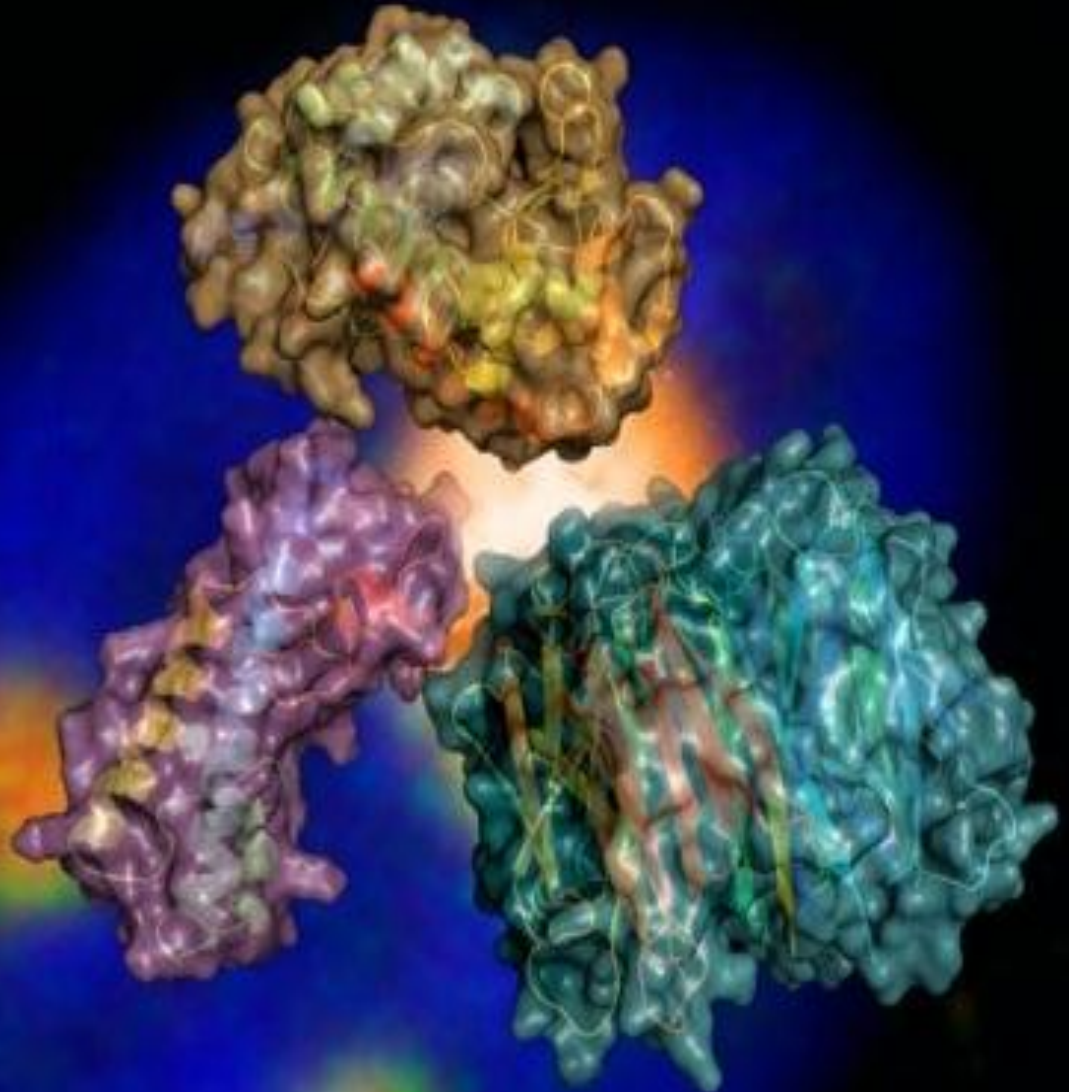


# Biochemistry

MCQs

Pharmacy Technician/Category B

1st year



# Defination & Introduction

## Chapter No.1

- Biochemistry deals with the study of chemical reaction occurring within:
  - Animals
  - Plants
  - Microorganisms
  - Living organisms**
- In Biochemistry the main focus is on structure, function and interactions of biological:
  - Environment
  - Macro molecules**
  - Cells
  - Chemicals
- A shampoo may be developed that enhances curliness or softness of hairs after the study of characteristics of protein:
  - Albumin
  - Globulin
  - Keratin**
  - Lipo proteins
- Biochemical investigations helps for the suggestion of best :
  - Food & medicines**
  - Clothe
  - Doctor
  - Exercise
- Rickets, Pellagra, Beriberi, scurvy, are the examples of biochemical:
  - Toxicity
  - Addiction
  - Excess
  - Deficiencies**

# Biochemical Principles/ Terminology

## Chapter No.2

- Human body mass contain water:
  - 60% to 70%
  - 65% to 75%
  - 75% to 80%
  - 65% to 70%**
- Pure water is very slightly dissociated therefore called:
  - Transparent liquid
  - Strong electrolyte
  - Solvent
  - Weak electrolyte**
- At 25 °C how many molecules of pure water are ionized:
  - One**
  - Two
  - Three
  - Four
- pH describes the degree of \_\_\_\_\_ of a solution :
  - Sweetness
  - Acidity or alkalinity**
  - Hotness
  - Reaction
- pH scale ranges from:
  - 0 to 15
  - 1 to 14
  - 0 to 100
  - 0 to 14**
- pH=?
  - $-\log[H^-]$
  - $-\log[H^+]$**
  - $\log[H_2]$
  - $\log[H^+]$
- Solution having pH less than 7 are called:
  - Basic
  - Electrolyte
  - Acidic**
  - Solvent
- pH of blood is:
  - 7.97
  - 7.65
  - 7.77
  - 7.35**
- pH of pure water is close to:
  - 8
  - 7**
  - 14
  - 9
- Buffer is a compound that resist to changing pH of any solution on slight addition of:
  - Salt
  - Acidic or basic solu.**
  - Water
  - sugar
- Substances which mostly do not diffuse through membrane are called:
  - Colloidal substances**
  - Crystalloids
  - Colligative
  - Precipitates
- Substances which can easily can pass through membrane are called:
  - Buffer
  - Osmotic
  - Crystalloids**
  - Colloidal substances
- Sodium chloride is an example of:
  - Crystalloids**
  - Colloids
  - Acidic solution
  - Buffer solution
- Colligative properties are those which depend on the number of:
  - Solvent particles
  - Solute particles**
  - Solution particles
  - Gas molecules
- When number of solute particles increase in the solution:
  - Osmotic pressure  $\uparrow$
  - Freezing point  $\downarrow$
  - Boiling point  $\uparrow$
  - All a,b,c**
- If number of solute particles increases in the solution:
  - Vapor pressure  $\downarrow$**
  - V.P remains same
  - Vapor pressure  $\uparrow$
  - All
- Condensation of a gas, vapor, or dissolved substances on the surface of a solid or liquid is called:
  - Diffusion
  - Passive transport
  - Adsorption**
  - Osmosis
- The process in which ions or molecules moves from a region of higher concentration to a region of lower concentration:
  - Adsorption
  - Diffusion**
  - Passive transport
  - Active transport
- Transport of ions and molecules across a cell membrane by diffusion without the application of energy is called:
  - Diffusion
  - Passive transport**
  - Active transport
  - Adsorption
- Movement of molecules across a cell membrane from a region of lower concentration to region of higher concentration with

expense of energy:

- (a) Passive transport (b) Osmosis (c) **Active transport** (d) Adsorption
- 26) The process by which a solvent passes from a solution of lower solute concentration to solution of higher solute concentration through a semi-permeable membrane:  
 (a) Surface tension (b) Active transport (c) Diffusion (d) **Osmosis**
- 27) A membrane which is permeable to the solvent but not to solute particles is called:  
 (a) Permeable memb. (b) **Semi-permeable mem.** (c) Cell membrane (d) Nuclear membrane
- 28) Osmotic pressure is equal to the:  
 (a) **Hydrostatic pressure by solvent on semi-permeable membrane** (b) Surface tension  
 (c) Blood pressure (d) Vapor pressure
- 29) Contractive tendency of the surface of the liquid that allow it to resist an external force is called:  
 (a) Turger pressure (b) Viscosity (c) Cohesive forces (d) **Surface tension**
- 30) Internal resistance of the molecules of any liquid to flow is called:  
 (a) Osmosis (b) Polarity (c) Vander wall forces (d) **Viscosity**

# Carbohydrates

## Chapter No.3

- 31) Carbohydrate generally made up of carbon, hydrogen and:  
 (a) Nitrogen (b) Phosphorus (c) **Oxygen** (d) Sulphur
- 32) Carbohydrates means:  
 (a) Sugar (b) Salts (c) Hydrated carbon (d) **Both a & c**
- 33) General formula of carbohydrate is:  
 (a)  $C_{2n}(H_2O)_n$  (b)  $C_n(HO)_n$  (c)  $C_n(H_2O)_2$  (d)  **$C_n(H_2O)_n$**
- 34) Generally carbohydrate are soluble in:  
 (a) **Organic liquid** (b) Inorganic liquid (c) Acidic solution (d) Water
- 35) Carbohydrates of low molecular weight have:  
 (a) Bitter taste (b) Tasteless (c) Less sweet taste (d) **Sweet taste**
- 36) There are two types of carbohydrates on the base of functional groups aldehyde and:  
 (a) Phosphate group (b) **Ketone group** (c) Amino group (d) Carbohydrate group
- 37) Major source of carbohydrate is:  
 (a) Animal source (b) Mineral source (c) **Plant source** (d) Sea water
- 38) Which one is rich source of carbohydrate is:  
 (a) **Cereals** (b) Fruits (c) Seeds of cotton (d) Dry leaves
- 39) Carbohydrates are the \_\_\_\_\_ most occurring substance in the nature after water:  
 (a) 3<sup>rd</sup> (b) 4<sup>th</sup> (c) 6<sup>th</sup> (d) **2<sup>nd</sup>**
- 40) Dry weight of plant is due to cellulose:  
 (a) 50-60% (b) **50-80%** (c) 50-70% (d) 50-65%
- 41) Process of photosynthesis cannot be done without:  
 (a) Light (b) shade (c) Water (d) **Both a & c**
- 42)  $6CO_2 + 6H_2O + \text{Light} \rightarrow C_6H_{12}O_6 + \text{-----?}$   
 (a)  $4H_2O$  (b)  $2O_2$  (c)  **$6O_2$**  (d)  $3O_2$
- 43) One gram of carbohydrates provides:  
 (a) 2 cal (b) 3 cal (c) **4 cal** (d) 5 cal
- 44) Process of oxidation of carbohydrate is called:  
 (a) **Respiration** (b) Expiration (c) Hydrolysis (d) Hemolysis
- 45) Respiration reaction is  $C_6H_{12}O_6 \rightarrow CO_2 + H_2O + \text{-----?}$   
 (a) L (b) M (c) G (d) **E**
- 46) Simple sugars are absorbed directly into blood stream by:  
 (a) **Small intestine** (b) Skin (c) Mouth (d) None of these
- 47) Compound or complex sugars are not absorbed directly into blood, first converted into:  
 (a) Polysaccharides (b) Disaccharides (c) Oligosaccharides (d) **Monosaccharide**
- 48) Glucose stores in muscles & liver in the form of:  
 (a) Insulin (b) Maltose (c) Sucrose (d) **Glycogen**
- 49) Carbohydrates are utilized by the body for the production of:  
 (a) Proteins (b) Amino acids (c) Oxygen (d) **Energy**
- 50) Energy supplied by carbohydrates to the body is:

- (a) 50 to 60%                      (b) 50 to 70%                      (c) 60 to 80%                      (d) **50 to 80%**
- 51) The effect of carbohydrate on calcium absorption:  
 (a) **Increase**                      (b) Decrease                      (c) No change                      (d) Unknown
- 52) The effect of carbohydrates on body's cholesterol level is:  
 (a) Increase                      (b) **decrease**                      (c) No change                      (d) Unknown
- 53) Friendly bacteria in GIT gets \_\_\_\_\_ from carbohydrates:  
 (a) Oxygen                      (b) Nitrogen                      (c) **Nutrients**                      (d) Protection
- 54) Which molecules of carbohydrates are more sweet:  
 (a) **Monosaccharide**                      (b) Disaccharides                      (c) Oligosaccharides                      (d) Polysaccharides
- 55) Simple sugars which cannot be further hydrolysis is called:  
 (a) Polysaccharides                      (b) Oligosaccharides                      (c) Disaccharides                      (d) **Monosaccharide**
- 56) Empirical formula of monosaccharide with  $n=3$  or larger is:  
 (a)  $(CH_2O_2)_n$                       (b)  **$(CH_2O)_n$**                       (c)  $(CHO_2)_n$                       (d)  $(CH_2O_4)_n$
- 57) Monosaccharide are basic unit of:  
 (a) **Carbohydrates**                      (b) Proteins                      (c) Lipids                      (d) Nucleus
- 58) Which one is not the example of monosaccharide:  
 (a) Glucose                      (b) **Raffinose**                      (c) Fructose                      (d) Galactose
- 59) Further hydrolysis of monosaccharide is:  
 (a) **Not possible**                      (b) Possible                      (c) Sometime possible                      (d) Difficult
- 60) Monosaccharide are generally soluble in:  
 (a) Acetone                      (b) Ethanol                      (c) **Water**                      (d) Ether
- 61) Monosaccharide have functional groups:  
 (a) Aldoses                      (b) Phosphate                      (c) Ketoses                      (d) **Both a & c**
- 62) Glucose is the example of:  
 (a) **Aldoses**                      (b) Ketoses                      (c) Alkyles                      (d) Oligosaccharides
- 63) Fructose is the example of:  
 (a) Aldoses                      (b) **Ketoses**                      (c) Derivatives carbs.                      (d) Pentoses
- 64) Two joined monosaccharide are called:  
 (a) Oligosaccharides                      (b) Polysaccharides                      (c) **Disaccharides**                      (d) Pentose sugar
- 65) Sweetness and molecular mass of disaccharides is greater than:  
 (a) **Monosaccharide**                      (b) Oligosaccharides                      (c) Proteins                      (d) Polysaccharides
- 66) If all the sugar molecules in disaccharides are same called:  
 (a) Homeostatic                      (b) Homeoserous                      (c) **Homogenous**                      (d) Hetrogenous
- 67) If all the sugar molecules in disaccharides are different is called:  
 (a) Homogenous                      (b) **Hetrogenous**                      (c) Homopolysaccharides                      (d) Hetropolysaccharides
- 68) Which one is not the example of homogenous disaccharides:  
 (a) Sucrose                      (b) Lactose                      (c) **Cellulose**                      (d) None of these
- 69) Which one is the example of heterogenous disaccharides:  
 (a) Sucrose                      (b) Lactose                      (c) Maltose                      (d) **Both a & b**
- 70) Oligosaccharides contains monosaccharide:  
 (a) 2                      (b) 3 to 7                      (c) **3 to 10**                      (d) 4 to 11
- 71) Raffinose is composed of glucose, fructose and:  
 (a) Sucrose                      (b) **Galactose**                      (c) Dextrose                      (d) Cellulose
- 72) Polysaccharides are composed of \_\_\_\_\_ numbers of simple sugar molecules:  
 (a) 1 to 6                      (b) 3 to 9                      (c) 1 to 9                      (d) **More than 10**
- 73) Hydrolysis of Polysaccharides give:  
 (a) Monosaccharide                      (b) Disaccharides                      (c) Oligosaccharide                      (d) **All a, b and c**
- 74) Polysaccharides have taste:  
 (a) Sweet                      (b) Bitter                      (c) Salty                      (d) **Tasteless**
- 75) Polysaccharides are optically:  
 (a) Active                      (b) **Not active**                      (c) Both a & b                      (d) Negative
- 76) Polysaccharides serves as stores of \_\_\_\_\_ in the cell:  
 (a) Water                      (b) Oxygen                      (c) **Fuels**                      (d) None of these
- 77) Molecular mass of polysaccharides is:  
 (a) Equal to the oligosaccharides                      (b) **Greater than mono, Di and oligosaccharides**  
 (c) Less than Disaccharides                      (d) Less than oligosaccharides
- 78) Polysaccharides which on hydrolysis yields monosaccharide of one type are called:  
 (a) Homopolysaccharides                      (b) Heteropolysaccharides  
 (c) Homogeneous polysaccharides                      (d) **Both a & c**
- 79) Which is the example of hetero polysaccharides:

- (a) Starch (b) Glycogen (c) Maltose (d) **Mucilage's**
- 80) Which is present abundantly in cell wall of plants:  
 (a) Starch (b) **Cellulose** (c) Glycogen (d) Mucilage's
- 81) Which is stored food material in plant grains:  
 (a) **Starch** (b) Cellulose (c) Glycogen (d) Mucilage's
- 82) Which one is stored in animals muscles and liver:  
 (a) Starch (b) Cellulose (c) **Glycogen** (d) Mucilage's

# Lipids

## Chapter No.4

- 83) Steroids, oils and waxes belongs to:  
 (a) Carbohydrates (b) **Lipids** (c) Proteins (d) Nucleic acids
- 84) Lipids are:  
 (a) Soluble in water (b) Insoluble in water (c) Soluble in non-polar solv. (d) **Both b & c**
- 85) Primary building blocks of lipids are fatty acids and:  
 (a) Amino acids (b) **Glycerol** (c) Nucleotides (d) Monosaccharide
- 86) An organic acid with a long straight hydrocarbons chain and even number of carbon atoms:  
 (a) Amino acids (b) Glycerol (c) **Fatty acid** (d) Steroids
- 87) Glycerol is a colorless or yellowish syrupy alcohol with:  
 (a) **Sweet taste** (b) Salty taste (c) Bitter taste (d) Sour taste
- 88) Oleic acid, stearic acid and butyric acid are the example of:  
 (a) Amino acids (b) Steroids (c) Cholesterol (d) **Fatty acids**
- 89) Simple lipids are esters of fatty acids with:  
 (a) Carbohydrates (b) Nucleoproteins (c) **Alcohols** (d) Alkalis
- 90) Chemical compound formed by the interaction of acid & alcohol is called:  
 (a) Fatty acids (b) Steroids (c) Waxes (d) **Esters**
- 91) Fat in liquid state is called:  
 (a) Alcohol (b) Ether (c) Wax (d) **Oil**
- 92) Esters of fatty acids with long chain monohydric alcohol called:  
 (a) Fats (b) **Waxes** (c) Compound lipids (d) Resins
- 93) Secretion of human skin having waxes is called:  
 (a) Sweat (b) **Sebum** (c) Oily face (d) Pimple
- 94) Exoskeleton of arthropods is composed of:  
 (a) **Waxes** (b) Proteins (c) Carbohydrates (d) Bones
- 95) Fatty acids with double bond in structure are called:  
 (a) Saturated fatty acids (b) **Unsaturated f.acids** (c) Essential fatty acids (d) Non-essential
- 96) Fatty acids which have all single bonds in structure are called:  
 (a) **Saturated fatty acids** (b) Unsaturated f.acids (c) Essential fatty acids (d) Non-essential
- 97) Fatty acids are long straight hydrocarbons chain and \_\_\_\_\_ number of carbon atoms:  
 (a) Odd (b) **Even** (c) Multiple (d) Six
- 98) Sphingosine, fatty acids and a monosaccharide or an oligosaccharides unit called:  
 (a) Glycolipids (b) Sphingoglycolipids (c) Glycosphingolipids (d) **Both a & c**
- 99) Phospholipids are composed of sphingosine, fatty acids, sugar and:  
 (a) Sulphuric acid (b) Sodium sulphate (c) **Sulphate group** (d) Both a & b
- 100) Phospholipids contain phosphoric acid, fatty acid, nitrogenous base and:  
 (a) Acid (b) Base (c) Glycerol (d) **Alcohol**
- 101) Fatty acids which cannot be constructed with in the body:  
 (a) **Essential fatty acids** (b) Non-essential f.acids (c) Saturated fatty acids (d) Unsaturated f.acids
- 102) Lipids are essential for the absorption of:  
 (a) Water soluble vitamins (b) **Fat soluble vitamins** (c) Thermo labile vitamins (d) Thermo stable vitamins
- 103) Dietary lipids decrease the gastric motility and have a high \_\_\_\_\_?  
 (a) Molecular weight (b) Energy (c) **Satiety value** (d) None of these
- 104) Body fat gives anatomical stability to:  
 (a) Kidney (b) Liver (c) Stomach (d) **Most of the body organs**
- 105) Insulation of nervous tissue is made up by:  
 (a) **Lipids** (b) Carbohydrates (c) Proteins (d) Waxes

- 106) Lipids are integral part of cell protoplasm and:  
 (a) Cell wall (b) **Cell membrane** (c) Cellular fluid (d) Cell nucleus
- 107) Precursor of cholesterol is:  
 (a) Proteins (b) Carbohydrates (c) Amino acids (d) **Lipids**

# Proteins

## Chapter No.5

- 108) Proteins are composed of:  
 (a) Monosaccharide (b) Fatty acids (c) **Amino acids** (d) Nucleotides
- 109) Amino acids are joined to each other by:  
 (a) Polysaccharides bond (b) **Poly peptide bond** (c) Phosphodiester bond (d) Hydrogen bond
- 110) Polypeptide bond is formed between amino group and:  
 (a) Nitrogenous group (b) Carbonyl group (c) Phosphorus group (d) **Carboxyl group**
- 111) Which one is amino group:  
 (a)  $-\text{COOH}$  (b)  $-\text{NH}_2$  (c)  $-\text{R}$  (d)  $-\text{C}-\text{R}$
- 112) Proteins are polymers of:  
 (a) Amino groups (b) Carboxyl group (c) Fatty acids (d) **Amino acids**
- 113) A natural or artificial substance made from many small molecules called:  
 (a) Compound (b) Empirical formula (c) Ester (d) **Polymer**
- 114) Central carbon atom in amino acid is called:  
 (a)  **$\alpha$ -carbon** (b)  $\beta$ -carbon (c)  $\gamma$ -carbon (d)  $\delta$ -carbon
- 115) Which one is the function of proteins:  
 (a) Wound repair (b) Blood coagulation (c) Body's building block (d) **All**
- 116) Proteins are involved in the \_\_\_\_\_ of hormones:  
 (a) Destruction (b) **Creation** (c) Copy (d) Storage
- 117) Enzymes are \_\_\_\_\_ in nature:  
 (a) Carbohydrate (b) Cholesterol (c) Waxes (d) **Proteins**
- 118) Enzymes \_\_\_\_\_ rate of chemical reactions in body:  
 (a) Decrease (b) Keep constant (c) **Increase** (d) Stops
- 119) Hemoglobin transport in the blood:  
 (a) Carbon dioxide (b) **Oxygen** (c) Nutrition (d) Water
- 120) Plasma proteins form \_\_\_\_\_ in blood:  
 (a) **Anti bodies** (b) Antigen (c) Clotting factors (d) Antigen-antibody complex
- 121) Antibodies helps to:  
 (a) Form clot (b) Prevent infections (c) To prevent harmful chemical in body (d) **Both b & c**
- 122) Hereditary transmission is done by:  
 (a) Phosphoproteins (b) Glycoprotein (c) **Nucleoproteins** (d) Plasma protein
- 123) Linear sequence of amino acids is called:  
 (a) Basic structure of protein (b) **Primary structure of protein**  
 (c) Secondary structure of protein (d) Tertiary structure of protein
- 124) Polypeptide bond between Amino acids is formed by the linkage of  $-\text{NH}_2$  group with:  
 (a)  $-\text{OH}$  group (b)  $-\text{CH}_2$  group (c)  **$-\text{CO}$  group** (d)  $-\text{CH}_3$
- 125) The folding of the polypeptide chain in to a specific coiled structure is called:  
 (a) Primary structure of protein (b) **Secondary structure of protein**  
 (c) Tertiary structure of protein (d) Quaternary structure of protein
- 126) Secondary coiled structure of protein is held together by:  
 (a) Nitrogen bonding (b) Oxygen bonding (c) **Hydrogen bonding** (d) Sharing of electron pairs
- 127) Tertiary structure of a proteins means it's over all:  
 (a) Linear structure (b) Two dimensional structure  
 (c) **Three dimensional structure** (d) Four dimensional structure
- 128) Tertiary structure of protein is:  
 (a) Rod like shape (b) **Globe shape** (c) Rectangular shape (d) Linear chains of amino acid
- 129) Protein molecules composed of more than one polypeptides chains each with its own structure is:  
 (a) Primary structure (b) Secondary structure (c) Tertiary structure (d) **Quaternary structure**
- 130) Simple Proteins on hydrolysis yields only:  
 (a) Fatty acids (b) **Amino acids** (c) Sugars (d) Oils

- 131) Globulin, albumins are the examples of:  
 (a) **Simple protein** (b) Compound protein (c) Derived protein (d) Both a & c
- 132) Conjugated proteins are composed of simple proteins combined with:  
 (a) **Non-protein part** (b) Prosthetic group (c) Cofactor (d) All
- 133) Nucleoproteins, phosphoprotein, glycoprotein are the example of:  
 (a) Simple proteins (b) Conjugated protein (c) Compound protein (d) **Both b & c**
- 134) Derived proteins are derived from:  
 (a) Simple proteins (b) Compound proteins (c) conjugated proteins (d) **All**
- 135) Proteins are formed by the combination of \_\_\_\_\_ kinds of amino acid:  
 (a) **20** (b) 22 (c) 25 (d) 24
- 136) How many types of proteins has discovered:  
 (a) More than 200 (b) **More than 300** (c) More than 350 (d) More than 400
- 137) Numbers of standard amino acids is:  
 (a) 40 (b) 30 (c) **20** (d) 10
- 138) Amino acids which don't take part in protein synthesis but important for body are called:  
 (a) Standard amino acids (b) **Non-standard amino acids**  
 (c) Non-essential amino acids (d) Non-functional amino acids
- 139) Amino acids which are not produced by our body and must be taken from outside through diet:  
 (a) Standard amino acids (b) Non-standard amino acids  
 (c) Non-essential amino acids (d) **Essential amino acids**
- 140) The covalent bond by which enzymes are linked to gather is called:  
 (a) Hydrophobic bond (b) **Peptide bond** (c) Hydrogen bond (d) Phosphodiester bond
- 141) Proteins are polymers of:  
 (a) **Amino acid** (b) Fatty acids (c) Monosaccharide (d) Nitrogen bases
- 142) -COOH group of amino acid is called:  
 (a) Carbonyl group (b) **carboxylic group** (c) Amino group (d) Side chain
- 143) Number of amino acids which takes part in protein formation:  
 (a) 7 (b) 9 (c) 200 (d) **20**
- 144) Blood plasma contain proteins:  
 (a) **7%** (b) 9% (c) 12% (d) 20%
- 145) Enzymes are:  
 (a) **Proteins** (b) Biocatalysts (c) Specific in action (d) All
- 146) Proteins "actin" and "Myosin" are preset in:  
 (a) Milk (b) Egg white (c) **Muscles** (d) Blood
- 147) Blood plasma proteins exerts osmotic pressure:  
 (a) 20-30 mmHg (b) 15-35 mmHg (c) 30-40 mmHg (d) **25-30 mmHg**
- 148) Amino acids present sperm cells:  
 (a) Prolamins (b) **Protamine** (c) Globin (d) None
- 149) Iodinated amino acids synthesize hormones of:  
 (a) Salivary glands (b) Pancreas (c) **Thyroid glands** (d) Ovary
- 150) Which is not standard amino acid:  
 (a) Cysteine (b) Alanine (c) **Ornithine** (d) Lysine
- 151) Which amino acid is a part of pantothenic acid:  
 (a) Citrulline (b)  **$\beta$ -alanine** (c) Dihydroxyphenyl alanine (d) Tyrosine
- 152) How many amino acids are essential among the standard amino acids:  
 (a) 6 (b) 8 (c) 10 (d) **20**
- 153) Precursor of dopamine is:  
 (a)  $\gamma$ -amino-butyric acid (b) Pantothenic acid (c) Cholesterol (d) **Dihydroxy phenyl alanine**

# Nucleic Acid

## Chapter No.6

- 154) Nucleic are essential for the life of:  
 (a) Plants (b) Animals (c) Insects (d) **All**
- 155) The basic structural unit of nucleic acid is called:  
 (a) Amino acids (b) Fatty acids (c) Nitrogenous base (d) **Nucleotide**
- 156) How many types of amino acids are:  
 (a) **2** (b) 3 (c) 4 (d) 7

- 157) How many components of a nucleotide are:  
 (a) 2 (b) **3** (c) 4 (d) 7
- 158) Nucleotide is composed of a sugar molecule, nitrogenous base and:  
 (a) Sulphur group (b) Nitrogen group (c) **Phosphorus group** (d) Carboxyl group
- 159) Sugar molecule in the structure of a nucleotide is composed of:  
 (a) 4-carbons (b) **5-carbons** (c) 6-carbons (d) 7-carbons
- 160) In nucleic acid, nitrogenous bases are divided into \_\_\_\_\_ categories:  
 (a) **2** (b) 4 (c) 5 (d) 6
- 161) In DNA nitrogenous bases are:  
 (a) A, G, C, U (b) **A, G, C, T** (c) A, G, C, G (d) A, G, C, A
- 162) In RNA nitrogenous bases are:  
 (a) **A, G, C, U** (b) A, G, C, T (c) A, G, U, T (d) A, G, U, T
- 163) Nucleotides contain pentose sugar of:  
 (a) 3 types (b) **2 types** (c) 5 types (d) 4 types
- 164) DNA contains:  
 (a) Ribose sugar (b) **Deoxyribose sugar** (c) Glucose (d) None
- 165) RNA contain:  
 (a) **Ribose sugar** (b) Deoxyribose sugar (c) Both a & b (d) Starch
- 166) In nucleotide structure phosphate group is surrounded by:  
 (a) Two oxygen (b) Three oxygen (c) **Four oxygen** (d) Five oxygen
- 167) How many types of RNA:  
 (a) 2 (b) **3** (c) 4 (d) 5
- 168) Main function of RNA is:  
 (a) **Protein synthesis** (b) Lipid production (c) Digestion (d) None of these

# Hormones

## Chapter No.7

- 169) All physiological activities are regulated by two systems in body, Nervous system and:  
 (a) Cardiovascular system (b) Respiratory system (c) **Endocrine system** (d) Both a & c
- 170) In endocrine system hormones are transported to the target cells:  
 (a) Directly through ducts (b) **Directly through blood stream**  
 (c) By nerves (d) None of these
- 171) Chemical messenger are involved in:  
 (a) **Cell signaling** (b) Cell reproduction (c) Cell division (d) None of these
- 172) Classical hormones are secreted by:  
 (a) Exocrine glands (b) **Endocrine glands** (c) Other tissues (d) Kidneys
- 173) Which one is not the example of endocrine glands:  
 (a) Pituitary glands (b) Parathyroid glands (c) Adrenal glands (d) **Salivary glands**
- 174) Exocrine glands are transported to target cells through:  
 (a) Blood stream (b) Nerves (c) Respiratory system (d) **None of these**
- 175) Example of exocrine gland is:  
 (a) Sweat glands (b) Salivary glands (c) Pineal glands (d) **Both a & b**
- 176) On the base of site of production there are \_\_\_\_\_ types of hormones:  
 (a) 5 (b) **7** (c) 9 (d) 11
- 177) On the base of chemical nature there are \_\_\_\_\_ types of hormones:  
 (a) **3** (b) 5 (c) 8 (d) 6
- 178) Hormones which are derived from cholesterol are called:  
 (a) Proteins hormones (b) **Steroid hormones** (c) Tyrosine (d) Derived hormones
- 179) Hormonal receptors are present on cell membrane, cytoplasm and:  
 (a) Plasma membrane (b) Mitochondria (c) **Nucleus** (d) None
- 180) Growth hormone is composed of \_\_\_\_\_ amino acids:  
 (a) **191 amino acids** (b) 18 to 20 (c) 8 (d) 51
- 181) Growth hormone is secreted by:  
 (a) Posterior pituitary glands (b) **Anterior pituitary glands**  
 (c) Adrenal gland (d) Pancreas
- 182) The effect of growth hormone is:  
 (a) Catabolic (b) Degenerative (c) **Anabolic** (d) All



- 183) Growth hormone is said to be have:  
 (a) **Anti-insulin activity** (b) Anti-glucagon activity  
 (c) Anti-diuretic activity (d) None of these
- 184) Other name of anti diuretic hormone is:  
 (a) Vaso constrictive (b) Vasodilator (c) Anti coagulant (d) **Vasopressin**
- 185) ADH contains:  
 (a) **9 amino acids** (b) 5 amino acids (c) 18 amino acids (d) 15 amino acids
- 186) Vasopressin is responsible for:  
 (a) Body's regulation of pH (b) **Body's retention of water**  
 (c) Body's heat regulation (d) Both a & b
- 187) Main role of oxytocin is:  
 (a) Ejection of milk (b) Teeth development (c) Contraction of uterus (d) **Both a & c**
- 188) Oxytocin contains 8 amino acids and released from:  
 (a) Anterior pituitary glands (b) **Posterior pituitary glands**  
 (c) Prostate glands (d) Pineal glands
- 189) Insulin produced by the \_\_\_\_\_ cells of pancreas:  
 (a)  $\alpha$ -cells (b)  **$\beta$ -cells** (c)  $\gamma$ -cells (d)  $\delta$ -cells
- 190) Main role of insulin is on:  
 (a) Protein metabolism (b) Lipids metabolism (c) **Carbohydrate meta...** (d) None of these
- 191) Insulin contains:  
 (a) 50 amino acids (b) **51 amino acids** (c) 52 amino acids (d) 53 amino acids
- 192) Effect of insulin on blood glucose level is:  
 (a) Increase blood sugar (b) Keep the same level (c) **Decrease sugar level** (d) None of these
- 193) Testosterone is responsible for the development of:  
 (a) **Male sexual characteristics** (b) Female sexual characteristics  
 (c) Uterus (d) Nervous system
- 194) Testosterone has effect on:  
 (a) Bone (b) Sex characters (c) RBCs (d) **All of these**
- 195) Main action of estrogen hormone is to develop the:  
 (a) Sexual organs in males (b) **Sexual organs in female**  
 (c) Bones in children (d) None of these

# Enzymes

## Chapter No.8

- 196) Biological molecule that catalyze chemical reactions is called:  
 (a) Catalyst (b) Substrate (c) **Enzyme** (d) Vitamin
- 197) An agent which in minute amount increases the velocity of reaction without appearing in final product:  
 (a) Enzymes (b) **Catalyst** (c) Hormone (d) Substrate
- 198) Substrate on which enzyme acts to convert it into product:  
 (a) Enzyme (b) Co-factor (c) **Substrate** (d) Catalyst
- 199) Rate of reaction increase with:  
 (a) Increase of enzyme (b) Decrease of enzyme (c) Increase of temperature (d) **Both a & c**
- 200) At 35 °C to 40 °C enzymatic activity is:  
 (a) Very little (b) Inactive (c) **Maximum** (d) Destroy
- 201) Most of the enzymes are:  
 (a) Fats (b) Carbohydrates (c) Steroids (d) **Proteins**
- 202) In conjugated protein the protein part is called:  
 (a) Holo enzyme (b) **Apo enzyme** (c) Prosthetic group (d) None of these
- 203) In conjugated protein the non-protein part is:  
 (a) Co-enzyme (b) Apo enzyme (c) Prosthetic group (d) **Both a & c**
- 204) The complete structure of Apo enzyme and prosthetic group is:  
 (a) Co-enzyme (b) Holo enzyme (c) Both a & b (d) None of these
- 205) Classes of enzymes are:  
 (a) 4 (b) 8 (c) **6** (d) 10
- 206) Aerobic dehydrogenases is an example of:  
 (a) **Oxidoreductases** (b) Transferases (c) Hydrolases (d) Ligases
- 207) Enzymes which catalyze the transfer of a functional group from one molecule to another:

- (a) Hydrolases (b) Isomerases (c) **Transferases** (d) Lyases
- 208) Enzymes which catalyze the breakdown of molecules in the presence of water:  
 (a) Oxidoreductases (b) Ligases (c) Lyases (d) **Hydrolases**
- 209) Carbonic anhydrase and decarboxylase enzyme are:  
 (a) Isomerases (b) **Lyases** (c) Transferases (d) Oxidoreductases
- 210) Enzymes involve in joining together two substrates:  
 (a) Isomerases (b) Lyases (c) **Ligases** (d) Hydrolases
- 211) Rate of enzymatic reaction is directly proportional to:  
 (a) pH (b) Temperature (c) **Enzyme concentration** (d) Product
- 212) Excess of product may lower the enzymatic reaction by:  
 (a) Denaturing the enzyme (b) **Occupying the active sites**  
 (c) Increasing the temperature (d) None of these
- 213) Optimum temperature for enzymatic activity is:  
 (a) 30 °C to 45 °C (b) **35 °C to 40 °C** (c) 30 °C to 40 °C (d) 40 °C to 50 °C
- 214) At 50 °C the activity of enzyme is:  
 (a) Very little (b) **Inactive** (c) Maximum (d) Destroy
- 215) Trypsin works best in:  
 (a) Acidic pH (b) **Basic pH** (c) Both a & b (d) Neutral pH
- 216) Pepsin works best in:  
 (a) **Acidic pH** (b) Basic pH (c) Both a & b (d) Neutral pH
- 217) Chemical agents which inactivates the enzymes are called:  
 (a) Co-factor (b) Apo enzyme (c) **Inhibitor** (d) Activator
- 218) If optimum temperature and pH are not present then reaction is completed in:  
 (a) Short time (b) **Long time** (c) Expected time (d) None of these
- 219) Activation energy is \_\_\_\_\_ by addition of enzymes:  
 (a) **Decrease** (b) Increase (c) Fixed (d) Not required
- 220) Fructose is 132% sweeter than:  
 (a) Glucose (b) **Sucrose** (c) Maltose (d) Raffinose
- 221) L.Asparaginase enzyme is used for:  
 (a) Indigestion (b) Cardio tonic (c) Kidney problem (d) **Cancer treatment**
- 222) Alcoholic beverages are manufactured by enzyme:  
 (a) **Amylase** (b) Pepsin (c) Trypsin (d) Lactate dehydrogenase
- 223) "Lock and key model" explains the specific action of:  
 (a) Hormones (b) Catalysts (c) Vitamins (d) **Enzymes**

# Vitamins

## Chapter No.9

- 224) Naturally occurring , essential, organic constituents of the diet, which in minute amount aid in maintaining the normal metabolic activities of the tissues is called;  
 (a) Enzyme (b) Protein (c) Hormone (d) **Vitamin**
- 225) During growth and pregnancy the requirement of vitamins;  
 (a) **Increased** (b) Decreased (c) Remains constant (d) No requirement
- 226) Fat soluble vitamins are;  
 (a) 2 (b) **4** (c) 6 (d) 8
- 227) Vitamin C & B are soluble in;  
 (a) Fat (b) **Water** (c) Alcohol (d) None
- 228) Vitamin B1 and B3 are;  
 (a) Thermo labile (b) Water soluble (c) Fat soluble (d) **A&B**
- 229) Vitamin involved in blood clotting;  
 (a) B6 (b) C (c) D (d) **K**
- 230) Vitamin A is also called;  
 (a) Calciferol (b) Tocopherol (c) **Retinol** (d) Riboflavin
- 231) After oxidation Retinal becomes;  
 (a) **Retinoic acid** (b) Retinal (c) Retinoid (d) None
- 232) Vitamin involved in the maintenance of normal visual process of eye;

- (a) **A** (b) B (c) C (d) D
- 233) Dryness of cornea and mucous membranes of eye is called;  
(a) Nyctalopia (b) **Xerophthalmia** (c) Keratomalacia (d) None
- 234) Night blindness due to disturbance in the visual pathway is termed as;  
(a) **Nyctalopia** (b) Xerophthalmia (c) Keratomalacia (d) Conjunctivitis
- 235) Keratinization, degeneration & thickness of cornea is termed as ;  
(a) Glaucoma (b) Xerophthalmia (c) **Keratomalacia** (d) Cataract
- 236) Dry skin, cracking of lips, fragility, brittle nails, gingivitis, and hair loss are symptoms of toxicity of vitamin;  
(a) B6 (b) B12 (c) K (d) **A**
- 237) Ergosterol is obtained from;  
(a) **Vegetable origin** (b) Animal (c) Bacterial (d) Viral
- 238) The most activated form of vitamin D is;  
(a) Cholecalciferol (b) 25-Hydroxycholecalciferol  
(c) **1, 25-dihydroxycholecalciferol** (d) None
- 239) Activity of parathyroid gland increased in;  
(a) Hypercalacemia (b) **Hypocalcemia** (c) Low Hb level (d) Reduced phosphate absorption
- 240) Development of nodule at costochondral junction is called;  
(a) Kyphosis (b) Lordosis (c) **Rickety rosary** (d) None
- 241) Softness of skull bones is termed as;  
(a) Pigeons chest (b) Lordosis (c) Scolosis (d) **Carniotabes**
- 242) Rickets and osteomalacia are called by the deficiency of vitamin;  
(a) C (b) **D** (c) E (d) k
- 243) Softness and bending of bones of legs are main symptoms of;  
(a) Paralysis (b) Insomnia (c) Beriberi (d) **Rickets**
- 244) Vitamin which prevent the habitual abortion by keeping the layers of embryo healthy;  
(a) A (b) B12 (c) B6 (d) **E**
- 245) Vitamin K is also called;  
(a) Anti-sterility vit. (b) Anti-coagulant vit. (c) **Anti-Hemorrhagic vit.** (d) B & C
- 246) Deficiency of vitamin K results in;  
(a) Prolong bleeding (b) Decreased digestion (c) Increased clotting time (d) **A & C**
- 247) Major function of vitamin C is;  
(a) RBCs production (b) Acts as co-enzyme (c) **Wound repair** (d) DNA synthesis
- 248) Deficiency of vitamin C results in disease;  
(a) Beriberi (b) Rickets (c) **Scurvy** (d) Blindness
- 249) Vitamin B1 is also called;  
(a) Riboflavin (b) Niacin (c) **Thiamin** (d) Pyridoxine
- 250) Beriberi is treated by vitamin;  
(a) B5 (b) **B1** (c) B6 (d) B12
- 251) Pellagra is prevented by vitamin;  
(a) **Niacin** (b) Pantothenic acid (c) Riboflavin (d) Thiamine
- 252) Pantothenic acid is also called;  
(a) Vit.B2 (b) Vit.B3 (c) Vit.B6 (d) **Vit.B5**
- 253) Vitamin necessary for the synthesis of neurotransmitters;  
(a) B1 (b) B2 (c) **B6** (d) B3
- 254) We are unable to use fats, carbohydrates or proteins without;  
(a) Vit.B2 (b) Vit.B3 (c) **Vit.B5** (d) Vit.B6
- 255) Cracked and red lips, inflammation of lining of mouth and tongue, mouth ulcers, sore throat are symptoms of deficiency of vitamin;  
(a) **B5** (b) B1 (c) B6 (d) B2
- 256) Vitamin necessary for the production of hemoglobin;  
(a) Vit.B1 (b) Vit.B2 (c) Vit.B5 (d) **Vit.B6**
- 257) Thick, scaly pigmented rash on skin exposed to sunlight, swollen mouth, vomiting, diarrhea, headache, fatigue, are symptoms of;  
(a) Pellagra (b) **Scurvy** (c) Cyanocobalamin deficiency (d) Vit. E deficiency
- 258) Which vitamin is used to treat cervical cancer, migraine, acne, muscle cramps, burning feet syndrome and eye conditions;  
(a) Niacin (b) **Pantothenic acid** (c) Riboflavin (d) Thiamine
- 259) Biotin is also called;  
(a) Vitamin B12 (b) **Vit.B7** (c) Vit.B9 (d) Vit.6
- 260) Which vitamin activates amino acids for protein synthesis?  
(a) B7 (b) **B12** (c) Ascorbic acid (d) Vit.B9

- 261) Loose teeth, poor healing, low immunity are symptoms of;  
 (a) **Anemia** (b) Scurvy (c) Folic acid toxicity (d) None
- 262) Vitamin not found in plants;  
 (a) Vit.B12 (b) Ascorbic acid (c) Cyanocobalamin (d) **a & d**
- 263) Vitamin involved in the production of RBCs;  
 (a) **Vit.B12** (b) Vit.B9 (c) Vit.B6 (d) Vitamin C
- 264) Lassitude, anemia, dermatitis, fall of hairs, muscular pain, are symptoms of deficiency of Vitamin;  
 (a) B9 (b) **B12** (c) B7 (d) C

## Biotechnology

### Chapter No.10

- 265) The application of biological organism, systems or processes to manufacturing and service industries is called:  
 (a) Biochemistry (b) **Biotechnology** (c) Biology (d) Zoology
- 266) Biotechnology which deals with health care and medical fields is termed as:  
 (a) **Red biotechnology** (b) white biotechnology (c) Blue biotechnology (d) Green biotechnology
- 267) Biotechnology which deals with agriculture is termed as:  
 (a) Red biotechnology (b) white biotechnology (c) Blue biotechnology (d) **Green biotechnology**
- 268) Biotechnology deals with industries:  
 (a) Red biotechnology (b) **white biotechnology** (c) Blue biotechnology (d) Green biotechnology
- 269) Biotechnology deals with marine and fresh water:  
 (a) Red biotechnology (b) white biotechnology (c) **Blue biotechnology** (d) Green biotechnology
- 270) Modern biotechnology has its roots in two branches of sciences:  
 (a) Molecular biology & Biochemistry (b) Microbiology & Biochemistry  
 (c) Molecular biology & Zoology (d) **Molecular biology & Microbiology**
- 271) The process which involves the removal of faulty genes from the cell and addition of correct gene in its place is called:  
 (a) Transcription (b) **Genetic engineering** (c) Translation (d) None
- 272) Controlled use of biological agents such as microorganisms or cellular components for the benefit of mankind:  
 (a) Biology (b) Gene therapy (c) **Biotechnology** (d) Biochemistry

## Electrolytes of body

### Chapter No.11

- 273) A substance which donates  $H^+$  ion or proton is called:  
 (a) **Acid** (b) Base (c) Alkali (d) buffer solution
- 274) A condition in which there is increase in  $H^+$  concentration or decrease in pH is called:  
 (a) Alkalosis (b) **Acidosis** (c) Regulation (d) Acid-base balance
- 275) A substance which is  $H^+$  ion or proton acceptor called:  
 (a) Alkali (b) Acid (c) **Base** (d) Salt
- 276) A condition in which there is decrease in  $H^+$  concentration or an increase in pH:  
 (a) **Alkalosis** (b) Acidosis (c) Acid-base balance (d) Dehydrogenation
- 277) The mechanism which maintains the homeostatic pH value in body:  
 (a) hybridization (b) Antibody formation (c) **Acid base balance** (d) None