

U.G. 5th Semester Examination - 2021**MICROBIOLOGY****[HONOURS]****Discipline Specific Elective (DSE)****Course Code : MB-H-DSE-L-02****(Microbial Biotechnology)**

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 any **five** of the following: 2×5=10
- i) Which are the species of *Azotobacter* that occur commonly in India?
 - ii) Which is the suitable medium for the cultivation of *Azospirillum*?
 - iii) What are Bt-crops?
 - iv) What are physiologically relevant concentrations of IAA for a PGPR to produce?
 - v) How fast do mycorrhizae grow?
 - vi) Which bacteria use genetic engineering?

- vii) What type of vaccine is the hepatitis B vaccine?
- viii) Why do microorganisms produce polysaccharides?

2. Answer any **two** : 5×2=10
- i) List two different cultures used as an industrial process. Why is continuous culture not widely used as an industrial process? 2+3
 - ii) What are the advantages of immobilized enzymes and cells? 5
 - iii) Can virus be used as biopesticide? Give an example of a bacterium, a fungus and an insect that are used as biocontrol agents. 2+3
 - iv) Can bioplastics be mechanically recycled? What is the difference between oxofragmentable and biodegradable plastics? 2+3
3. Answer any **two** : 10×2=20
- i) What are the steps for PGPR application in the field? What are the factors must be considered for its success? 6+4
 - ii) What is high fructose corn syrup? Which enzyme is used for production of fructose syrup? What are the differences in the way glucose and fructose are metabolized by the

body? Is there a difference between drinking calories and eating calories? Does fructose cause diabetes? 2+1+3+2+2

- iii) What alcohol is used in biodiesel production? What crops are mostly used to make ethanol and biodiesel? What is biogas? Can biogas be used in place of fossil fuels? What are the environmental impacts of producing/using biogas?

1+2+2+2+3

- iv) Why microbial diversity is important in bioremediation? What is bioaugmentation? How are microorganisms involved in removal of heavy metals from aqueous effluents? 2+2+6
