

2016

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 of the following : 2×10

- (i) What do you mean by Auxillary food chain? Give example.
- (ii) Mention the types of food web.
- (iii) Why damp and humid atmosphere contain fewer Micro-organism than the dry one?
- (iv) Highlight the significance of energy flow of an ecosystem?

- (v) Mention the difference between National Park and Biosphere Reserves.
- (vi) What is green manure?
- (vii) Name two micro-fauna of soil.
- (viii) What is mutualism? Give example.
- (ix) Air does not possess any flora-explain.
- (x) Write two air borne plant diseases and their casual organisms.
- (xi) What is continuous fermentation?
- (xii) Define phyllosphere and phylloplane.
- (xiii) Name two microorganisms that transmit through aerosol.
- (xiv) What is meant by social forestry?
- (xv) Differentiate between primary and secondary succession.
- (xvi) How constant temperature is maintained in the fermentor during fermentation?
- (xvii) Mention different parts of a fermentor.

2. Briefly discuss on different Forests types of India. How Conservation of Indian forests have gained importance in the past. 12+4
3. Briefly discuss the types of substrate used in industrial fermentation and how their sterilization are made. What physical factors affecting Oxygen transfer during fermentation and what is OTR and how it can be raised? 6+(6+4)
4. Discuss the structure and functions of an ecosystem and mention the objectives of studying ecosystem. State the laws of thermodynamics having relevance to the flow of energy in an ecosystem. (10+2)+4
5. Write down the process of biological nitrogen fixation and mention how fixed nitrogen is assimilated by them. Write the major constraints in biofertiliser use. 8+4+4
6. (a) Write down the production process of Vermicompost.
 (b) How *Rhizobial* biofertilizer is produced in large scale for agricultural application?
 (c) Write down utility of mycorrhiza in plantation on barren land. 5+5+6

7. (a) Enlist ten Biosphere Reserves of India along with their location in the country.

(b) Point out the differences between National Parks and Sanctuaries.

(c) Highlight the concept pertaining to the Biosphere Reserve. 5+5+6

8. 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

9. Describe aeromicrobiological pathway for dispersion of microorganisms.

Write a note on Germ warfare.

How bioaerosol can be controlled? 8+4+4

10. Write notes (any two) : 2×8

(a) Advantages of biofertilizers over chemical fertilizers.

(b) 'Wetlands are called Nature's lungs and kidney'—Justify.

(c) Mention the criteria for designating an area as Biodiversity Hot-Spot.