

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS- 2023

M.Sc.2nd Semester (BT)

COURSE CODE (CREDITS): 20MSWBT232

MAX. MARKS: 35

COURSE NAME: Environmental Biotechnology

COURSE INSTRUCTORS: Ashok Kumar Nadda

MAX. TIME: 2 Hours

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Section I

Q1. Answer the following questions. Each question is carrying one mark only.

- a) What are bioadhesives and biolubricants? Give examples of each. (Marks 1)
- b) What is Arbuscular Mycorrhiza? Mention their sources too. (Marks 1)
- c) Name the two microorganisms that are present in natural enteric fermentor. (Marks 1)
- d) What are bioemulsifiers? Give two examples. (Marks 1)
- e) How does the lead and mercury affect the health of human beings? Name the diseases produced by these pollutants. (Mark 1)

Section II

Q 2 What are the two major classes of soil enzymes? Discuss the role of chitinases and urease in maintaining soil health? (Marks 3)

Q 3 Give a brief account of plant growth promoting rhizobacteria (PGPR) and how does these are beneficial to crops? (Marks 3)

Q 4 Comment on the role and Plant-Incorporated-Protectants (PIPs) in the agriculture biotechnology. Give suitable examples. (Marks 3)

Q 5 What are the sources of actinovate and serenade that are available commercially in the market? Comment on their role to prevent the development of disease in the plants. (Marks 3)

Q 6 How do the microorganisms will be utilized for the removal of heavy metals impurities in the aquatic ecosystem? (Marks 3)

Section III

Q 7 Illustrate the process of synthesis of bioplastic from starch based waste material. What are the selection criteria for the use of bio-based products? (Marks 4)

Q 8 Discuss various types of biofertilizers that help in the absorption of nitrogen, phosphorous and sulphur by plants. Give examples and their role in crop improvement **(Marks 4)**

Q 9 Discuss the role of various microbial genera in the MEOR (Microbial enhanced oil recovery) process. How does the microbe can be used to increase oil recovery from deep wells? Explain with a labeled diagram. **(Marks 4)**

Q10 Discuss the mechanism of activation of BT protoxin inside the gut of moth larvae. How this activation does leads to the killing of insect in larval stages. **(Marks 3)**