

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Test-3 EXAMINATIONS-2022

B. Tech 4th Semester Biotechnology

COURSE CODE (CREDITS): 18B11BT414

MAX. MARKS: 35

COURSE NAME: Microbiology

COURSE INSTRUCTORS: Ashok Kumar Nadda

MAX. TIME: 2 Hours

Note: All questions are compulsory. Use of mobile phone is prohibited in the exam. Marks are indicated against each question in square brackets.

Section I

Very short answer types questions. Each Question carries one mark only.

- (a) A unique type of lipid present in the cell membrane of scalloped type of Archaea is-----
----- (1 mark COIII)
- (b) A bacteria named -----that currently holds the record for high temperature growth, it can grown in temperatures up to 113°C (1 mark COII)
- (c) Phosphate mobilizing biofertilizers plays a crucial role in crop improvement and maintaining soil health. Give the example of bacteria and fungi capable of phosphate mobilization. (1 mark COII)
- (d) *Azolla* is a free-floating water fern that floats in water and fixes atmospheric nitrogen in association with nitrogen fixing blue green alga *Anabaena* and it is used as biofertilizer for wetland rice and it is known to contribute -----kg N/ha per rice crop. (1 mark COIV)
- (e) Among the enveloped and non enveloped virus which one is more sensitive towards antimicrobial agents? (1 mark COIII)

Section II

- Q 3** Discuss the various phylum of the archaebacteria with the help of suitable examples. What are the various mechanisms and unique characteristics that archaea adopt to survive in extreme environments? (3 marks COIII)
- Q 4** Write a brief account of Arbuscular Mycorrhiza and its role in the agricultural microbiology. (3 marks COIV)
- Q 5** In order to get the energy, microbial cell follows the anaerobic respiration and fermentation pathways. Differentiate between fermentation and anaerobic respiration and among these which pathways generate higher amount of energy? (3 marks COIV)
- Q 6** Discuss the various benefits of probiotics on human health. What are the major microbial genera exist as probiotics and confer the protection against various diseases? (3 marks COIV)

Section III

Q 6 Organic solvent tolerant microbes and enzymes have great importance in the industry. Give the examples and mechanism of adaptation of organic solvent tolerant bacteria with their possible applications. **(4 marks COII)**

Q 7 What are the unique characteristics of barophiles that help them to survive under high hydrostatic pressure condition where normal cells or living being may not able to survive? Explain with the help of suitable examples. **(4 marks COV)**

Q 7 Biomass can be converted into high energy rich fuels using microbial process? Give the various examples of microbes involved in the biomass degradation and its conversion into bioethanol and biogas? **(4 marks COIV)**

Q 8 Give a detailed account of microbial biopesticides. What are various advantages and principles underlying the use of biopesticides in integrated pest management. **(6 marks COIV)**

or

Q 9 Discuss the mechanism of action of *Bacillus Thurengiensis* on the crop harming pests. Explain with the help of a suitable diagram. **(6 marks COIV)**

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