

Total Number of Questions : 20

Time : 2.00 Hours

Max. Marks : 100

1. What are glycoproteins ? Explain their types. (3 Marks)
2. What is Klenow fragment ? Give its importance. (3 Marks)
3. State the principle of SDS-PAGE. Protein A is a homodimer of two polypeptides each of size 20 kDa. Protein B is a heterodimer of 20 kDa and 40 kDa. Diagrammatically, show the number and sizes of bands that will be seen on Native-PAGE and SDS-PAGE. (3 Marks)
4. Give an account of repetitive DNA sequences in eukaryotes. (5 Marks)
5. Explain the structure and function of zinc finger and leucine zipper protein motifs. (5 Marks)
6. Describe Hardy-Weinberg principle and its deviations. (5 Marks)
7. Explain the negative regulation of lac operon. (5 Marks)
8. State why preservation of cells is important. Explain any three methods of preservation with advantages and disadvantages of each method. (5 Marks)
9. Enumerate the various applications of Recombinant DNA Technology. (5 Marks)
10. State the Beer-Lambert Law and its limitations. A solution has an extinction coefficient (ϵ) of 1.50, $\lambda_{\max} = 500$ nm and absorbance (A) = 0.40. What will happen to the values of ϵ , λ_{\max} and A , when the solution is diluted two fold ? (5 Marks)
11. Briefly describe the factors affecting expression of cloned genes. (5 Marks)
12. State the Michaelis-Menten Equation. Draw a graph to show the effect of substrate concentration $[S]$ on the velocity (V) of an enzyme-catalyzed reaction. Label $[S]$, V_0 , V_{\max} and K_m on the graph. (5 Marks)
13. What are advantages and disadvantages of DNA transfer by electroporation ? (5 Marks)
14. How do Bt genes work in Bt transgenic plant ? (5 Marks)
15. Define embryonic and adult stem cell culture, each with its characteristics. (5 Marks)
16. Describe role of HAT medium in hybridoma technology. (5 Marks)
17. What are catabolic plasmids ? (5 Marks)
18. Give a brief description of types of composting in solid waste management. (5 Marks)
19. Describe the structure, classes and functions of immunoglobulin. (8 Marks)
20. What does constitute patent infringement ? What are available remedial measures ? (8 Marks)