



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

SECOND SEMESTER – APRIL 2015

BT 2826 - ENVIRONMENTAL BIOTECHNOLOGY

Date : 23/04/2015

Dept. No.

Max. : 100 Marks

Time : 01:00-04:00

PART – A

Answer all the questions

(20 Marks)

I Choose the correct answer:

(5 x 1 = 5 marks)

- The zone of ecosystem consisting of phyto and zoo planktons is _____
a) littoral b) profundal c) limnetic d) benthic
- BOD roughly measures the amount of _____ in water
a) degradable organic matter b) inorganic matter
c) oxygen d) nitrogen
- Low shear airlift bioreactors are used when waste contains _____ components
a) viscous b) volatile c) organic d) involatile
- Source of β galactosidase lactose permease biomarker
a) *E.coli* b) *Vibrio* c) *Pseudomonas* d) *Salmonella*
- Sulphuric and _____ acid are involved in acid rain
a) Nitric b) Hydrochloric c) Mercuric d) Nitrous

II State whether the following are true or false, if false, give reason

(5 x 1 = 5 marks)

- Eutrophic lakes have a low nutrient content.
- Nitrification and denitrification are the important anaerobic reactions in sewage treatment.
- Genetically modified microorganisms are designed to degrade specific contaminants.
- Fentons reagent is used for treating wastewater which are resistant to biological treatment.
- Pentachlorophenol is a broad spectrum biocide.

III Complete the following:

(5 x 1 = 5 marks)

- The study of flora of lakes and ponds is referred to as _____.
- Zoogloea film contains _____ bacteria
- Bioplastic- poly β - hydroxybutyrate is obtained from _____.
- Methylotrophs grow utilising _____ for carbon and energy.
- Bioremediation by plants is called _____.

IV Answer the following, each within 50 words only

(5 x 1 = 5 marks)

- What are barophilic microorganisms?
- What is breakpoint chlorination?
- Define bioremediation.
- List the major groups of pesticides.
- What are the three classes of biopolymers?

PART – B

Answer the following questions, each in about 500 words only.

Draw diagrams wherever necessary.

(5×8 = 40 marks)

21. (a) Give an account of the major groups of archaebacteria.

OR

(b) Discuss the role of microbes in maintenance of sulphur cycle.

22. (a) Write briefly on activated sludge process and the problems associated with it.

OR

(b) Explain in brief the biochemical activities in sewage treatment.

23. (a) Discuss in brief on biodegradation of xenobiotics.

OR

(b) Give an account of bioremediation of hydrocarbons.

24. (a) Write briefly on carboxylation of phenol by methanogenic bacteria.

OR

(b) Explain the different methods of effluent treatment from the sugar industry,

25. (a) Give a brief account of *Deinococcus radiodurans* and its impact on the environment.

OR

(b) What are soil enzymes? Discuss its importance.

PART – C

Answer any two of the following questions, each in about 1500 words;

(2×20 = 40 marks)

Draw diagrams wherever necessary.

26. Explain in detail the principle and application of remote sensing in environmental study.

27. Write in detail on the various steps involved in water treatment.

28. What is bioleaching? Explain with an example. Add a note on its advantages and disadvantages.

29. What are the various steps in leather tanning? Explain in detail tannery effluent treatment.
