Program Control 1 of Discipline “Genetic engineering and biosafety ”

Biotechnology

1. What is the GMO process?
2. Discribe a DNA Extraction and Gel Analysis
3. Characterization of Recombinant DNA
4. Which techniques create recombinant DNA
5. Genetic modification
6. Main steps of molecular cloning
7. Molecular cloning, Choice of host organism and cloning vector
8. DNA ligation is an important technique in molecular cloning
9. Molecular cloning, Preparation of vector DNA
10. Preparation of DNA to be cloned
11. Cloning a Eukaryotic Gene in a Bacterial Plasmid
12. Show the types of vector DNA
13. Give a characterization of cloning a Eukaryotic Gene in a Bacterial Plasmid
14. What is the shuttle vector?
15. Give a characterization of a cosmid.
16. Describe a fosmid as cloning vector
17. Characterization of endonucleases and their use
18. Using of ligases in genetic engineering
19. What is the Multiple cloning site (MCS) characterization and use in molecular biotechnology.
20. Subclone characterization and use
21. Characterization of DNA cloning techniques
22. Present DNA analysis to determine degree of purification
23. What are the size and composition of the particles, which are used for the particle bombardment method?
24. How is gene introduction performed with the model plant, Arabidopsis? Is this technique widely applied to other plants?
25. What are some differences between physical and biological methods for DNA introduction

into plant cells?

1. What part or parts of the plant cell provide the most resistance to DNA introduction?
2. In the case of a successful DNA introduction, where in the target cell does the foreign DNA

end up?

1. How is gene introduction performed with the model plant, Arabidopsis? Is this technique

widely applied to other plants?

1. Present a use of artificial chromosome construction
2. Give a characterization of a structural aberration detection
3. Describe a yeast artificial chromosome and its use of Genetic engineering
4. What is a bacterial artificial chromosome (BAC)?
5. Explain a bacterial conjugation mechanism and horizontal gene transfer (HGT).
6. Describe a Transformation and transduction.
7. Analyze a use of BAC
8. Describe a traits for improved crop production using transgenic approach.
9. What is a a genomic library and its use?
10. Describe *Agrobacterium tumefaciens* forgenetic engineering
11. Present the use of the T‐DNA Transfer process for transformation?
12. Give a characterization of yeast artificial chromosome (YACs)?
13. How do you understand *Agrobacterium vectors* are called “binary vectors?
14. Explain an autonomously replicating sequence (ARS)?
15. Present components of yeast artificial chromosome (YAC) and explain their roles?
16. Explain the construction of yeast artificial chromosome (YAC)?
17. Show the use of yeast artificial chromosome (YAC) in plants biotechnology ?