



সামান্য মন্ত্র: সমিতি: সামান্য

UNIVERSITY OF NORTH BENGAL

B.Sc. Sec 2nd Semester Examination, 2024

UMICSEC12002-MICROBIOLOGY

BIOFERTILIZERS

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** of the following: 1×5 = 5
 - (a) What is the precursor of IAA?
 - (b) Define N₂ fixation.
 - (c) What is VAM?
 - (d) What is mineralization?
 - (e) State the function of Azospirillum.
 - (f) What is crop response?
 - (g) What are biofertilizers?
 - (h) What is heterocyst?

2. Answer any **three** of the following: 5×3 = 15
 - (a) Write down the general characteristics of cyanobacteria.
 - (b) Describe the field application of PSM.
 - (c) Write a short note on application of Azolla in rice cultivation.
 - (d) Describe non-leguminous symbiosis of N₂ fixer.
 - (e) Write a note on ectomycorrhizal and endomycorrhizal association with plants. 5

3. Answer any **two** of the following: 10×2 = 20
 - (a) Describe in detail the isolation procedure, characterization and mass production of phosphate-solubilizing microbes. Give one example of phosphate solubilization bacterium. 3+3+3+1
 - (b) Describe IAA biosynthetic pathway in microorganisms and write down about indole acetic acid as producer in plant and its plant actions.
 - (c) Write down the isolation, general characteristics and field application of Rhizobium. What is leg hemoglobin? 3+3+3+1
 - (d) Write down the advantages of biofertilizers over chemical fertilizers. Describe the characteristics of azotobacter. 6+4

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‘समानो यन्त्रः समितिः समानी’

UNIVERSITY OF NORTH BENGAL

B.Sc. Major 2nd Semester Examination, 2024

UMICMAJ12002-MICROBIOLOGY

BACTERIOLOGY

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Answer any **five** of the following: 1×5 = 5
 - (a) What is nucleoid?
 - (b) Name one endospore forming bacteria.
 - (c) What is the function of lysozyme?
 - (d) What is specific growth?
 - (e) What is meant by differential media? Give example.
 - (f) What is meant by semilogarithmic growth plot?
 - (g) What is spheroplast?
 - (h) What are halophiles? Give example.

2. Answer any **three** of the following: 5×3 = 15
 - (a) Briefly describe the different phases of bacterial growth. 5
 - (b) Differentiate between pili and fimbriae. What are plasmids and what are their importance in general? 3+2
 - (c) Write short notes on— 2½+2½
 - (i) Whittaker's five kingdom system
 - (ii) Importance of rRNA oligonucleotide sequencing.
 - (d) Write down the importance of bacterial capsule with example. 5
 - (e) Mention the general characteristics of Actinobacteria and Firmicutes. 5

3. Answer any **two** of the following: 10×2 = 20
 - (a) Describe a detailed structure of cell wall of Gram-negative bacteria with the help of labelled diagram. Write down the differences between Gram-positive and Gram-negative bacteria. 6+4
 - (b) Give an account of general characteristics of Archaea. Add a note on their ecological and economical importance. 6+4
 - (c) Describe how high temperature is used in controlling microbes. How do you validate the functioning of an autoclave? 6+4
 - (d) Discuss the fluid mosaic model of bacterial cell membrane with suitable diagram. Write a note on prokaryotic ribosome. 6+4

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