

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, JANUARY 2013

(CCSS)

Biotechnology

BT 1C 02—ENVIRONMENTAL BIOTECHNOLOGY (Complementary)

Time : Three Hours

Maximum : 30 Weightage

I. Answer all *twelve* questions :—

1 1st world climate conference held on :

- (a) Geneva. (b) London.
(c) Vienna. (d) Brazil.

2 The term ecosystem was proposed by :

- (a) Carl Mobino. (b) A. Tansely.
(c) E.Odum. (d) E. Clement.

3 An example of sedimentary type of nutrient cycle :

- (a) Nitrogen cycle. (b) Carbon cycle.
(c) Phosphorus cycle. (d) None of the above.

4. The direction of energy flow :

- (a) Unidirectional. (b) Bi-directional.
(c) Cyclic. (d) Any of these.

5 Water pollution is caused by :

- (a) CO. (b) PAN.
(c) Fertilizer. (d) Fossil fuels.

6 Minanata disease is an example of :

- (a) Air pollution. (b) Water pollution.
(c) Marine pollution. (d) All of these.

7 The bacteria which oxidized ammonia to nitrite :

- (a) Nitrobacter. (b) Nitrosomonas.
(c) Pseudomonas. (d) Aerobacter.

Turn over

8 The key enzyme involved in **nitrogen fixation** :

- (a) **Hydrogenase.** (b) **Nitrogenase.**
 (c) **Leghaemoglobin.** (d) None of these.

9 Phosphate **solubilizing** organism :

- (a) **Bacillus.** (b) **E. Coli.**
 (c) **Klebsiella.** (d) **Candida.**

10 The common Earth worm species used for **vermicomposting** :

- (a) **Eisenia foetida.** (b) **Erwinia carotovora.**
 (c) **Streptomyces.** (d) **Histoplasma.**

11 Anaerobic bacteria fix nitrogen non-symbiotically :

- (a) **Rhizobium.** (b) **Desulfovibrio.**
 (c) **Azotobacter.** (d) **Bacillus.**

12 Which of the following is a method of disinfection :

- (a) **Sedimentation.** (b) **Filtration.**
 (c) **Chlorination.** (d) **Coagulation.**

(12 x $\frac{1}{4}$ = 3 weightage)

II. Short answer type questions. Answer all *nine*.

13 **Biomagnification.**

14 Sedimentation.

15 **Bioremediation.**

16 Commensalism.

17 **Barterioids**

18 Leg Haemoglobin.

19 Indicator organism.

20 **Phyllosphere.**

21 Green-manure.

(9 x 1 = 9 weightage)

ILL Short Essay (Any *five*). Explain the following :-

- 22 Vermicomposting.
- 23 Components of ecosystem.
- 24 Phosphorus cycle.
- 25 Kinds of pollution.
- 26 Energy flow in an ecosystem.
- 27 Trickling filter.
- 28 Role of **Rhizosphere** in plant-Microbe interactions.

(5 x 2 = 10 weightage)

IV. Essay questions :

- 29 What are different steps on water purification methods ? Explain **MPN** method to check purity of water.
- 30 Explain the process and molecular mechanism of symbiotic nitrogen fixation.
- 31 Explain pond as a model ecosystem. Compare pond ecosystem with green land ecosystem.

(2 x 4 = 8 weightage)