

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATIONS-2024

B. Tech. BT/BI-3rd Semester

COURSE CODE (CREDITS): **18B11BT414 (3)**

MAX. MARKS: **35**

COURSE NAME: **Microbiology**

COURSE INSTRUCTORS: **Dr. Ashok Kumar Nadda**

MAX. TIME: **2 Hours**

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Section I

Q 1 Answer the following questions.

- a) Explain the significance of microbial interaction in nutrient cycling within ecosystems.
(Mark 1) CO-I
- b) Give an example of each antibiotics that cause the hydrolysis the cell wall and cell membrane of bacteria? (Mark 1) CO-II
- c) How do the probiotics benefit the digestive system? How can probiotics help in treating diarrhea? (Mark 1) CO-V
- d) What role do cellulolytic bacteria play in the conversion of biomass? Give two example of bacteria that convert the biomass to value added product (Mark 1) CO-IV
- e) How does microbial conversion of biomass contribute to sustainable energy production?
(Mark 1) CO-IV

Section II

Q 2 How do mycorrhizal fungi function as biofertilizers? Enlist the various types of mycorrhiza.
(Marks 3) CO-V

Q 3 What advantages do biopesticides have over synthetic chemical pesticides? Give an account of bacterial biopesticides used commercially to control the various disease in plants (Marks 3)
CO-V

Q 4 How do plasmids differ from chromosomal DNA? Discuss the various types of plasmids.

What types of genes are commonly found on plasmids? (Marks 3) CO-III & IV

Q 5 Discuss the various mechanism of action of probiotics? Discuss the various health benefits of probiotics on human body. (Marks 3) CO V

Q 6 What is antibiotic resistance, and why is it a concern in bacterial pathogens? What is a nosocomial infection, and how are bacterial pathogens involved? (Marks 3) CO III

Section III

Q 7 What is the role of epidemiology in understanding bacterial diseases? Name a common bacterial pathogen responsible for foodborne illness. How can bacterial pathogens be transmitted?? (Marks 5) CO IV

Q 8 How do extremophiles survive in high-temperature environments, such as the hydrothermal vents? Name an extremophile that produces enzymes used in DNA amplification (PCR). How do extremophiles contribute to biotechnology and industrial processes? What is the significance of extremophiles in the context of climate change? (Marks 5) CO V

Q9 Give a detailed account of followings diseases. Discuss the causative agent, incubation period, disease cycle, symptoms prophylaxis and treatment measures. (Marks 2.5×2= 5) CO IV

- (a) Rabies
- (b) Whooping cough