

351

M.Sc. Examination 2022

Semester III

Biotechnology

Core Course - XIV

(Ecology, Environmental Biotechnology and Emerging Technologies)

Full Marks : 40

Time 3 Hrs

Questions are of value as indicated in the margin

Group A - Ecology, Environmental Biotechnology

Answer any two questions

10x2= 20

1. Define second and third -generation biofuel with examples. What is Saccharification process? Explain how the different pretreatment methods affect Saccharification process.

5+ 1+ 4= 10

2. Draw and explain with examples about different types of survivorship curves. Define vermicomposting. What are the advantages of vermicomposting vis-a-vis other methods of composting?

5
4+1+4=10

3. What are the different steps of waste water treatment? Elaborate the preliminary and primary steps of waste water treatment. Define algal bloom. Discuss about the controlling methods of HABs.

2+4+1+3=10

Group B- Emerging Technologies

Answer any two questions

10x2= 20

- 4 γ. a) Sketch and describe the basic components of a mass spectrophotometer. Differentiate between EI and MALDI. How m/z ratio related with TOF? Compare hard and soft ionization.

b) Write the Principle of FRET

(3+2+1+1)+3=10

- 5 ζ. a) Give a basic structure of flow cytometry. Define ADC in flow cytometry. Describe the basic principle of cell sorting in flow cytometry.

b) Write the basic principle of TEM. Mention two drawbacks of SEM

3+1+3+(2+1)=10

- 6 β. a) Explain the fingerprint and functional group regions in an IR spectrum. "IR spectroscopy can be called rotational and vibrational spectroscopy" do you agree? Justify your answer. Why are the IR peaks not very sharp?

b) Derive Bragg's law expression

(3++2+1)+4=10