

U.G. 6th Semester Examination - 2021**MICROBIOLOGY****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : MB-H-DSE-L-03****(Microbes in Sustainable Agriculture and Development)**

Full Marks : 40

Time : 2½ 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 the following questions : 1×10=10
- i) What is biofertilizer?
 - ii) Name one genetically modified crop.
 - iii) Write the name of one bacterial plant pathogen.
 - iv) What is rhizoplane?
 - v) Name the major green house gas?
 - vi) Name one non-symbiotic nitrogen fixing bacteria.
 - vii) What is biomanure?
 - viii) Mention the source of Bt toxin.

- ix) Name one lignin degrading enzyme.
 - x) What is the full-form of PGPR?
2. Answer any **five** of the following: 2×5=10
- i) What are the main factors affecting survival of microorganisms in soil?
 - ii) Write short note on golden rice.
 - iii) What is humus?
 - iv) Write the role of microbes in nitrogen cycle.
 - v) Describe the biocontrol mechanism against a plant pathogen.
 - vi) What is green house effect?
 - vii) How is phosphate solubilised in soil by microbes?
3. Answer any **four** of the following: 5×4=20
- i) Describe mineralization process of hemicelluloses and lignocelluloses in soil.
 - ii) Mention different types of Mycorrhizae and their contribution in plant growth.
 - iii) What are the advantages and disadvantages of GM-crops?
 - iv) Write the reservoirs of sulphur in nature. Describe briefly how it enters the biological system. 2+3

- v) Write the general characteristics of a good carrier material for biofertilizer. Name two microorganisms used as biofertilizer.

3+2

- vi) What is biogas? Mention the nature of biogas producing bacteria. What are the raw materials used for biogas production?

1+2+2
