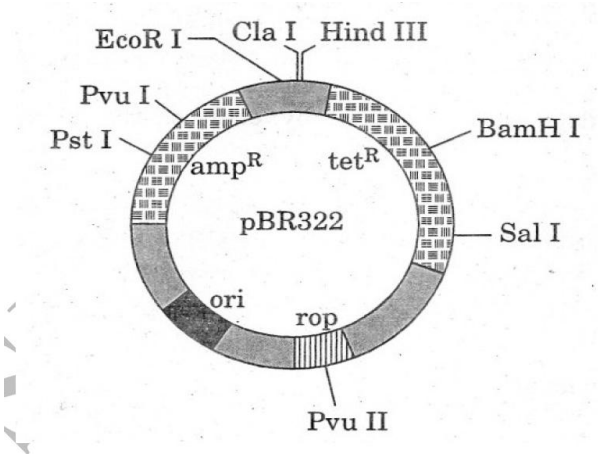
Biotechnology

Class XII

1. Identify the following: 1
   i. 5’-GAATTC-3’
      3’-CTTAAG-5’
   ii. 5’G AATTC-3’
      3’-CTTAA G-5’
2. How can very low concentration of bacteria or virus be detected? 1
3. How is the action of exonuclease different from that of endonuclease? 1
4. Expand GEAC. What is its role in Biotechnology? 2
5. Name the organism from which Ti plasmid is isolated. Explain the use of this plasmid in biotechnology. 2
6. A recombinant DNA is formed when sticky ends of vector DNA and foreign DNA join. Explain how the sticky ends are formed and get joined.2
7. How infestation of *Meoidegyne incognitia* was prevented in tobacco plant?2
8. i) Mention the number of primers required in each cycle of polymerase chain Reaction (PCR). Write the role of primers and DNA polymerase in PCR. 2
   (ii) Give the characteristic feature and source organism of the DNA polymerase used in PCR. 2
9. What is Ti plasmid? Name the organism where it is found. How does it help in genetic engineering? 2

10. How does a transgenic organism different from the rest of its population? Give any two examples of such organism for human advantage. 2
11. How did Eli lilly synthesize the human insulin? Mention difference between this insulin and the one produced by the human pancreas. 3
12. What is ADA deficiency? Describe three methods to cure it? 3
13. What is the advantage of recombinant therapeutics over similar products isolated from non-human sources? Name any two recombinant products used as medicine. 3
14. With an example, explain how Biotechnology has been applied in raising pest resistant plants by RNA interference? 3
15. Why is Agrobacterium mediated genetic transformation described as natural genetic engineering in plants?
16. What is PCR? Describe the process of PCR. 3
17. What is the advantage of modern genetic techniques over traditional hybridization method? 3
18. What is cloning vector? Explain the technique of using such a vector in E. coli. 3
19. What are transgenic bacteria? Illustrate using one example. 3
20. Write a brief account of genetically engineered insulin. 3

21.(i) Name the organism in which the vector shown is inserted to get the copies of the desired gene. (ii) Mention the area labeled in the vector responsible for controlling the copy Number of the inserted gene. (iii) Name and explain the role of a selectable marker in the vector shown. 3



22.Name the insect pest that is killed by the products of cryIAC gene. Explain how the gene makes the plant resistant to the insect pest. 5

23.Represent diagrammatically the steps in amplification of a DNA segment. Who designed this process? 5

24.Represent diagrammatically the steps in involved in rDNA technology.5

25.Name the soil bacterium that produces a protein/chemical that is toxic to insect pests. Show with example that the different forms of them encoded by different forms of the genes are insect specific. 5