BOTANY

CELL - BASIC UNIT OF LIFE

1) Difference b/w prokaryotic cells & Eukaryotic cells.
2) A cell in an adult organism can be viewed as a steady-state system why?
3) Difference b/w Plant cell & Animal Cell
4) Define Cell cycle
5) Write a short note on the principle that "form follows function".
6) State the importance of Programmed cell Death (PCD)
7) Mention the important feature of cell principle (or) cell doctrine.
8) Name some exceptions to cell Theory.
9) State cell theory as proposed by schleiden and schwann.
10) Write a brief note on Incipient nucleus or nucleoid.
11) Differentiate Gram positive bacteria & Gram negative bacteria.
12) List out the chemical composition of cell wall.
13) Define Plasmid.
14) What do you meant by Polyribosomes (or) Polysomes.
15) Write a short note on flagella.
16) What are the shapes & types of flagella?
17) Are cyanobacteria included in Eubacteria. Why?
18) Define svedberg unit
19) Differentiate TEM and SEM.
20) What are the components of cell wall?
21) Define the term intussusception
22) What are Microfibrils?
23) Briefly explain about plasmodesmata
24) List out the various types of thickenings in cell wall
25) What are Pits? Mention their types.
26) What is desmotuble?
27) Discuss the functions of Cell wall.
28) What are micellae?
29) Explain Unit membrance
30) Differentiate Peripheral proteins & Integral protein
31) Discuss the functions of plasma membrane.
32) Mention the factors on which permeability of a cell membrane depends.
33) How substances are transported across the cell membrane?
34) Difference between Active transport & passive transport of substance in cell membrane.

35) Mention the two forces by which the movement of ions across selectively permeable membrane is governed
36) Define Phagocytosis
37) Write a short note on Pinocytosis
38) Write Exocytosis
39) What are the types of Endoplasmic reticulum?
40) Define Cisternae
41) Discuss the functions of Nucleus
42) Mitochondria - The power of the cell Explain
43) Why mitochondria is regarded as semi-autonomous organelles
44) What are plastids? Mention its types.
45) Differentiate 70S type Ribosome Vs 80S type Ribosome
46) Name the three kinds of cell division.
47) Define cell division
48) What are the stages of prophase I of Meisois
49) Write a short note on phragmoplast /How phragmoplast is formed?
50) Mention few significance of Mitosis
51) What is synpasis?
52) Define crossing over
53) Mention few significane of Meiosis
54) Write a short note on Reductional Cell Division.

CLASSIFICATION OF LIVING ORGANISM

1) Define Taxonomy
2) Write a short note on systematics.
3) Explain the Need for classification.
4) Write a note on species & its classification
5) Give a brief note on Two kingdom system of classification.
6) What are the Limitations of Two Kingdom system of classification
7) Define Archaebacteria
8) List out the living and nonliving characteristics of views.
9) What is Contagium Vivum Fluidum?
10) What are the methods to determine the size of viruses?
11) What are the different shapes of viruses?
12) Define Virion
13) Define Viroids
14) Define Prions
15) Give some examples of plant viral diseases.

16) Differentiate Mycophages, Cyanophages and Bacteriophages.
17) Give some examples of Animal viral diseases.
18) Describe the life cycle of phages.
19) Write a brief not on stages of virulent phage.
20) Define Lysogenic bacterium.
21) Draw the structure of HIV
22) Define Simian virus
23) Write a note on SARS.
24) What are interferons.
25) Define Bacteriology.
26) Discuss the classification of bacteria based on the shape & arrangement.
27) What are the two types of arrangement of flagellar arrangements in Bacteria.
28) Differentiates positive chemotaxis and negative chemotaxis
29) Mention few uses of bacteria.
30) Bacteria – a biological Scavenger. Why?
31) What is meant by Retting of Fibres?
32) Define Mycology
33) What are the distinguishing features of fungi.
34) Define biotrophs and necrotrophs?
35) Define haustoria.
36) Mention the types of symbiotic union of Fungi.
37) Define basidiomycetes.
38) What is meant by thallus?
39) Write a note on asocarps and its types.
40) Why are Deuteromycotina called as Fungi imperfecti"?
41) List out the uses of Fungi.
42) Name some fungal diseases of plants.
43) Write few examples of edible fungi.
44) Define phycology.
45) Define Benthic
46) What are Lichens?
47) Write a short note on types of photosynthetic pigments in algae.
48) Define pyrenoids.
49) What are the two types of flagellar arrangements in algae.
50) Give some examples of algae, which lacks flagella.
51) Differentiate Isokont and Heterokont
52) List out the uses of algae.
53) Define Agar-agar

54) What do you meant by Diatomite
55) Define single cell protein (SCP)
56) Define Eutrophication.
57) What are the harmful effects of Algae?
58) Define species
59) Define metazoans. Mention their characteristics.
60) What are the demerits of five kingdom system of classification.
61) What is meant by phylogenetic classification.
62) What are called amphibians of plant kingdom?
63) Mention some features of Bryophytes.
64) The gametoptyte generation is dominant in Bryophyte. Explain?
65) Differentiate class Hepaticae, class Anthocerote, class Musci.
66) List out the uses of bryophytes.
67) What is peat?
68) What are the salient features of pteridophytes.
69) Differentiate heterosporous and homosporous.
70) Mention any three uses of pteridophytes.
71) Difference between Gymnospermae and Angiospermae
72) What are the uses of Gymnosperms.
73) Name the two classes of Gymnospermae
74) What are the aims of biosystematics.
75) Define Ecotype, Ecospecies, cenospecies
76) Write a short note on Herbaria and its uses
77) List out some of the salient features of ICBN
78) Write a brief note on type specimen
79) Binomial nomenclature of a species is binary. Explain with an example
80) Write the Bentham & Hooker's Classification of seeded plants.
81) Mention few merits & demerits of Bentham & Hooker's classification of plants.
82) Write down the Systematic position of
    i) Malavaceae
    ii) Solanaceae
    iii) Euphorbiaceae
    iv) Musaceae
83) Write the floral formula of
    i) Malavaceae
    ii) Solanaceae
    iii) Euphorbiaceae
    iv) Musaceae
84) Write any two economic importance of

i) Malavaceae
ii) Solanaceae
iii) Euphorbiaceae
iv) Musaceae

NUTRITION

1) What are photo-autrophs?
2) Difference between photoautotrophic bacteria, Chemoautotrophic bacteria and Hetrotrophic bacteria.
3) Describe the nutrition mode of fungi.
4) Define Myxotrophic.
5) Define Insectivorous plants with example
6) Write a short note on chemosynthesis.
7) Mention the mode of nutrition of Kingdom plantae & Animalia
8) Mention the criteria for essentiality of Mineral Element.
9) What are the deficiency symptoms of macro nutrients and micronutrients.
10) Write a short notes on contact exchange theory.
11) What do you mean by Donnan Equilibrium.
12) What are the stages of nitrogen cycle.
13) Define De-nitrification
14) Define Nitrification
15) What do you mean by nitrate assimilation.
16) What is called Ammonification.
17) Difference between symbiotic Nitrogen Fixation & Non-Symbiotic Nitrogen Fixation.
18) Difference between Cyclic Photophosphorylation and Noncyclic photophosphorylation.
19) Define Z-scheme.
20) Write a short note on photolysis of water

TRANSPIRATION

1) Write a short note on diffusion
2) Define osmosis
3) List out the important role of osmosis.
4) What is meant by facilitated transport.
5) Write a short note on Brownian movement.
6) What do you mean by Tyndall effect.

7) What are the properties of protoplasm.
8) Define Diffusion pressure deficit.
9) What is called Turgor pressure.
10) Difference between Diffusion pressure deficit (DPD) & Water Potential.
11) What are the factors affecting the rate of Transpiration.
12) What are the types of transpiration.
13) Define Root - Shoot Ratio.
14) Define the structure of stomata.
15) How starch is converted into sugar. [Starch - Sugar Interconversion theory]
16) Write a short note on mechanism of stomatal opening and closing.
17) Define Hydroponics.
18) What are the advantages & Disadvantages of hydroponics.

RESPIRATION

1) Difference between Aerobic bacteria and Anaerobic bacteria
2) Difference between Capnophilic bacteraia vs Facultative anerobes bacteria.
3) Define Endospores
4) Difference between photorespiration and dark respiration
5) Define oxidative phosphorylation
6) Write the significance of pentose phosphate pathway.
7) Define respiratory quotient
8) What is compensation point?
9) What is fermentation?
10) Write a short note on phases of growth.
11) Define (i) Auxins, (ii) Gibberelins, (ii) Cytokinin, (iv) Ethyiene (v) Abscisic acid.
12) What are growth inhibitors?
13) Define Critical period
14) What do you mean by vernalization
15) What are the advantages and disadvantages of vernalization.

REPRODUCTION

1) How gene recombination occur in bacteria?
2) What are the methods of reproduction in algae?

3) Define Isogamy
4) Discuss about Heterogamy and its types.
5) Differentiate Anisogamy and Oogamy
6) What is grafting?
7) What is a bulbil?
8) What are the advantages of vegetative propagation?
9) Difference between stolons and offset.
10) Write a short note on micro propagaion.
11) Define totipotency
12) What are the types of self pollination
13) Mention few advantages of self pollination & Cross pollination
14) What are the agents of pollination & its example
15) Difference between self pollination & cross pollination
16) Write a short notes on double fertilisation.
17) What do you mean by Triple fusion.
18) How the following parts are changed after fertilization.
    i) Ovary wall
    ii) Synergids
    iii) Funicle
    iv) Micropyle
    v) Antipodal cells
19) Difference between hydocotyl & epicotyl.
20) What are the internal and external factors for seed germination
21) Write a short note on vivipary.
22) Define Senescence in plants.
23) What is the importance of Abcission?
24) What are the types of Senescence?
25) What is called abscission zone?

PLANT ANATOMY

1. What are the characteristics of Meristematic tissues?
2. Define Meristematic tissue.
3. How meristem is classified?
4. What are the types of simple tissue.
5. Differentiate parenchyma, Collenchyma, Sclerenchyma.
6. Write a short note on fibres.
7. What are the four kinds of cells in Xylem?
8. What are the four kinds of cells in phloem?

9. Define companion cells.
10. What are the functions of Epidermal tissue system.
11. List out the various types of vascular bundles.
12. How ground tissue system is differentiated.
13. What are the types of parenchyma and Collenchyma.
14. Difference between monocot and dicot root.
15. Difference between manocot and dicot stem.
16. Define medulla.
17. Differentiate hypodermis from Endodermis.
18. What is Dorsiventral leaf? Give an example.
19. What is an Isobilateral leaf? Give an example.
20. What are the medium used in plant tissue culture.
21. How sterilization is done in plant tissue culture.
22. What is morphogenesis.
23. What are the applications of plant tissue culture.
24. How protoplast is isolated?
25. Name some organisms used for SCP.
26. What are the uses of SCP?
27. What is PEG?
28. What are Edaphic factors?
29. Define Mycorrhizae.
30. Difference between Epiphytes and Epizoics
31. Where can you find Lianes?
32. What is Competitions.
33. Write a short note on warming's classification of plants.
34. What are the regions of root?
35. Explain the types of Root System?
36. What are the primary and secondary functions of root
37. Describe the modification of Tap root system.
38. What are Pneumatophores?
39. Differentiate stilt roots and Prop roots.
40. Define Epiphytic roots
41. Write short note on assimilatory roots.
42. List out the classification of storage roots.
43. Define buds and its types.
44. What are the functions of stem?
45. How stem is modified? Mention its types.
46. Mention few difference between phylloclade and cladode.
47. What are the different types of underground stem?

48. Write a brief note on parts of leaf.
49. Differences between simple leaf & compound leaf.
50. How leaf is modified?
51. What are the advantages of Rhizome?
52. Describe pitcher plant.
53. Difference between Reticulate venation and Parallel venation.
54. Define phyllotaxy
55. Mention the classification of inflorescence
56. Define Intercalary inflorescence
57. Give some evidences to support that flower is a modified shoot.
58. What are the essential and non-essential parts of flowers?
59. Write a short note on calyx and corolla.
60. Define Aestivation
61. Explain the various types of Aestivation.
62. What are the different types of placentation?
63. What do you mean by true fruit and false fruit?
64. Describe the structure of fruit.
65. Write a brief note on simple fruit.
66. Define Aggregate fruit.
67. What are the type of seeds.
68. Distinguish between apocarcpous and syncarpous ovary.
69. What is legume? Give an example.
70. What are dry dehiscent fruits?
71. Distinguish between monothecous and dither us anther.

GENETICS

1) Define Genetics
2) Write a short note on Genetics?
3) What do mean by variation?
4) What are the basic features of inheritance?
5) Pea plant is proved to be an ideal experiment plant for Mendel. Justify
6) Mention three important laws of Mendel.
7) What are the important features of gene?
8) Define SAT chromosome.
9) What are the types of chromosomes?
10) What are B-chromosome

11) Identify the difference between Lamp brush chromosome and polytene chromosome.
12) Define genome.
13) Write a short note on linkage.
14) Define crossing over.
15) Write the significance of crossing over.
16) What are the uses of gene mapping?
17) Explain substitution mutation & its types.
18) What is the Significance of mutation.
19) Write a short notes on mutagenic agents.
20) Define Translocation chromosomal aberration
21) Distinguish Deletion & Duplication of chromosomal aberration.
22) Define Ploidy and mention its types
23) Write the significance of Ploidy.
24) Write a brief note on bacterial transformation.
25) What are called Positive super coils?
26) Why Okazaki fragments is called semi discontinuous replication?
27) Define pangenes.
28) Mention some of the theories on heredity.
29) List out the reason for mendel's success.
30) Define backcross and test cross.
31) What are the types of gene interaction
32) Difference between Epistasis and Dominance