Answer Key with Explanations

1. c) Amino acid - Nucleotides consist of a phosphate group, a pentose sugar, and a nitrogenous base.

2. a) RNA and DNA - These are the two types of nucleic acids responsible for genetic information.

3. d) Uracil - Uracil is found in RNA instead of thymine in DNA.

4. c) Storage of genetic information - DNA stores the genetic blueprint of an organism.

5. b) Protein synthesis - RNA is mainly involved in the process of protein synthesis.

6. b) Vitamin K - Essential for blood clotting.

7. b) Rickets - Vitamin D deficiency leads to weak bones.

8. b) Vitamin E - A powerful antioxidant that protects cells from damage.

9. b) Vitamin A - Important for good vision.

10. c) Vitamin A - Fat-soluble vitamins include A, D, E, and K.

11. c) Cholesterol - Precursor for steroid hormones.

12. b) Amino acids - Proteins are composed of amino acids.

13. c) Energy storage (primary function) - Proteins primarily function in structure and enzymes, not energy storage.

14. b) Contains only single bonds between carbon atoms - Saturated fatty acids have no double bonds.

15. b) Amino acid - The basic building block of proteins.

16. d) Protein - Not a carbohydrate.

17. c) Monosaccharide - Simple sugars are the basic unit of carbohydrates.

18. d) Simple carbohydrates - Provide quick energy.

19. c) Polysaccharide - Starch is a complex carbohydrate.

20. c) Starch - Storage polysaccharide in plants.
21. c) Carbohydrates - The body's primary energy source.

22. c) Brown rice - Rich in complex carbohydrates.

23. c) Monosaccharide - The simplest carbohydrate unit.

24. c) Glycogen - Storage polysaccharide in animals.

25. d) Oils - Oils are fats, not carbohydrates.

26. d) Annealing - Not a method for ore concentration.

27. a) Calcination - Removes volatile impurities.

28. c) Aluminium - Extracted by electrolysis.

29. b) Remove impurities like silica - Flux helps remove non-metallic impurities.

30. b) Electrolytic refining - Used to purify copper.

31. c) Nitrogenous fertilizer - Urea is a nitrogen-based fertilizer.

32. c) $CO(NH_2)_2$ - Chemical formula for urea.

33. c) Nitrogen - Urea supplies nitrogen to plants.

34. c) Insoluble in organic solvents - Urea dissolves in water, not in organic solvents.

35. c) Ammonia and carbon dioxide - Urea is synthesized from these.

36. C_nH_2n - Correct general formula for alkenes.

37. c) Glycol - Oxidation of alkenes leads to glycols.

38. d) H_2SO_4 - Sulfuric acid dehydrates alcohols.

39. a) C_5H_{12} - A saturated hydrocarbon.

40. a) Nylon - Synthetic fiber.

41. d) C_4H_6 - Butyne molecular formula.

42. b) Alkane - Alkanes undergo substitution reactions.

43. d) Dehydration - Alkenes are formed from alcohol dehydration.

44. b) Na/HCl - Used for alkyl halide reduction.

45. d) Alkenes - Also called olefins.

46. c) C_nH_2n+2 - General formula for alkanes.

47. b) Methane - Major component of marsh gas.

48. c) C_9H_{18} - Next homologous series member.

49. b) Ethene - Used in mustard gas preparation.

50. d) Sucrose - A disaccharide.

51. a) Starch - Tasteless carbohydrate.

52. c) Maltose - A reducing sugar.

53. b) Vitamins - Used to control bleeding.

54. a) Glucose - Main product of photosynthesis.

55. d) Sucrose - Most common oligosaccharide.

56. c) $C_{16}H_3COOH$ - Palmitic acid formula.

57. c) Vitamin K - Fat-soluble vitamin.

58. d) K - A fat-soluble vitamin.

59. b) C_n(H_2O)_n - General formula for carbohydrates.

60. c) Vitamin A - Deficiency causes night blindness.

61. d) Sucrose - Glucose and fructose combine to form sucrose.

62. a) $C_{17}H_3COOH$ - Stearic acid formula.

63. b) Fatty acids - Building blocks of lipids.

64. c) Lignite - Coal with 70% carbon.

65. d) Anthracite - Coal with 90% carbon.

66. b) Methane - Major natural gas component.

67. b) Carboxylic acid - Functional group COOH.

68. a) Pyridine - Example of a heterocyclic compound.

69. b) C_2H_5 - Ethyl radical formula.

70. c) Catenation - Carbon's ability to form chains.

71. c) Coal tar - Pitch is derived from coal tar.

72. c) 50% - Approximate carbon content in wood.

73. d) Wohler - Synthesized urea in the lab.

74. d) Biogas - Not a fossil fuel.

75. b) $C_{10}H_{22}$ - Decane molecular formula.

76. d) 85% - Methane content in natural gas.

77. c) 70% - Carbon content in peat.

78. a) C_5H_{14} - Pentane formula.

79. b) Acidic - Solution with high H+ concentration.

80. c) 7 - pH of pure water.

81. a) 78% - Nitrogen percentage in air.

82. c) Sucrose - Non-reducing sugar.

83. c) Amphoteric substances - React with both acids and bases.

84. b) Lewis base - Donates electrons in covalent bonds.

85. a) Acid - Proton acceptor.

86. b) Starch - Polysaccharide.

87. d) All of the above - Metal carbonate + acid reaction.

88. b) Food - Preservatives prevent spoilage.

89. a) HNO_3 - An acid.

90. a) Neutralization - Acid + base reaction forming salt and water.

91. b) Insoluble calcium and magnesium salts - Cause radiator blockages.

92. b) Heat - UV radiation absorption by ozone

93. a) 80 km - Thermosphere starts here.

94. c) Mesosphere - Protects Earth from meteoroids.

95. b) 5 layers - Atmosphere structure.

96. d) -70°C to 0°C - Stratosphere temperature range.

97. a) Vegetable ghee - Hydrogenation of oils.

98. b) Thermal insulator - Fat layer under the skin.

99. a) Animal products - Source of cholesterol.

100. c) Fats and oils - Lipid components.