

2015
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

1. Answer the following questions : 2×5
 - (a) What is coliform test?
 - (b) The black stem rust pathogen persists in the field even if the field remains without wheat plants for one season — why?
 - (c) How do you sample air to assess airborne pathogens?
 - (d) What factor determines the attraction of *Rhizobium* to the root surface of the legume plant?
 - (e) With suitable example define commensalism.

2. (a) How does microbial flora distributed differentially in different kind of soil? 2½
 - (b) What is phyllosphere? How do bacteria evade the host barrier in phyllosphere? 1+2½
 - (c) Why paddy fields are infested with *Azolla*? 2
 - (d) State the important characteristics of marine bacteria. 2

3. (a) How do sulfites and benzoates act as food preservatives? 1½+1½
 - (b) What is canned food? How is it prepared? How does the contamination of canned food occur? 1+2+2
 - (c) Why does reddening of salted fish occur? 2

4. (a) What is vermicompost? Briefly describe the procedure for its preparation. 1+2
 - (b) What is the causative agent of blast of rice? Briefly describe the progression and control of this disease. 1+3
 - (c) How do you control pests through biological means? 3

5. (a) How are the phosphate solubilizing microbes important? 2
 (b) What do you mean by bioleaching and biomineralization? 3
 (c) Briefly describe the nitrogen cycle. 3
 (d) What is hypertrophication? 2
6. (a) State the general limitations of studying microbial diversity. $2\frac{1}{2}$
 (b) 'Ionizing radiation is more useful in sterilizing foods and food products than ultraviolet ray'. — Explain why? $2\frac{1}{2}$
 (c) What is phosphatase test of pasteurized milk? Explain it. 1+2
 (d) State the factors affecting microbial community in air. 2
7. (a) Why airborne pathogens are more deadly than food borne pathogens? 2
 (b) How do you determine MPN of sewage water? What are the disadvantages of MPN-analysis? 3+1
 (c) How can you determine COD of a given water sample? What are the benefits of knowing COD value of water? $2\frac{1}{2}+1\frac{1}{2}$
8. (a) What are the best ways of preservation of eggs? 2
 (b) What is the difference between curd and yogurt? Outline the procedure for the production of yogurt. $1\frac{1}{2}+2\frac{1}{2}$
 (c) Food can be stored (i) by drying and (ii) in high salt. Explain why? $1\frac{1}{2}+1\frac{1}{2}$
 (d) Briefly account the features of methanogens. 1
9. Write short notes on : $2\frac{1}{2}\times 4$
 (a) Endosymbionts
 (b) Integrated pest management
 (c) Symbiotic nitrogen fixation
 (d) Salmonellosis.