

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2023

M.Sc. 2nd Semester Microbiology

COURSE CODE (CREDITS): (21MS1MB212)

MAX. MARKS: 25

COURSE NAME: MICROBIAL GENETICS AND PHYSIOLOGY

COURSE INSTRUCTORS: AKN

MAX. TIME: 1.5 h

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

Section I

Q1 Very short answer type questions. Each question is carrying one mark.

- (a) What are chemolithotrophic microorganisms? Give suitable example. **(01 mark)**
- (b) Name the hydrogen oxidizing bacteria and which enzymes mainly present in these microbes for hydrogen oxidation reactions. **(01 mark)**
- (c) What are anamoxasomes? Name the phylum in which anamox bacteria are majorly found **(01 mark)**
- (d) Give the examples of microorganisms involved in butyric acid fermentation **(01 mark)**
- (e) Give two examples of lactic acid bacteria. **(01 mark)**

Section II

Q 2 Explain with the help of suitable examples sulfur oxidizing and iron oxidizing bacteria. (2.5 marks)

Q 3 Explain why an organism like *Desulfovibrio* could grow as an anaerobic lithotroph, while *Acidithiobacillus ferrooxidans* growing on FeSO_4 would be an obligate aerobe. (2.5 marks)

Q 4 Explain diagrammatically the various steps in sporogenesis. Also give a detailed diagram of endospores. (2.5 marks)

Q 5 Differentiate between batch culture and continuous culture. Among these which is suitable for most of the industrial applications and why? (2.5 marks)

Section III

Q 6 What happens to coding sequence in case of Frame Shift mutations? Logically explain with the help of an example. **(Marks 2)**

Q 7 The numbers of individuals suffering from one recessive autosomal disorder are 25 out of 10000. Calculate the percentage of heterozygous individuals in the population and frequency of dominant and recessive alleles. **(Marks 2)**

Q 8 Give a brief account of diauxic growth in microorganisms. How does the substrate availability affect the growth of microorganisms? **(Marks 3)**

Q 9 What is the difference between Reverse and Forward Genetics? Highlights the techniques used in Reverse Genetics? **(Marks 3)**

TZ Examinations May 2023