

PAST PAPERS

BOTANY-III (Cell Biology, Genetics and Evolution)

2013-2022

SHORT QUESTIONS: -

1. What are enzymes? Give their significance
2. What is allopolyploidy?
3. Differentiate between multiple allele and polygene.
4. What is gene pool?
5. What are autosomes?
6. Define crossing over.
7. Differentiate between Autophagy and Autolysis.
8. Define cytosol. Explain its types shortly.
9. Differentiate between Cytokinesis and Karyokinesis.
10. Describe the Semi-conservative Replication.
11. Define Translocation.
12. Define Fluid Mosaic Model.
13. What is Antisense Strand?
14. What is Synapsis?
15. What is Complete Linkage?
16. Differentiate between Monohybrid and Dihybrid cross.
17. Describe Homology.
18. Describe the importance of proteins.
19. What are dictyosomes?
20. Define cell cycle.
21. Differentiate cisternae and cristae?
22. Describe Karyotype analysis
23. Differentiate deletion and addition.
24. Give the importance of crossing over.
25. Differentiate between Aneuploidy and Euploidy.
26. Describe the Law of independent Assortment.
27. What are three types of RNA and their importance?
28. What is point mutation?
29. Define conjugation.
30. What is the importance of PCR?
31. Differentiate between population and community.
32. Mention functions of Golgi complex.

33. What is the chemical composition of Ribosomes?
34. What are Glyoxisomes and what is their function?
35. What is Cytokinesis?
36. What is the role of Mitosis?
37. What is Karyotyping?
38. Differentiate between Nucleoside and Nucleotide.
39. What are Transposons?
40. What are Alleles?
41. What is Crossing over?
42. What is Mutation?
43. What is the difference between Active and Passive transport?
44. What are plasmids and what is their role in bacteria?
45. What is Cell cycle?
46. How Plesiomorphy differs from Apomorphy?
47. What is Pit? Describe its main functions?
48. Briefly discuss various protocols regarding Genetic engineering?
49. Differentiate between Homoplasmy and Homology?
50. Differentiate between Transformation and Transduction?
51. Differentiate between Diploidy and Monoploidy?
52. Differentiate between Protoplasm and Tonoplast?
53. Differentiate between Lomasomes and Plasmalemma?
54. Differentiate between back cross and test cross?
55. Define evolution?
56. What is difference between generalized and specialized transduction?
57. What are applications of genetic engineering?
58. What is difference between heterochromatin and euchromatin?
59. Define mutation. What are its types?
60. What is difference between starch and cellulose?
61. Differentiate between test cross and back cross?
62. Draw secondary structure of protein?
63. What is difference between glyoxysomes and peroxisomes?
64. What are purines? Give its types?
65. Explain gene regulation?
66. What is conjugation?
67. Define crossing over? Explain its mechanism?
68. What is inversion and translocations?
69. What are different types of proteins in plasma membrane? Explain their functions?
70. Explain the functions of endoplasmic reticulum?
71. Describe Physio-chemical nature of the plasma membrane?
72. Draw a structure of a nucleotide?
73. What is transformation?

74. Write a note on Starch?
75. How conjugation is involved in Bacterial DNA recombination?
76. What are Base analogue?
77. Differentiate between Plasmid and Episomes?
78. What are Hfr Strains?
79. What is reciprocal Translocation?
80. How the phenomenon of tautomerism cause mutation?
81. Define Cell theory.
82. What is the difference between Simple and Facilitated diffusion?
83. What are Leucoplasts? Mention their functions?
84. Differentiate between Prokaryotic and Eukaryotic ribosomes?
85. What are Peroxisomes? What is their function?
86. What are the different types of RNA and their functions?
87. What is Transduction?
88. vii. What are Cytoplasmic inclusions?
89. Differentiate between Population and Community?
90. What is Synapsis?
91. How carbohydrates and sugars are used by the body?
92. How ribosomes are involved in protein synthesis?
93. What are nucleic acids?
94. Define evolution?
95. What are the types of plastids?
96. Differentiate between nucleus and nucleolus?
97. Describe the role of pachytene in meiosis?
98. What is the chemical composition of cell membrane?
99. What is Inversion mutation?
100. Differentiate between alleles and gene?
101. What is the Mendel law of independent assortment?
102. What is a genetic code?
103. What is back cross?
104. Define segregation
105. What is a stop codon?
106. Define conjugation.
107. What is difference between generalized and specialized transduction?
108. What is basic principle of genetic engineering?
109. What is difference between same sense mutation and non-sense mutation?
110. Define Evolution. What are its types?
111. What is difference between starch and cellulose?
112. Differentiate between saturated and unsaturated fats.
113. Draw tertiary structure of protein.
114. What is difference between glyoxysomes and peroxisomes?

115. What are purines? Give its types.

LONG QUESTIONS

1. What is Gene mutation?
2. Describe DNA replication in detail?
3. Explain the structure and function of Plastids?
4. Describe Chromosomal Aberrations in detail?
5. What is the PCR, and how is it used to form multiple copies of a DNA segment?
6. What are nucleic acids? What are its types?
7. Give the ultrastructure of chromosomes?
8. Briefly describe cell cycle and its stages?
9. Describe sex linked and sex limited characters with examples?
10. What is the PCR, and how is it carried out to produce multiple copies of a DNA segments?
11. Explain the four Mechanism of Sex Determination?
12. Explain Prophase-I of Meiosis in detail?
13. Give an account of Euploidy?
14. Differentiate between translation and transcription. Give a detailed note on translation?
15. Describe the law of segregation by strand analysis?
16. Describe in detail the variations in CHROMOSOME structure and arrangement?
17. How CROSSING OVER differs from GENETIC LINKAGE? Discuss?
18. What is CELL WALL? Describe different types of cell walls and their functions in the organisms?
19. What is CELL CYCLE? Write down the processes of MITOTIC CYCLE?
20. Discuss in detail the 2nd LAW OF INDEPENDENT ASSORTMENT. What are the limitations in its applicability?
21. Describe CYTOPLASMIC INHERITANCE?
22. Describe GENE MUTATION?
23. Describe Mitochondria AND ITS FUNCTION?
24. Explain gene regulation?
25. What is conjugation?
26. Define crossing over? Explain its mechanism?
27. What is inversion and translocations?
28. What are different types of proteins in plasma membrane? Explain their functions?
29. Explain the functions of endoplasmic reticulum?
30. What is the role of histone in DNA packaging?
31. Describe Mendel's Law of inheritance?
32. Describe the types of chromosomes on the basis of the position of centromere?
33. How generalized transduction is different from specialized transduction?
34. What are mutagens? How radiations can cause mutation?
35. Differentiate between Induced and Spontaneous Mutations?

36. What is the chemical composition of Cell membrane?
37. Describe the ultrastructure and function of Chloroplast?
38. Write a short note on Lac operon?
39. Explain the Transduction in bacteria in detail?
40. Differentiate between Test cross and Back Cross and their importance?
41. Explain with examples Duplication and Deletion?
42. How vacuoles play an important role in a plants cell?
43. What is sex linked inheritance? Explain with examples?
44. What are the glyoxysomes and peroxysomes and discuss their functions?
45. Discuss gene expression regulation (The Lac operon)?
46. Discuss the basic genetic Engineering techniques and its role in revolutionizing modern life?
47. Explain Lac Operon.
48. What is genetic recombination and its types?
49. Define crossing over. Explain its mechanism.
50. What is inversion and translocations?
51. What are different types of endoplasmic reticulum? Explain their functions.
52. Explain the functions of plasma membrane.

