31/03/2016

School of Environment and Natural Resources
Doon University
Dehradun, Uttarakhand
Question Paper: Mid-Semester

M. Tech. Environmental Technology (Second Semester) | Session: Jan 2016 – May 2016
Course: Applied Environmental Chemistry & Microbiology | Course Code: ETC-520
Maximum Marks: 30 | Maximum Time: 2:00 Hrs

Instructions

(i) All questions are compulsory. Read all questions carefully.
(ii) Write your name on question paper.
(iii)Mobile/cell phones are not allowed inside the examination hall.

Section A. Give answers to any Three questions: **(Marks: 2 × 3 = 06)**

1. What is mean doubling time? How is it correlated with specific growth rate of bacteria?
2. What effect does increasing a limiting nutrient have on the yield of cells and the growth rate?
3. Under what circumstances is the MPN method used to determine the number of bacteria in a sample? Write its limitations.
4. How microorganisms can be harmed by oxygen?

Section B. Give answers to any Four questions: **(Marks: 3 × 4 = 12)**

5. Discuss the kinetics of destruction of microorganisms by moist heat sterilization.
6. Two types of prokaryotic cells have been distinguished: bacteria and archaea. How do these cells differ from each other? How are they similar?
7. Discuss the various methods of microbial control by filtration.
8. What are extremophiles? Discuss environmental applications of extremophiles.
9. Discuss the following microbial interactions with examples: Mutualisms and Amensalism

Section C. Give answers to any TWO questions: **(Marks: 6 × 2 = 12)**

10. What is synchronous and asynchronous growth? Discuss in brief the Helmstetter-Cummings Technique of obtaining synchronous culture.
11. Write short notes on inclusion bodies and diauxic growth curve.
12. Discuss the Swan-Neck Experiment of Louis Pasteur and Whittaker's five kingdom concept.