Enrollment No._____

NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Science
Program/s: M.Sc. Microbiology
Year: 1st **Semester:** 1st
Examination: End Semester Examination
Examination year: December 2022

Course Code: MIC102 **Course Name:** **Microbial Ecology and Diversity**
Date: 07/12/2022 **Total Marks:** 40
Time: 08:30 am to 10:30 am **Total Pages:** 2

Instructions:

- *Write each answer on a new page.*
- *Use of a calculator is permitted/not permitted.*
- ** COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping*

Q. No.	Details	Marks	COs*	BTL#
Q.1	**Do as directed:** 1. Which of the following is NOT true about facultative anaerobic bacteria? a) They do not require oxygen for growth but may use it for energy production if available b) They strictly require oxygen for growth c) They grow well in presence and absence of oxygen d) None of the above 2. In enrichment culture: a) The medium is established such that it selective for the desired organism and counter selective for undesired organisms b) A set of incubation conditions is established such that it selective for the desired organism and counter selective for undesired organisms c) Both (a) and (b) d) Allows the growth of all the organisms taken from the source 3. In commensalism: a) Both the organisms are benefitted b) Only one organism associated with the other is benefitted c) One organism associated with the other is benefitted, while other is harmed d) None of the above 4. Flavin adenine dinucleotide is: a) A dehydrogenase b) A co-enzyme c) Both (a) and (b) d) None of the above 5. Which of the following is NOT true about Entner-Doudoroff ? a) It is a pathway for glucose catabolism b) It is widespread among gram-negative bacteria c) It is found in both prokaryotes and eukaryotes. d) None of the above 6. Define protocooperation 7. State one reason why psychrophiles are not able to tolerate high temperatures 8. Give two examples of microbes in the terrestrial ecosystem. 9. Define microbial diversity. 10.Give one example each of: (a) Oxidation reaction (b) Reduction reaction.	**10**	CO1 CO2 CO3 CO4	BT1, BT2 BT4

Enrollment

Q.2	**Answer in brief (Any 7)** 1. Define and state one importance of 'microbial community structure.' 2. What is meant by enrichment bias? 3. State few methods to determine the purity of a culture. 4. Define: Benthic zone and Neritic zone 5. Define and state the difference between colonization and infection. 6. State two adaptations of halophiles due to which they can survive in extreme salt concentrations. 7. State the reason behind the acidic nature of acid mine drainage. 8. Complete the following reaction: $C_6H_{12}O_6$+2NAD + 2ADP + 2Pi → _____ + _____ + _____ (Glucose)	14	CO1, CO2 CO3 CO4	BT1, BT2 BT4
Q.3	**Write short notes on (Any 2)** 1. The Winogradsky column 2. The nitrogen cycle and role of microorganisms in the cycle. 3. Different phases of microbial growth	6	CO1 CO2 CO3 CO4	BT1, BT2
Q.4	**Answer in detail (Any 2)** 1. What is quorum sensing? Explain in brief the mechanism of quorum sensing with suitable example. 2. Draw and explain in brief the tricarboxylic acid (TCA) cycle. 3. Draw the Pentose phosphate Pathway and write in brief its importance.	10	CO1 CO2 CO3, CO4	BT1, BT2

**********End of Question Paper**********