2020

MICROBIOLOGY — GENERAL

Paper : DSE-A-2

(Microbes in Environment)

Full Marks : 50

The figures in the margin indicate full marks.

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

Day 2

Question no.* 1** is compulsory. Answer ***any four questions from the rest.

1. Answer ***any five*** questions : 2×5

(a) Write down the Stoke's equation for setting of droplets.

(b) Write down the names of one ammonia oxidizer and one sulphur oxidizer.

(c) What is bioaerosol? What is its size?

(d) What do you mean by synergistic association of microbes? Give example.

(e) Write down the names of two symbiotic systems in Plant microbe interaction.

(f) What is composting?

(g) What is sludge?

(h) What is mutualism? Give example.

(i) Define BOD and COD.

(j) What is the criteria of potable water?

2. (a) What are phyto and zooplanktons?

(b) Mention the main problems associated to characterize the flora of open sea.

(c) What happens when a lake become eutrophic?

(d) What is Rhizosphere? Why rhizospheric soil have more load than other soil?

(e) Write down the name of one free living nitrogen fixing bacteria. 1½+1½+2+(2+2)+1

3. (a) Does a positive presumptive test indicate that water is potable?

(b) What are coliforms? Why are they selected as the indicator of water potability?

(c) What is MPN test?

(d) Write the results of completed tests for fecal and nonfecal coliforms in a tabular form.

2+(2+2)+2+2

Please Turn Over

4. (a) Briefly describe the phosphorous cycle.

(b) Write the names of two bacteria in a commensal relationship. Briefly describe their process of commensalism.

(c) How is cellulose degraded by microbes? 3+(2+3)+2

5 (a) How are solid wastes treated before disposal? Discuss the methods.

(b) What are Primary and Secondary treatment for liquid wastes?

(c) What is the use of trickling filter? (2+2)+(2+2)+2

6. (a) Differentiate between symbiotic and non-symbiotic plant microbe interaction.

(b) Name two microbes in ruminants. What is the role of those microbes in that system?

(c) How is chitin degraded by the microbes?

(d) What are nematophagus fungi? 3+(2+2)+2+1

7. (a) Discuss nitrogen cycle with schematic diagram, mentioning the following :

(i) Nitrogen fixation

(ii) Ammonification

(iii) Nitrification and denitrification

(iv) Nitrate reduction.

(b) What role is played by microbes in phosphate solubilization? (2+2+2+2)+2

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