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 1

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

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

(a) What is biogeochemical cycling?

(b) What is microbial niche and microbial habitat?

(c) Write down two important differences between BOD and COD.

(d) What is meant by bioaerosol?

(e) Name two microorganisms found in the genito-urinary tract of a healthy human being.

(f) What are the biotic components of an ecosystem?

(g) What are halophiles? Give an example.

(h) Give two examples of phosphate solubilizing bacteria.

(i) Give any two examples of microbe-animal interaction.

(j) Define nematophagon fungi with a relevant example.

2. (a) Give a schematic profile of soil.

(b) Define symbiosis. Write in brief what you know about symbiotic relations of microorganisms in soil. 3+(2+5)

3. (a) What is symbiotic nitrogen fixation? Briefly describe the mechanism.

(b) What is leg haemoglobin? What is its function?

(c) What is nitrification? (2+3)+(1+2)+2

4. (a) Mention the sources of solid waste and their types.

(b) Briefly describe the methods of secondary treatment of waste water.

(c) Name two pesticide degrading bacteria. 3+5+2

Please Turn Over

5. (a) Write short notes on :

(i) Trickling filter process of municipal waste water.

(ii) Membrane filter technique for the bacteriological examination of water.

(b) Define the following terms :

(i) Oligotrophs

(ii) Obligate halophiles

(iii) Flora of open sea. (2½×2)+(2+2+1)

6. (a) What are fecal coliforms? Which types of microorganisms are used as indicators of fecal contamination of water other than coliforms?

(b) What are activated sludge? Compare the microbial activity in the activated sludge process with that which occurs in a septic tank. (2+3)+(2+3)

7. (a) What do you mean by bioremediation?

(b) Why do petroleum degrading bacteria need to attach to the surface of oil droplets?

(c) What do you mean by reductive dechlorination?

(d) What is Winogradsky column?

(e) Why sulphate is added into a Winogradsky column? 2+2+2+2+2
