



WEST BENGAL STATE UNIVERSITY
B.Sc. Programme 6th Semester Examination, 2022

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 rhizosphere?
 - (b) Give the examples of non symbiotic N₂- fixing bacteria.
 - (c) What are 2nd generation biofuel?
 - (d) What are methanogen?
 - (e) Define PGPR.
 - (f) Briefly describe ammonification.
 - (g) What does it mean by mineralization?
 - (h) Give the example of green house gas and briefly describe how it contributes to global warming.

2.
 - (a) Describe the benefit of biofertilizer. 2
 - (b) What is green house effect? 2
 - (c) What is endomycorrhiza? Give an example. 2
 - (d) What is Biomagnification? 2

3.
 - (a) What does it mean by 'Bt' in Bt-cotton. 2
 - (b) What is the mode of action of Bt- toxin? 3
 - (c) What is golden rice? 1
 - (d) What are the probable negative effect of using excessive GM crop on environment? 2

4.
 - (a) Write down the difference between biomagnification and bioaccumulation. 2
 - (b) What does it mean by phosphate solubilization? Give the example of one bacterium that can execute this process. 2+1
 - (c) Discuss the beneficial role of any one transgenic animal in human use. 3

5. (a) Discuss the nitrogenase enzyme system. 2
(b) What are the different categories of biopesticides? 2
(c) Discuss the role of baculovirus in biopesticides. 3
(d) Why Soil acts as good reservoir of different kinds of bacteria? 1
6. (a) Discuss nitrification and de-nitrification with examples. 2+2
(b) Is nitrification aerobic or anaerobic process? 1
(c) What is the ill effect of nitrification process? How it can be overcome? 1+2
7. (a) Briefly describe the function of Leg haemoglobin. 2
(b) Describe the function of 'nod' gene. 2
(c) What is Biogas? Describe its advantages. 1+1
(d) What is recalcitrance? Give an example. 2
8. (a) What does it mean by eutrophication? 2
(b) What is VAM? Give example. 2
(c) Describe the characteristics of 'Bacteroid'. 2
(d) What is the difference between manure and fertilizer? 2

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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