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Set 2 – Biomolecules

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1. Monosaccharides are classified based on —
A) Number of carbon atoms and functional group
B) Presence of nitrogen
C) Number of oxygen atoms
D) Type of peptide bond

2. Which of the following is a reducing sugar?
A) Sucrose
B) Maltose
C) Cellulose
D) Starch

3. Which sugar is known as “blood sugar”?
A) Glucose
B) Fructose
C) Galactose
D) Sucrose

4. Fructose is a —
A) Hexose ketose
B) Hexose aldose
C) Pentose aldose
D) Triose

5. Ribose is a component of —
A) RNA only
B) DNA only
C) Both RNA and DNA
D) None

6. Which carbohydrate gives positive Fehling’s test?
A) Glucose
B) Sucrose
C) Cellulose
D) Starch

7. Which of the following is a homopolysaccharide?
A) Glycogen
B) Chitin
C) Hyaluronic acid
D) Heparin

8. Which of the following is a heteropolysaccharide?
A) Cellulose

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B) Chitin
C) Hyaluronic acid
D) Starch

9. Cellulose and starch differ in —
A) Type of glycosidic bond
B) Number of glucose units
C) Type of glucose
D) Monomer molecule

10. The glycosidic bond in maltose is —
A) α(1→4)
B) β(1→4)
C) α(1→6)
D) β(1→6)

11. Glycogen is a branched polymer of —
A) α-D-glucose
B) β-D-glucose
C) Fructose
D) Ribose

12. The bond between glycerol and fatty acid in triglycerides is —
A) Ester bond
B) Peptide bond
C) Hydrogen bond
D) Glycosidic bond

13. Which of the following is an unsaturated fatty acid?
A) Palmitic acid
B) Stearic acid
C) Oleic acid
D) Lauric acid

14. Which of the following is not a lipid?
A) Cholesterol
B) Lecithin
C) Glycogen
D) Wax

15. Which lipid forms the main structural component of plasma membrane?
A) Phospholipid
B) Steroid
C) Triglyceride
D) Wax

16. Cholesterol is important for —
A) Membrane fluidity
B) ATP synthesis

C) Hormone transport
D) Enzyme activation

17. The simplest amino acid is —
A) Glycine
B) Alanine
C) Valine
D) Serine

18. Amino acids exist as zwitterions because —
A) They have both acidic and basic groups
B) They are neutral molecules
C) They contain nitrogen
D) They dissolve in water

19. Which amino acid contains a sulfur atom?
A) Methionine
B) Alanine
C) Glycine
D) Serine

20. The covalent bond between two amino acids is called —
A) Peptide bond
B) Glycosidic bond
C) Hydrogen bond
D) Disulfide bond

21. The peptide bond is formed between —
A) –COOH of one and $–NH_2$ of another amino acid
B) –COOH of both amino acids
C) $–NH_2$ of both amino acids
D) None

22. Denaturation of proteins involves —
A) Loss of secondary and tertiary structures
B) Breaking of peptide bonds
C) Formation of new chains
D) Loss of primary structure

23. Enzymes are highly specific because —
A) Their active site fits a particular substrate
B) They are large molecules
C) They are made of protein
D) They are soluble in water

24. The part of enzyme where substrate binds is —
A) Active site
B) Binding site
C) Receptor site
D) Reaction site

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25. Coenzymes are —
A) Organic non-protein parts of enzymes
B) Inorganic ions
C) Metal cofactors
D) None

26. Metal ions like Mg^{2+}, Zn^{2+}, Fe^{2+} act as —
A) Cofactors
B) Coenzymes
C) Apoenzymes
D) Inhibitors

27. Enzyme and substrate combine to form —
A) Enzyme-substrate complex
B) Holoenzyme
C) Product
D) Coenzyme

28. Enzyme catalysis occurs at the —
A) Active site
B) Coenzyme site
C) Ribosomal site
D) ATP site

29. Enzymes act as catalysts because they —
A) Lower activation energy
B) Increase temperature
C) Change pH
D) Change reaction equilibrium

30. The rate of enzyme reaction is affected by —
A) Temperature
B) pH
C) Substrate concentration
D) All of these

31. The inactive enzyme without cofactor is called —
A) Apoenzyme
B) Holoenzyme
C) Coenzyme
D) Isoenzyme

32. An enzyme with cofactor is called —
A) Holoenzyme
B) Apoenzyme
C) Cofactor
D) Isoenzyme

33. The lock and key hypothesis was proposed by —
A) Emil Fischer

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B) Michaelis and Menten
C) Watson and Crick
D) Jacob and Monod

34. The induced fit model was proposed by —
A) Koshland
B) Fischer
C) Crick
D) Pauling

35. Inhibitors reduce enzyme activity by —
A) Binding to enzyme
B) Increasing activation energy
C) Destroying enzyme
D) Lowering substrate level

36. Competitive inhibitors resemble —
A) Substrate
B) Product
C) Enzyme
D) Cofactor

37. Non-competitive inhibitors —
A) Bind to site other than active site
B) Compete with substrate
C) Increase enzyme activity
D) Bind to substrate

38. DNA differs from RNA in —
A) Sugar and base composition
B) Length
C) Function
D) All of these

39. RNA acts as a genetic material in —
A) Some viruses
B) Bacteria
C) Plants
D) Fungi

40. The purine bases are —
A) Adenine and Guanine
B) Cytosine and Thymine
C) Uracil and Cytosine
D) Thymine and Uracil

41. The pyrimidine bases are —
A) Thymine, Cytosine, Uracil
B) Adenine and Guanine

C) Cytosine and Guanine
D) Thymine and Adenine

42. The two strands of DNA are held together by —
A) Hydrogen bonds
B) Peptide bonds
C) Phosphodiester bonds
D) Ionic bonds

43. The number of hydrogen bonds between A–T pair is —
A) Two
B) Three
C) One
D) Four

44. The number of hydrogen bonds between G–C pair is —
A) Three
B) Two
C) One
D) Four

45. The enzyme that catalyzes DNA replication is —
A) DNA polymerase
B) RNA polymerase
C) Ligase
D) Helicase

46. DNA replication is —
A) Semi-conservative
B) Conservative
C) Dispersive
D) Non-template

47. The main energy currency of cell is —
A) ATP
B) ADP
C) GTP
D) AMP

48. The bond between phosphate groups in ATP is —
A) High-energy bond
B) Peptide bond
C) Hydrogen bond
D) Glycosidic bond

49. The energy released by one ATP molecule is approximately —
A) 7.3 kcal/mol
B) 2.3 kcal/mol
C) 10 kcal/mol
D) 1 kcal/mol

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50. The scientist who discovered the structure of DNA was —
A) Watson and Crick
B) Miescher
C) Hershey and Chase
D) Avery

✅ Answer Key (Set 2 – Biomolecules)

1-A, 2-B, 3-A, 4-A, 5-A, 6-A, 7-A, 8-C, 9-A, 10-A,
11-A, 12-A, 13-C, 14-C, 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-D,
31-A, 32-A, 33-A, 34-A, 35-A, 36-A, 37-A, 38-D, 39-A, 40-A,
41-A, 42-A, 43-A, 44-A, 45-A, 46-A, 47-A, 48-A, 49-A, 50-A.