Unit 1

1. Branches and areas of study under biology
2. Issues pertaining to biology
3. Nature and Organizational level of living world
4. Characteristic features of organisms
5. Hierarchical levels of organization in living things

Unit 2

1. Elemental composition of living matter
2. Chemical properties of water important in life
   1. What is the main reason for that to maintain the life on earth from some properties of water?
      1. Water molecule is small
      2. Water molecule is a polar molecule
      3. Angular molecule
      4. Production of H bonds with other water molecules
      5. Ionization ability
3. Physical properties of water important in life
4. Basic characteristics of carbohydrates
5. Monosaccharides
6. Disaccharides
7. Polysaccharides
8. Main polysaccharides, their monomeric units and functions
9. Functions of carbohydrates
10. Basic characteristics of lipids
11. Fats
12. Phospholipids
13. Functions of lipids
14. Characteristics of amino acids
15. Levels of protein structures
16. Denaturation of proteins
17. Functions of proteins
18. Nucleotides
19. Formation of nucleic acids
20. Structure of DNA
21. Functions of DNA
22. Structure of RNA
23. Differences between DNA and RNA
24. Nucleotides found in organisms other than nucleic acids
25. Compound light microscope
26. Electron microscope basics
27. Transmission electron microscope
28. Scanning electron microscope
29. Differences between light microscope and electron microscope
30. Cell theory
31. Organization of cells
32. Differences between prokaryotic and eukaryotic cells
33. Plasma membrane
34. Nucleus
35. Ribosomes
36. RER
37. SER
38. Golgi apparatus
39. Lysosome
40. Peroxisome
41. Mitochondria
42. Chloroplast
43. Cytoskeleton
44. Differences between microtubule, microfilaments and intermediate filaments
45. Cilia and flagella
46. Centrioles
47. Central vacuole
48. Cell wall
49. Cell junctions
50. Plasmodesmata
51. Extracellular matrix
52. Eukaryotic cell cycle
53. Meiosis
54. Tumor and cancers
55. Galls in plants
56. Energy relationship in metabolic activities
57. ATP
    1. Which of the following statements is incorrect regarding ATP.
       1. ATP is a mobile molecule
       2. The ATP hydrolysis reaction release energy.
       3. ATP can be produced within living cells within a long period of life.
       4. ATP molecule contains a ribanudeotide molecule.
       5. ATP can also be produced by sunlight.
58. General characteristics of enzymes
59. Mechanisms of enzyme action
60. Cofactors
61. Factors affecting rate of enzymatic reactions
62. Enzyme inhibitors
63. Allosteric regulation in enzymes
64. Global importance of photosynthesis
65. Photosynthetic pigments
66. Photosynthetic spectrum
67. Excitation of chlorophyll
68. Photosystems
69. Light reaction
70. Calvin cycle
71. Photorespiration
72. C4 pathway of photosynthesis
73. Importance of C4 pathway
74. Comparison of C3 and C4
75. Factors affecting photosynthesis
76. Aerobic and anaerobic respiration
77. Glycolysis
78. Oxidation of pyruvates
79. Citric acid cycle
80. Electron transport chain
81. Ethyl alcohol fermentation
82. Lactic acid fermentation
83. Respiratory quotient
84. Use of protein, carbohydrates and lipids in respiration

Unit 3

1. Condition of earth before life
2. Biochemical evolution
3. Origin of protocell
4. Origin of photosynthetic organisms
5. Origin of first eukaryote
6. Diversification of eukaryote
7. Geological eons and eras of evolution
8. Theory of Lamarck
9. Darwin – Wallace theory
10. Artificial classification
11. Natural classification
12. History of classification
13. Present system of classification and its basis
14. Hierarchy of taxa from Domains to Species
15. Binomial nomenclature
16. International codes of Binomial nomenclature
17. Use of Keys
18. Key characteristics of domain Bacteria
19. Key characteristics of Cyanobacteria
20. Key characteristics of Domain Archaea
21. Key characteristics of Domain Eukarya
22. A comparison of three domains of life
23. The diversity of organisms within the kingdom Protista
24. Evolutionary relationships among major groups of plants
25. Diversification of Kingdom Plantae
26. Non-vascular plants
27. Characteristic features of phylum Bryophyta
28. Seedless vascular plants
29. Significant features of seedless vascular plants
30. Phylum Lycophyta
31. Phylum Pterophyta
32. Seed plants
33. Significant features of seed plants
34. Phylum Gnetophyta
35. Phylum Cycadophyta
36. Phylum Coniferophyta
37. Phylum Anthophyta
38. Comparison of monocots and dicots
39. Characteristic features of Kingdom Fungi
40. Phylum Chytridiomycota
41. Phylum Zygomycota
42. Phylum Ascomycota
43. Phylum Basidiomycota
44. Characteristic features of Kingdom Animalia
45. Phylum Cnidaria
46. Phylum Platyhelminthes
47. Phylum nematode
48. Phylum Annelida
49. Phylum Mollusca
50. Phylum Arthropoda
51. Phylum Echinodermata
52. Phylum Chordata
53. Class Chondrichthyes
54. Class Osteichthyes
55. Class Amphidia
56. Class Reptilia
57. Class Aves
58. Class Mammalia

Unit 4