QUESTION BANK

UG0802 -ZOO-64T-203- Cell Biology, Genetics & Biotechnology

PART A – Short Answer Questions

Cell Biology

1. **Differentiate Prokaryotic and Eukaryotic cell**
2. **Write on Ribosomal units of prokaryotes (RU2023)**
3. **Write on Two major features of Anaphase**
4. **Write on Interphase nucleus (RU2023)**
5. **What is the importance of studying giant chromosomes (RU2023)**
6. **Define a cistron (RU2023)**
7. **Two functions of mitochondria**
8. **Who discovered nucleus in cell**
9. **Function of cell wall (RU2022)**
10. **Define Virus (RU2022)**
11. **Define polysome (RU2022)**
12. **Expand NADH (RU2022)**
13. **Define cilia or flagella (RU2022)**
14. **Define chromatin (RU2022)**
15. **Explain metaphase (RU2022)**
16. **Function of lysosome**
17. **Where are lampbrush chromosomes found?**
18. **At which substage of Meiosis I are chiasmata observed?**
19. **Write on Function of centromere.**
20. **What is chromatin?**
21. **What is the percentage of protein content in plasma membrane?**
22. **What are cis and trans proteins?**
23. **Write on Phagocytosis and Pinocytosis.**
24. **Histone and non-histone proteins**
25. **Write the name of scientist who discovered lampbrush chromosome**
26. **What are extrinsic and intrinsic proteins?**
27. **What is active transport? Give example.**
28. **What is chiasmata?**
29. **Difference between exocytosis and endocytosis**

30. Main functions of endoplasmic reticulum (RU2014)
31. What are peroxisomes? (RU2014)
32. Write on bacterial cell wall (RU2017)
33. Write short notes on: a) Virus b) Prokaryotic and Eukaryotic cells (RU2014)
34. Write short note on a) Lysosome b) Endoplasmic Reticulum c) Cilia and Flagella (RU2014)
35. Mention important features of metaphase stage of meiosis (RU2014)
36. Write differences between prokaryotic and eukaryotic cells (RU2015)
37. Structure and functions of Nucleus and Nucleolus (RU2014)
38. Process of active transport with types and examples
39. Write on Cell-Cell Junction
40. Fluid Mosaic Model
41. Write on Cell Cycle.
42. "New cells originate from pre-existing cells" – Who gave this statement?
43. Give 2 main differences between DNA and RNA (RU2014)

Genetics

44. Write on Klinefelter's syndrome
45. Give examples of X-linked genetic disorders
46. What is incomplete dominance?
47. What is exons?
48. What is trisomy?
49. Explain independent assortment
50. Write the phenotypic ratio in the inheritance of lethality in yellow mice
51. Define mutations
52. Shell coiling in snails is the example of which type of inheritance
53. Define multiple allelism
54. 'Catlike cry' disorder in children in man is the example of which type of chromosomal aberration
55. What is back cross?
56. What is chiasmata?
57. Name the type of cross used to prepare chromosome maps
58. What is crossing over? (RU2014)

59. **Write notes on: a) Codominance b) Blood group in Man (RU2016)**
60. **Write short notes on: i) Heterochromatin and euchromatin ii) Replication of DNA (RU2016)**
61. **Write short notes on: i) Molecular basis of mutation ii) Linkage iii) Aneuploidy (RU2016)**
62. **Chromosomal mutations (RU2014)**
63. **Write short notes on: i) Supplementary genes ii) Epistasis (RU2014)**
64. **What are multiple alleles? Discuss with reference to ABO blood group (RU2014).**
65. **Mutation and write the molecular basis of mutation.**
66. **What are modifiers and suppressors.**

Biotechnology

67. **Write short notes on: i) Heterochromatin and euchromatin ii) Replication of DNA (RU2016)**
68. **Define clone (RU2015)**
69. **What are Okazaki fragments (RU2023)**
70. **What are vectors for recombinant DNA transfer**
71. **What is pBR 322**
72. **What are cosmids**
73. **Write on Restriction Enzymes**
74. **Bacteriophage**
75. **Fermented food production**
76. **Steps and application of Recombinant DNA Technology**
77. **Define plasmid**
78. **In which organisms are plasmids found?**
79. **What are cosmids?**
80. **Define vectors**
81. **Why are plasmids used as cloning vectors?**
82. **What is meant by transformation?**
83. **What is cDNA?**
84. **Mention 3 enzymes important in genetic engineering**
85. **Mention any two uses of transgenic animals**
86. **Write a note on transgenic animals and procurement of proteins**
87. **Name the techniques used for producing transgenic animals**

88. Define phasmid vectors (RU2016)
89. What is palindrome? (RU2016)
90. Who developed PCR technique? (RU2016)
91. Write the definition of Biotechnology (RU2016)
92. Write full form of PCR (RU2015)
93. Write two applications of Biotechnology (RU2015)
94. Who developed the first mammalian clone (RU2014)
95. Give the definition of Malting (RU2014)
96. What is Gene bank? (RU2014)
97. Name a gram-positive bacterium
98. What is the function of DNA ligase in recombinant DNA technology
99. What is bacteriophage?
100. What is cloning
101. What is SCNT
102. What are vaccines
103. Define pasteurization
104. Name three bacterium used in dairy Industry
105. Howmany type of alcoholic beverages are there.
106. What is chemical preservation

PART B – Long Answer/Descriptive Questions

Cell Biology

107. Describe the process of active transport along with its types and suitable examples
108. Structure and function of centriole (RU2023)
109. Fluid Mosaic Model (RU2023)
110. Structure and function of lysosome (RU2023)
111. Describe the ultrastructure of nucleus and its functions with the help of diagram
112. Write on Synaptonemal complex (RU2023)
113. Describe the structure and function of plasma membrane (RU2022)
114. Detailed note on structural organisation of chromosomes (RU2022)
115. Stages of mitosis division with diagram (RU2022)
116. Structure, chemical composition and function of mitochondria (RU2022)
117. Notes on: a) Golgi complex b) Endoplasmic reticulum c) Lysosome (RU2022)

118. Structure, chemical composition and function of special chromosomes
119. Notes on: a) Chromatids (RU2022)
120. Describe the structure, types and functions of chromosomes (RU2016)
121. Significance of meiosis and stages with diagram (RU2016)
122. Different models for the structure of plasma membrane (RU2016)
123. Structure of cilia and flagella (RU2016)
124. Write short notes on: a) Bacteriophage b) Structure of cilia and flagella (RU2016) c) Cell cycle (RU2016)

Genetics

125. Supplementary genes (RU2023)
126. Sex determination in Drosophila (RU2023)
127. Write on i) Klinefelter's syndrome ii) Downs syndrome iii) Color blindness iv) Hemophilia vi) Phenylketonuria(RU2023)
128. Write on Linkage and crossing over (RU2023)
129. Euploidy and Aneuploidy (RU2023)
130. Mendel's law of inheritance and their significance (RU2022)
131. Notes on: a) Lethal genes b) Mechanism of cell regulation (RU2022)
132. Notes on: a) Mendel's law of independent assortment b) Monohybrid cross and Dihybrid cross
133. What is Epistasis? Explain dominant and recessive epistasis with examples (RU2016)
134. Write on i) Principle of segregation ii) Independent assortment
135. Write on i) Epistais ii) Complementary gene iii) Duplicate gene
136. Write on i) Incomplete dominance ii) Codominance iii) Pleiotropism iv) Epistasis
137. Write on Extrachromosomal Inheritance
138. Write on Mutation and mechanism of mutagenesis.
139. Write on Genetic disorders

Biotechnology

1. Steps and application of Recombinant DNA Technology (RU2017)
2. Write short notes on: a) Bacteriophage b) Structure of cilia and flagella (RU2016)
3. Mechanism of active transport. Difference between active and passive transport (RU2016)
4. Write on Cloning methods – Cell, Animal, Gene cloning

5. **Write on Cloning Vectors.**
6. **Write short note on i)Plasmid ii) Cosmid iii)Bacteriophage iv) BAC v) YAC**
7. **Write on animal cell culture, equipments and materials for animal cell culture; applications of cell culture techniques.**
8. **What is Transgenesis. Give the methods of Transgenesis , production of transgenic animals and their application in Biotechnology.**
9. **What do you mean by stem cells? Classify different stem cells and their applications (RU2021)**
10. **Write short notes on: a) DNA Fingerprinting b) Reverse Transcriptase (RU2017)**
11. **Write brief account of cloning – discuss advantages and disadvantages (RU2015)**
12. **Write short notes on: i) Vaccines ii) PCR iii) Plasmid (RU2014)**
13. **Define the term Biotechnology. Write the scope and entrepreneurship with reference to Rajasthan (RU2014)**
14. **Give an outline on Food, drink and dairy biotechnology.**
15. **Write on the production of dairy products, wine, beer, vinegar.**
16. **Discuss the techniques of food preservation and biotechnology.**
17. **Write on industrial production of enzymes and vitamins by the use of microorganisms.**
18. **Write short notes on i) TDT ii) Synthesis of acetic acid iii) Milk products iv) Pasteurization v) Milk products.**
19. **What are fermented foods? Discuss the synthesis and uses of important dairy products.**
20. **Write an essay on alcoholic beverages and biotechnology.**
21. **Write on cloning of Dolly the lamb.**
22. **Write on SCNT technique.**
23. **Write in detail Nuclear embryo transfer technique.**

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