

(A-24) Seat No.: _____

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SARDAR PATEL UNIVERSITY
M. Sc. IGBT EXAMINATION, SEVENTH SEMESTER
PS07CIGEB3-ENVIRONMENTAL MICROBIOLOGY
22nd October, 2016(Saturday), 2.00 pm to 5.00 pm

Maximum Marks: 70

Note: (1) All the Questions are compulsory. (2) Figures on the right indicate marks.

Q.1 Select the right answer for the following:

1x8= 8

1. The surface in freshwater represents the interface b/w hydrosphere and the atmosphere is referred as _____.
a. Wetland b. Estuary c. Salt-marsh Estuary d. Neuston
2. _____ is the region nearest the Earth's surface interfaces with both the hydrosphere and the lithosphere.
a. Stratosphere b. Ionosphere c. Troposphere d. Lithosphere
3. Population Selection r & K strategies is derived from following equation
a. $\frac{dx}{dt} \cdot \frac{1}{x} = r - (r/K) \cdot x$ b. $\frac{dx}{dt} = r - (r/K) \cdot x$
c. $\frac{dx}{dt} \cdot \frac{1}{x} = r - (r/K)$ d. $\frac{dt}{dx} \cdot \frac{1}{x} = r - (r/K) \cdot x$
4. In a lake, epilimnion layer contains _____ group bacteria in maximum number.
a. Heterotrophs
b. Chemotrophs
c. Cyanobacteria
d. Sulphate reducers
5. Anabaena azollae is a
a. Free living N₂ fixer b. Symbiotic N₂ fixer
c. Asymbiotic N₂ fixer d. none of these
6. Leaf cutting Atta species of ant cultivates _____ group of fungi.
a. Basidiomycetes b. Zygomycetes
c. Deuteriomycetes d. none of these
7. The relationship describes in which one organism lives off the table scraps of another organism is known as _____.
a. Co metabolism b. Syntrophism c. Commensalism d. Parasitism
8. FAME analysis is a method to study
a. Species Diversity b. Ecology c. Community Diversity d. None

(P.T.O.)

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- Q.2. Attempt any seven of the following 2x7
=14
1. Give example of symbiotic N₂ fixation observed in actinomycetes.
 2. How can co-metabolism serve as a basis for commensalism?
 3. Explain the r and K strategies of population selection.
 4. Enlist strategies for survival of psychrophiles.
 5. Define three reasons for 16 s r DNA as chronological tool.
 6. Define Bacteroids & explain the role of leghaemoglobin.
 7. Explain the mechanism of nematode trapping fungi.
 8. Define the role of chemolithotrophs in deep sea thermal vent habitats.
 9. Why T-RFLP is better than RFLP?
- Q.3 a. Discuss the composition and activity of fresh water microbial community. 6
 b. The litho-ecosphere is one of the suitable habitats for microbes: Justify. 6
- OR**
- b. Write a note on species diversity indices 6
- Q.4 a. Define hyperthermophiles. Discuss the physiology & strategies to survive at extreme high temperature. 6
 b. Explain the method, application & limitation of DGGE as tool to study microbial diversity. 6
- OR**
- b. Enlist conventional methods to study microbial biodiversity and discuss any one in detail. 6
- Q.5 a. Explain the regulatory mechanism of Nitrogenase enzyme. 6
 b. Discuss the nodulation process in symbiotic nitrogen fixation. 6
- OR**
- b. Write a note on: Free living N₂ fixers. 6
- Q.6 a. Enlist various positive associations among microbes & discuss commensalism in detail with suitable examples. 6
 b. How do microorganisms contribute to the nutrition of ruminant animals? 6
- OR**
- b. Explain the difference b/w predation & parasitism. Discuss parasitism in detail with suitable example. 6