PG Even Semester Examination, May 2025

ECOLOGY & ENVIRONMENTAL SCIENCE

4th Semester

Course No. : ECG - 651

(Environmental Biotechnology and Chemistry)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

(Answer any five questions, selecting one from each unit)

Unit - I

1. What are the different environment friendly approaches in biotechnological studies? Discuss the technologies where various types of microbial organisms are used to keep the environment clean. 4+10=14

2. Write notes on : 7x2=14
   a) PHB from biobased resources
   b) Atom economy principle in green synthesis

Unit - II

3. Define biotechnology in solid waste management and

enumerate its application. Discuss in detail the different techniques of in-situ and ex-situ bioremediation. 2+5+7=14

4. Write notes on any two : 7x2=14
   a) GMO in waste water treatment
   b) Methods of enzyme immobilization

Unit - III

5. What is bioethanol? Describe the bioethanol production technology highlighting the role of microorganisms in the process. Mention two advantages of bioethanol as an energy source. 2+10+2=14

6. Write notes on : 7x2=14
   a) Methane production from biobased resources
   b) SCP from fungi

Unit - IV

7. a) Taking some examples, give an account of acid-base reactions. Mention two properties each of acid and base. 6+2=8

   b) Discuss briefly about the factors governing the solubility of gases in water. 6

8. Write notes on any two : 7x2=14
   a) Gibb's energy
   b) Saturated and unsaturated hydrocarbons

Unit - V

9. What is chromatography? Explain its working principle. Write in detail about HPLC and mention its advantages. 2+3+9=14

10. Write notes on any two : 7x2=14
    a) Working principle of flame photometer
    b) X-ray fluorescence and its applications

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