

2018

M.Sc.

Part-II Examination

ENVIRONMENTAL SCIENCE

PAPER—IXB

Full Marks : 100

Time : 4 Hours

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

Answer Q. No. 1 and any five questions from the rest.

1. Answer any ten questions : 10×2

(i) Differentiate between 'r' and 'k' selection species.

(ii) Mention differences between solid state and submerged fermentation.

(iii) What is rhizosphere ? Give example of its associated microorganisms.

(Turn Over)

- (iv) What is standing crop? How is it measured?
- (v) Differentiate Neuston and Nekton with example.
- (vi) Mention the situations where the pyramid of biomass becomes inverted.
- (vii) How can you isolate protozoa from soil sample?
- (viii) Define geneecology.
- (ix) What do you mean by auxiliary food chain?
- (x) What is green manure?
- (xi) Differentiate primary and secondary succession.
- (xii) Why damp and humid weather contains less microorganisms than dry weather?
- (xiii) Define a soil profile.
- (xiv) What are biodiversity hotspots?
- (xv) Name two macrophytes found in river side.
2. Write down the process of biological nitrogen fixation and mention how fixed nitrogen is assimilated by them. Write major constraints of biofertilizer use. 8+4+4

3. Enlist different soil quality parameters. Discuss the role of different soil microorganisms in maintaining environmental health of soil. Highlight the ecological threats on soil organisms. 4+8+4
4. State differences among organic and chemical fertilizer. Give an idea about different categories of biofertilizers. How biofertilizers are applied on crops? 4+8+4
5. Draw, label and describe different parts of a stirred Tank Bioreactor. Give an idea about the substrates which are used frequently in industrial fermentation. 10+6
6. Classify soil fauna on the basis of habitat size and degree of dependance on soil. State their ecological importance. 12+4
7. Briefly discuss sampling devices for collection of bioaerosols. How bioaerosols can be controlled? 12+4
8. Mention different forest types of India. State the differences among sanctuary and national park. 12+4
9. Write a note on wasteland. Briefly describe about the industrial plantation with its limitations. 4+8+4

10. Write short notes on :

4×4

- (a) Protocooperation
  - (b) Mutualism
  - (c) Commensalism
  - (d) Competition
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