



MCBGDSE03T 17/08/2021
10.00 AM to 12.00 Noon

<https://forms.gle/QBN6rne1oMecVYK38>

WEST BENGAL STATE UNIVERSITY

B.Sc. Programme 6th Semester Examination, 2021

MCBGDSE03T-MICROBIOLOGY (DSE2)

MICROBES IN SUSTAINABLE AGRICULTURE AND DEVELOPMENT

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

Candidates should answer in their own words and adhere to the word limit as practicable.

Answer Question No. 1 and any *four* questions from the rest

1. Answer any *four* questions from the following: 2×4 = 8
 - (a) What is Geosmin?
 - (b) Write the name of two greenhouse gases that emitted from soil.
 - (c) What are epiphytic bacteria?
 - (d) What is bioremediation?
 - (e) What are GM crops? Give two examples.
 - (f) Write the effects of PGPR.
 - (g) What is bacteroid?
 - (h) Give examples of one bacteria and one fungi that are used as insecticides.
2. (a) How does soil serve as a habitat for microorganisms? 3
 - (b) How does *Bacillus thuringiensis* (Bt) associated with GMO corn? 3
 - (c) What is leghemoglobin? 2
3. (a) Define Biomagnification. 2
 - (b) How are insect viruses used in the control of plant diseases? 3
 - (c) How is vermicompost prepared? 3
4. (a) "Soil gases has a ratio of high CO₂ and low O₂" — Explain. 2
 - (b) What elements are dependent on biogeochemical cycle? 1
 - (c) How to control the emission of CO₂ and methane gases? 2+2
 - (d) Write the name of soil bacteria that produce nitric oxide. 1
5. (a) What are transgenic animals? How do they beneficial to humans? 1+3
 - (b) How does plant growth promoting bacteria provide multiple benefits in agriculture? 2
 - (c) Which type of microorganisms are commonly used in biogas production? 2

6. (a) What are xenobiotics? 2
(b) Briefly describe the role of *Dehalococcoides* in biodegradation. 3
(c) Explain the importance of *Botryococcus braunii*. 3
7. (a) What is biogas? Briefly describe the biogas production process. 1+2
(b) What are the four different groups of microbes involved in methane production? 2
(c) What is ICPs? Write role of ICPs in agriculture. 1+2
8. (a) Write the selection procedure of rhizobial inoculant. 2
(b) Write the role of different groups of N₂ fixing bacteria as plant growth promoter. 2
(c) Give an example on bio-fuel with its production procedure. 1+3

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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