

U.G. 5th Semester Examination - 2020**MICROBIOLOGY****[HONOURS]****Course Code : MB-H-CC-L-12****(Microbial Ecology and Agricultural Microbiology)**

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 the following questions : $1 \times 10 = 10$

- i) What is ecological niche?
- ii) What are coliforms?
- iii) What is metagenomics?
- iv) Name a plant disease caused by plasmid-borne gene.
- v) What is siderophore?
- vi) Name one phyllosphere inhabiting diazotroph.
- vii) What are PR proteins?
- viii) What is biomagnification?
- ix) What is IMViC test?

x) What are target specific fungicides?

2. Answer any **five** questions: $2 \times 5 = 10$

- i) What are 'ecological pyramids'?
- ii) Which RNA gene sequence is used in bacterial classification and why?
- iii) Explain top down and bottom up control in ecosystem.
- iv) What is multispecies modelling?
- v) What are the limiting factors for microbial colonization in rhizosphere?
- vi) Name one important fungal disease of wheat. How can you control it?
- vii) Why is vermicomposting considered as an eco-friendly technology?

3. Answer any **four** questions: $5 \times 4 = 20$

- i) How do psychrotolerant organisms differ from psychrophilic organisms? What molecular adaptations to the cytoplasmic membrane are seen in psychrophiles and why are they necessary? $2+3$
- ii) Explain with examples the commensalism and amensalism between microbes.

[Turn Over]

- iii) Distinguish between grazing and detritus food chain. Describe the role of microbial food web in a detritus based ecosystem. 3+2
 - iv) Mention the different types of biofertilizers used in agriculture. How are rhizobial formulation produced commercially as biofertilizer for marketing? What are the major constraints of this industry in India? 2+2+1
 - v) Distinguish between biocontrol, biocide control and biotechnological control of insect diseases of plants citing an example.
 - vi) Write short notes on mycorrhizal fungi and plant growth promoting rhizobacteria.
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