Roll No. ..... Total No. of Pages : 2

PC 13193-N

L-15/2111
ENVIRONMENTAL BIOTECHNOLOGY-XI
Semester- III

Time Allowed : Three Hours] [Maximum Marks : 75

Note :- The candidates are required to attempt any **two** questions each from Sections A & B carrying **15** marks each and entire Section C consisting of **10** short answer type questions carrying **1.5** marks each.

SECTION—A

1. What are pollutants and what are their major sources? What are their biochemical effects on microbes, plants and animals?
2. Differentiate between *in situ* and *ex situ* bioremediation. Describe biochemical pathways involved in biodegradation of low and high molecular weight organic compounds and pesticides.
3. What do you understand by microbial removal of heavy metals? Why they are considered as toxic? Explain some microbial transformations of heavy metals.
4. What are various aerobic waste water treatment technologies? Describe operational details of activated sludge process.

2×15=30

SECTION—B

5. Explain different methods of solid waste treatment. What are the factors that influences biodegradation?
6. What are biofuels and how they are generated? Explain their pros and cons.
7. What is biosensors and how they are constructed? What is their role in detection of BOD?
8. Describe different biological treatment technologies of waste air. What is waste air and how it is generated? 2×15=30

SECTION—C

9. Define, describe or explain following :-
   (i) Methane
   (ii) Bioventing
   (iii) Up-flow anaerobic sludge blanket (USAB)
   (iv) Indian scenario of vermicomposting
   (v) Aerated lagoons
   (vi) Monod's equation for suspended and attached culture systems
   (vii) Heavy metal resistance in microbes
   (viii) Hazardous impacts of pollutants on human
   (ix) Fluidized bed reactor
   (x) Bioindicator. 10×1.5=15