

U.G. 6th Semester Examination - 2022**MICROBIOLOGY****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : MB-H-DSE-L-03****(Microbes in Sustainable Agriculture and Development)**

Full Marks : 40

Time : $2\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*1. Answer any **five** of the following questions: $2 \times 5 = 10$

- i) What is soil texture?
- ii) What do you mean by loam?
- iii) What is meant by topsoil and subsoil?
- iv) What is ensiling?
- v) Mention the viruses used as bioinsecticides.
- vi) What is flavr-savr tomato?
- vii) What is ammonification?
- viii) What is actinorhizal symbiosis?

2. Answer any **two** from the following questions: $5 \times 2 = 10$

- i) Give the name of the organism responsible for producing Bt toxin. Describe the mechanism of action of Bt toxin as biocontrol agent. $1+4$
- ii) What is soil profile? Briefly describe the soil profile of a typical soil. $1+4$
- iii) What is biofuel? Mention the difference between biofuel and fossil fuel. Mention at least one organism each for the production of ethanol and butanol. $1+2+2$
- iv) What is leghemoglobin and mention its function. What is the genetics of nodule formation in leguminous plant? $(1+2)+2$

3. Answer any **two** from the following questions: $10 \times 2 = 20$

- i) What is transgenic animal? What do you mean by animal cloning? What are the different types of animal cloning and briefly describe each type? $2+2+(2+4)$
- ii) What do you mean by symbiotic nitrogen fixation and mention two bacteria involved in the process? Explain the process of symbiotic nitrogen fixation. $2+2+6$

[Turn Over]

iii) What are methanogens? Describe the role of autotrophs and heterotrophs in carbon cycle.

2+(4+4)

iv) Write short notes on :

$2\frac{1}{2} \times 4$

- a) PGPR
- b) Golden rice
- c) Humus
- d) Bioethics
