# CLASS XI BIO CH:9

## Set 3 – Biomolecules

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**1.** The reaction joining two monosaccharides to form a disaccharide is —
A) Hydrolysis
B) Condensation (dehydration)
C) Oxidation
D) Reduction

**2.** Hydrolysis of sucrose gives —
A) Glucose + Fructose
B) Glucose + Galactose
C) Fructose + Mannose
D) Galactose + Maltose

**3.** Which of the following is a ketose sugar?
A) Fructose
B) Glucose
C) Galactose
D) Ribose

**4.** Which sugar forms both furanose and pyranose rings?
A) Fructose
B) Glucose
C) Ribose
D) Galactose

**5.** The difference between α-glucose and β-glucose lies in —
A) The position of –OH group at $C_1$ carbon
B) The number of carbon atoms
C) The number of –OH groups
D) The molecular weight

**6.** Cellulose cannot be digested by humans because —
A) It has β(1→4) linkage
B) It has α(1→4) linkage
C) Humans lack amylase
D) It is a protein

**7.** Which of the following shows branching?
A) Amylopectin and glycogen
B) Cellulose
C) Amylose
D) All

**8.** The polysaccharide that forms the exoskeleton of arthropods is —
A) Chitin

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B) Cellulose
C) Glycogen
D) Starch

**9.** Which of the following is amphipathic in nature?
A) Phospholipid
B) Cholesterol
C) Wax
D) Glycolipid

**10.** Essential amino acids are those —
A) Not synthesized by the body
B) Synthesized by the body
C) Present in DNA
D) Formed during transcription

**11.** Which one of the following amino acids is basic?
A) Lysine
B) Aspartic acid
C) Glutamic acid
D) Serine

**12.** Which amino acid contains two amino groups?
A) Lysine
B) Glycine
C) Alanine
D) Valine

**13.** Proteins are amphoteric because —
A) They contain both acidic and basic groups
B) They dissolve in water
C) They are neutral molecules
D) They form micelles

**14.** Disulfide bonds in proteins are formed between —
A) Two cysteine residues
B) Two glycine residues
C) Cysteine and methionine
D) Tyrosine and phenylalanine

**15.** Collagen is a —
A) Fibrous protein
B) Globular protein
C) Conjugated protein
D) Derived protein

**16.** The enzyme pepsin acts in —
A) Acidic pH
B) Alkaline pH

C) Neutral pH
D) Variable pH

**17.** The enzyme trypsin acts in —
A) Alkaline pH
B) Acidic pH
C) Neutral pH
D) Low temperature

**18.** Enzyme urease was the first enzyme crystallized by —
A) Sumner
B) Buchner
C) Fischer
D) Koshland

**19.** Enzyme activity is maximum at —
A) Optimum temperature
B) Minimum temperature
C) Maximum substrate concentration
D) Minimum pH

**20.** Increasing substrate concentration beyond saturation point —
A) Does not increase reaction rate
B) Increases indefinitely
C) Decreases enzyme efficiency
D) Stops enzyme action

**21.** The ratio of enzyme to substrate binding strength is called —
A) Km (Michaelis constant)
B) Kcat
C) Vmax
D) Activation energy

**22.** The enzyme which transfers phosphate from ATP to glucose is —
A) Hexokinase
B) Glucokinase
C) Phosphatase
D) Dehydrogenase

**23.** Cofactors are important for enzyme function because they —
A) Help in substrate binding or catalysis
B) Denature enzyme
C) Block active site
D) Change enzyme sequence

**24.** Vitamins acting as coenzymes include —
A) Niacin and Riboflavin
B) Calcium and Iron
C) Magnesium and Zinc
D) Sodium and Potassium

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**25.** Coenzyme $NAD^+$ is derived from —
A) Niacin (Vitamin $B_3$)
B) Thiamine
C) Riboflavin
D) Biotin

**26.** The structure of DNA was proposed in —
A) 1953
B) 1944
C) 1962
D) 1970

**27.** The model of DNA was proposed by —
A) Watson and Crick
B) Hershey and Chase
C) Franklin and Wilkins
D) Meselson and Stahl

**28.** The two DNA strands are —
A) Antiparallel and complementary
B) Parallel
C) Identical
D) Unrelated

**29.** The base sequence of one strand of DNA is ATGCT; the complementary strand will be —
A) TACGA
B) TGACG
C) ATGCT
D) TGCAT

**30.** The distance between two adjacent base pairs in DNA is —
A) 3.4 Å
B) 34 Å
C) 20 Å
D) 10 Å

**31.** The total length of DNA in a human diploid cell is approximately —
A) 2 meters
B) 2 cm
C) 2 mm
D) 2 nm

**32.** Which of the following is not a component of nucleotide?
A) Amino acid
B) Sugar
C) Base
D) Phosphate

**33.** The bond linking nucleotides in DNA is —
A) Phosphodiester bond

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B) Peptide bond
C) Hydrogen bond
D) Glycosidic bond

**34.** In DNA, adenine pairs with thymine by —
A) Two hydrogen bonds
B) Three hydrogen bonds
C) One hydrogen bond
D) Peptide bond

**35.** In RNA, adenine pairs with —
A) Uracil
B) Thymine
C) Cytosine
D) Guanine

**36.** Which of the following has maximum structural diversity?
A) Proteins
B) Lipids
C) Carbohydrates
D) Nucleic acids

**37.** The enzyme responsible for joining DNA fragments is —
A) DNA ligase
B) DNA polymerase
C) Helicase
D) Topoisomerase

**38.** The enzyme responsible for unwinding DNA is —
A) Helicase
B) Ligase
C) Polymerase
D) Primase

**39.** The first macromolecule formed on earth was likely —
A) RNA
B) DNA
C) Protein
D) Lipid

**40.** In Watson–Crick model of DNA, the helix is —
A) Right-handed
B) Left-handed
C) Irregular
D) Antiparallel only

**41.** The most abundant RNA in cells is —
A) rRNA
B) mRNA

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C) tRNA
D) snRNA

**42.** The smallest RNA is —
A) tRNA
B) rRNA
C) mRNA
D) hnRNA

**43.** Enzymes belong to which class of biomolecules?
A) Proteins
B) Carbohydrates
C) Lipids
D) Nucleic acids

**44.** Which of the following enzymes hydrolyzes starch?
A) Amylase
B) Lipase
C) Protease
D) Maltase

**45.** DNA and RNA differ in one base —
A) Thymine in DNA, Uracil in RNA
B) Adenine in DNA, Cytosine in RNA
C) Guanine in DNA, Adenine in RNA
D) None

**46.** In DNA, sugar and phosphate form —
A) Backbone
B) Base sequence
C) Coding region
D) Gene

**47.** The secondary structure of proteins is due to —
A) Hydrogen bonds
B) Peptide bonds
C) Ionic bonds
D) Disulfide bonds

**48.** Enzyme catalysis follows —
A) Lock and key mechanism
B) Induced fit model
C) Both A and B
D) None

**49.** RNA acts as an enzyme in —
A) Ribozymes
B) Ribosomes only
C) DNA replication
D) Translation

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**50.** The process of conversion of protein into amino acids is —
A) Hydrolysis
B) Condensation
C) Polymerization
D) Denaturation

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## ✅ Answer Key (Set 3 – Biomolecules)

1-B, 2-A, 3-A, 4-A, 5-A, 6-A, 7-A, 8-A, 9-A, 10-A,
11-A, 12-A, 13-A, 14-A, 15-A, 16-A, 17-A, 18-A, 19-A, 20-A,
21-A, 22-A, 23-A, 24-A, 25-A, 26-A, 27-A, 28-A, 29-A, 30-A,
31-A, 32-A, 33-A, 34-A, 35-A, 36-A, 37-A, 38-A, 39-A, 40-A,
41-A, 42-A, 43-A, 44-A, 45-A, 46-A, 47-A, 48-C, 49-A, 50-A.