

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Test-3 EXAMINATIONS-2022

B. Tech 4th Semester Biotechnology (Backlog)

COURSE CODE (CREDITS): 10B11BT313

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) The outer coat of the virus is made up of _____ (1 mark COIII)
- (b) A large group of primitive bacteria having unusual cell walls, membrane lipids, ribosomes, and RNA sequences, and having the ability to produce methane and to live in anaerobic, extremely hot, salty, or acidic conditions is known as _____. (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) What are the high level antimicrobial agents? Give their examples. (1 mark COIV)
- (e) Why we need to grow the microorganism in the laboratory when they are present in the nature too? Give proper explanations. (1 mark COIII)

Section II

- Q 3** Discuss the various physiological characteristics of archaeobacteria that make them different from other existing microbial genera? Explain with the help of suitable examples. (3 marks COIII)
- Q 4** Write a brief account of methanogenic bacteria with their occurrence and diversity in natural ecosystem. Give examples of commercially important methanogens. (3 marks COIV)
- Q 5** In order to get the energy, microbial cell follows the various metabolic pathways. Differentiate between aerobic respiration, 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 Those microorganisms which live in high temperature environment or hot springs have unique physiology in their cellular components. Give the examples and mechanism of adaptation of thermophilic bacteria with their possible applications. (4 marks COII)

Q 7 What are the unique characteristics of alkaliphiles that help them to survive under high pH condition where normal cells or living being may not be 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 generation of bioenergy rich products? (4 marks COIV)

Q 8 Give a detailed account of microbial biofertilizers. What are various advantages and principles underlying the use of biofertilizers 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)

T3 Examinations