

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Question Paper Code: UD502

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Professional Elective

Biotechnology

21BTV502 PLANT BIOTECHNOLOGY

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1. Define totipotency of plant cells. CO1- U
2. Define Plasticity. CO1- U
3. Differentiate biotrophs and necrotrophs with examples CO1- U
4. Write about the symbiotic relationship between plants and microbes. CO1- U
5. Illustrate various methods of gene transfer CO1- U
6. Sketch the structure of Ti Plasmid CO1- U
7. Define Plant functional genomics. CO1- U
8. Predict the efficient gene editing tools and justify your answer CO3- App
9. Make a flowchart of permission obtaining procedure from regulatory bodies of Indian government for doing transgenic research. CO1- U
10. Why plants systems were preferred than eukaryotic systems for antibody production? Justify your answer CO4- App

PART – B (5 x 16= 80 Marks)

11. (a) Explain in detail about the various stages of Plant tissue culture with a neat flow chart. CO1 - U (16)
- Or
- (b) Explain in detail about CO1 - U (16)
 - (i) Organogenesis (8 Marks)
 - (ii) Somatic hybridization (8 Marks)

12. (a) Extend in detail about the pathogenic and symbiotic relationship of microbe with the plants. CO1 - U (16)
- Or
- (b) Generalize the concept of molecular basis of plant- pathogen interaction. CO1 - U (16)
13. (a) Veronika, a plant biotechnologist working in a lab facing a problem with transfer of gene into the host cell by gene gun method. So, she is planning for some alternative direct gene transfer method to transform her gene. Her principal investigator suggests her to do transformation by electroporation. Guide her with a principle and procedure of this technique with neat illustration. CO4 - App (16)
- Or
- (b) Vignesh is in need of genetically modified crop for producing vitamin A. Help him to select a method to transfer the target gene directly to develop a transgenic plant CO4 - App (16)
14. (a) T-DNA tagging has emerged to become an important tool in plant physiology and molecular biology. Justify this statement with a clear explanation. CO5 -Ana (16)
- Or
- (b) The CRISPR/Cas9 tool surpasses other programmable nucleases, such as ZFNs and TALENs, for its simplicity and high efficiency. Illustrate the CRISPR/Cas9 tool for the targeted genome editing with a neat explanation. CO5 -Ana (16)
15. (a) Summarize the production of insect resistant plants with an example CO1 - U (16)
- Or
- (b) Explain in detail about Virus resistant plant with an example. CO1 - U (16)