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Question Paper Code: UC102

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Professional Elective

Biotechnology

21BTV102- ENVIROMENTAL BIOTECHNOLOGY

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Give some potential suggestions to control air pollution, how could urban areas implement these strategies? CO2-App
2. How the industries are managing heavy metal pollution. CO1 - U
3. Differentiate aerobic and anaerobic biological treatment. CO1 - U
4. What are the benefits of applying advanced technologies like membrane filtration in municipal wastewater treatment? CO2 -App
5. What are major industrial pollutants? CO1 - U
6. Define screening and pumping process in industrial waste water treatment. CO1 - U
7. Define Biocatalyst. CO1 - U
8. List advantages and disadvantages of isolated enzymes versus whole cell systems. CO - U
9. Define alternate source of energy. CO1 - U
10. List down the process involved in production of ethanol. CO1 - U

PART – B (5 x 16= 80 Marks)

11. (a) What are the different sources of pollution and discuss its impact in environment. CO1 – U (16)
- Or
- (b) Give a detailed account of sources of heavy metal pollution. CO1 – U (16)

12. (a) Interpret your learning's to treat the major pollutants in present in industrial waste water? CO2-App (16)
- Or
- (b) How the Genetically Engineered Organisms (GEOs) be effectively applied to improve the efficiency of wastewater treatment? Discuss the specific roles of GEOs in degrading pollutants and removing contaminants from wastewater. CO2-App (16)
13. (a) Explain the treatment process of textile waste water. CO1 – U (16)
- Or
- (b) Discuss the various physical, chemical, and biological characteristics of solid wastes. How do these characteristics impact the selection of waste management strategies? CO1 – U (16)
14. (a) Discuss the role of vermicomposting in organic waste management. How can it be integrated into municipal or agricultural waste management systems to improve soil health and reduce landfill waste. CO4-App (16)
- Or
- (b) Discuss the basic organic reaction mechanisms involved in biocatalysts. How do enzymes facilitate specific reactions in environmental processes, and what are the key mechanistic aspects that contribute to their efficiency? CO4-App (16)
15. (a) How can organic waste be converted into valuable manure? Discuss the step-by-step process of this conversion and its impact on environmental sustainability. CO4-App (16)
- Or
- (b) What is organic farming, and how does it differ from conventional farming? Discuss its advantages and challenges, especially in the context of environmental conservation. CO4-App (16)