

2021
B.E. (Bio-Technology) Seventh Semester
BIO-711: Environmental Biotechnology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Write briefly:
- What is MEOR?
 - What is F/M ratio in activated sludge process?
 - Define BOD and COD?
 - What is the difference between MLSS and MLVSS?
 - What is acid rain?
 - What is recirculation ratio?
 - What are the limitations of BOD test?
 - Which bacteria help in desulfurization of coal?
 - What is nucleic acid hybridization?
 - How sludge retention time is different from hydraulic retention time? (10x1)

UNIT - I

- II. Explain the following:-
- UASB.
 - High and low rate trickling bed filter. (5,5)
- III. a) Briefly describe design criteria of screen and grit chamber for waste water treatment.
- b) If the 3-day, 12°C BOD is 120 mg/l, what will be its 7-day, 25°C BOD? (5,5)
- IV. a) Design a conventional activated sludge process to treat settled wastewater with diffused air aeration system given the following data:
Settled wastewater BOD₅ = 300 mg/l. Average flow = 30 MLD,
Effluent BOD₅ = 25 mg/l, F/M=0.2, MLSS=3000 mg/l.
- b) Draw oxygen sag analysis curve, write the basic Streeter - Phelps equation to describe and predict the behaviour of polluted stream. From this equation, determine critical travel time and critical deficit. (5,5)

P.T.O.

(2)

UNIT – II

- V. a) What are the safeties need to be followed for handling bio-hazardous wastes.
b) What are different methods of solid waste disposal? Discuss composting in brief. (4,6)
- VI. a) Why microbial desulfurization of coal is important in environmental aspects? Give example with reactions.
b) Explain the influence of pH on anaerobic digestion. In industrial waste treatment what types of sludges are created and how are they treated and disposed? (5,5)
- VII. Write short notes on:-
a) Applications of Microbial-Enhanced Oil Recovery Technology.
b) Microbial recovery of metals from solutions. (5,5)

x-x-x