2021

MICROBIOLOGY — HONOURS

Fourth Paper

(Group - A)

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.

Answer ***question no.* 1** and ***any four*** questions from the rest. 2×5

1. (a) What do you mean by aerosols?

(b) State the importance of *Trichoderma* added to soil.

(c) How are non-fæcal coliforms detected in water samples?

(d) Name one food borne disease and the organism responsible for it.

(e) What is the importance of pasteurization?

2. (a) Why is air a poor medium for survival of microbes?

(b) What are allergens?

(c) Give an account of filters as a sampling technique of bioaerosols.

(d) Name one air borne bacteria and one fungus and the disease caused by each of them.

(e) Mention at least two physical environmental stresses for microbes. 2+2+2+2+2

3. (a) State the physical, chemical and biological characteristics of potable water.

(b) Characterise *E. coli* and *Salmonella* on the basis of IMViC test.

(c) Why is fæcal coliform harmful? 5+4+1

4. (a) How can poultry meat and eggs be the source of potential infection?

(b) State the limitations of Appertization.

(c) State the significance of phosphatase test. 4+3+3

5. (a) What are the differences between competition and synergism?

(b) Mention two symptoms of red rot of sugarcane.

(c) What do you mean by biological pest control?

(d) What is non-symbiotic nitrogen fixation?

(e) What is leaf blight of potato? 3+2+2+2+1

Please Turn Over

6. (a) Name two macrofauna present in the soil and their functions.

(b) Explain commensalism, ammensalism and mutualism with respect to soil borne microbes and give suitable examples.

(c) Which organism is responsible for the discovery of Gibberellin? 3+(3+3)+1

7. (a) What is radulin? State its function.

(b) Distinguish between bacterium and bacteroid.

(c) How mechanical composting is different from normal composting?

(d) State the mechanism of switching-on and switching-off of *nif* operon. (1+1)+2+2+4

8. (a) What is meant by sedimentary cycles? Why are they so called? Give example.

(b) Explain the major phases of microbial carbon cycle with the roles of microbes involved in the process.

(c) Why is black stem rust an heterocious rust? Name the causal organism for these diseases. 3+5+(1+1)

9. Write short notes on : 2½×4

(a) Phosphate solubilization

(b) Rhizosphere

(c) Anamorph and Telesmorph of Brown Spot of Rice

(d) Microbial production of methane.