carbohydrate.

Q39: How were nucleic acids isolated?

Ans: Nucleic acids were isolated in 1870 by F.

Miesches from the nuclei of the pus cells. Due to their isolation from nuclei and their acidic nature, they were named nucleic acids.

Q40: Differentiate between a nucleotide and a nucleoside?

Ans: **Nucleotide:**

- A nucleoside and a phosphoric acid combine to form a nucleotide.

Nucleoside:

- The compound formed by combination of a base and pentose sugar is called nucleoside.

Q41: What is a gene?

Ans: Gene is a unit of biological inheritance.

Q42: Which was the first microbe have the genome completely sequenced?

Ans: Haemophilus influenzae is the first microbe to have the genome completely sequenced and this was published on July 28, 1995.

Q43: What is transpiration?

Ans: RNA is synthesizes by DNA in a process as transcription.

Q44: What is messenger RNA?

Ans: It takes the genetic message from the nucleus to the ribosomes in the cytoplasm to form particular proteins messenger RNA carries the genetic information from DNA to ribosomes, where amino acids are arranged according to the information in mRNA to form specific protein molecule.

This is a type of a single strand of variable length. Its length depends upon the size of the gene as well as the protein form which it is taking the message. mRNA is about 3 to 4% of the total RNA in the cell.

Q45: What is transfer RNA?

Ans: It comprises about 10 to 20% of the cellular RNA Transfer RNA molecule are small, each with a chain length of 75 to 90 nucleotides. It is involved in protein synthesis.

Q46: What are conjugated molecules? Give some examples of it.

Ans: Two different molecules belonging to different categories usually combine together to form conjugated molecules. For **Example:** Glycoproteins, glycolipids, nucleoproteins, lipoproteins, etc.

Q47: What are nucleohistones? What is their function?

Ans: Nucleic acids have special affinity for basic proteins. Nucleohistones are present in chromosomes. They play important role in regulation of gene expression.

Q48: What are lipoproteins? What is their function?

Ans: Lipoproteins are formed by combination of lipids and proteins. They are basic structural framework of all types pf membranes in the cell.

Q49: Differentiate between glycoproteins and glycolipids.

Ans: **Glycoproteins:**

- Carbohydrate may combine with proteins to form glycoproteins. Most of the secretions are glycoprotein in nature and they are integral structural components of plasma membrane.

Glycolipids:

- Carbohydrate may combine with, lipids to form glycolipids. They are also integral structural components of plasma membrane.

Q50: What is the contribution of Erwin Chargaff in biology regarding structure of DNA?

Ans: In 1951 Erwin Chargaff provided data about the ratios of different bases present in the DNA molecule. This data suggested that adenine and thymine are equal in ratio and so are guanine and cytosine.

Q51: Who used the technique of X-ray diffraction to determine structure of DNA?

Ans: Maurice Wilkins and Rosalind Franklin Used the technique of X-ray diffraction to determine structure of DNA.

Q52: Who built the scale model of DNA?

Ans: James-D Watson and Francis Crick built the scale model of DNA.

Q53: Differentiate between purines and pyrimidines?

Ans: **Purines:**

- These are double ringed nitrogenous bases. Adenine and guanine are purines.

Pyrimidines:

- These are single ringed nitrogenous bases. Cytosine, thymine and uracil are pyrimidines.

Q54: Which one is more soluble in organic solvent Palmitic acid or Butyric acid?

Ans: Palmitic acid is more soluble in organic solvents than butyric acid because it has more carbon atoms than butyric acid and its melting point is also more than butyric acid.

Q55: Differentiate between saturated and unsaturated.

Ans: **Saturated Fatty Acid:**

- Saturated fatty acid contains double bond. These are oils and liquids at room temperature.

Unsaturated Fatty Acid:

- Unsaturated fatty acids have no double bonds. They are fats and solid at room temperature.

Q56: Describe primary structure of proteins.

Ans: The primary structure comprises the number and sequence of amino acids in a single chain in a protein molecule. The size of protein molecule is determined by the type of amino acids and the number of amino acids comprising that particular molecule.

Q57: What is the secondary structure of proteins?

Ans: The polypeptide chain in secondary do not lie flat. They coil into a helix or some other configuration. Common secondary structure is alpha-helix which involves spiral formation of the polypeptide chain.

It has 3.6 amino acids in each turn. This structure is kept by the formation of hydrogen bonds among amino acids molecules. Beta-pleated Sheet is formed by folding back of the polypeptide.

Q58: What is tertiary structure? How it is maintained?

Ans: A polypeptide chain bends and folds upon itself forming a globular shape. This is the proteins tertiary structure. It is maintained by ionic, hydrogen and disulphide bonds.

Q59: How many type of cell walls are present in different organisms?

Ans:	<u>Organism</u>	<u>Cell Wall</u>
➤	Bacteria	Pepidoglycan and lipopolysaccharides (lipoprotein complex)
➤	Blue green algae	Muramic acid
➤	Fungi	Chitin
➤	Algae and other Plants	Mainly cellulose

Q60: Differentiate between different structure of proteins.

Ans: Difference between different structures of proteins:

Feature	Fibrous Protein	Globular Protein
Shape	Fibrils	Spherical or ellipsoidal
Structural Organization	Secondary	Tertiary
Solubility in aqueous media	Insoluble	Soluble
Crystal Nature	Non-crystalline	Crystalline
Elasticity	Elastic	Inelastic
Role	Structural	Functional
Stability	Stable : Silk fibers, actin, myosin,	Unstable : Enzymes antibodies, hemoglobin, hormones

Chapter : 02

Biological Molecules

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Imp.Long Questions

- Q1: Explain importance of Carbon in living organisms.
- Q2: Justify, that Carbon occupies the central position in the skeleton of life.
- Q3: Write a note on importance of water. (V.imp)
- Q4: Describe any four properties of water.
- Q5: What are polysaccharides? Describe its various types. (V.imp)
- Q6: Write a note on phospholipids.
- Q7: Write a note on acylglycerols. (V.imp)
- Q8: Explain structure of protein. (V.imp)
- Q9: Give functions of proteins.
- Q10: Differentiate between fibrous and globular proteins. (V.imp)
- Q11: Discuss primary and secondary structure of proteins. (V.imp)
- Q12: Discuss types of RNA.
- Q13: Compare DNA with RNA.
- Q14: Differentiate between DNA and RNA.
- Q15: Write a note on different types of RNA. (V.imp)
- Q16: Discuss Watson and Crick model of DNA. (V.imp)