(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 154801 Roll No. | | | | | | | | | | |

B.TECH.

Theory Examination (Semester-VIII) 2015-16

ENVIRONMENTAL BIOTECHNOLOGY

Time : 3 Hours *Max. Marks : 100*

Section-A

1. **Attempt all sections. All sections carry equal marks. Write answer of each section in short.** (10×2 = 20)

   (a) Define the term pollution and gives its various types.

   (b) Write the use of baffles, impellers and spargers in bioreactors.

   (c) How is packed bed reactor different from UASB reactor?

   (d) Name the different available sources of biomass for the fuel conversion.

   (e) What are fluidized bed reactors? Write in brief.

(f) How can you classify waste on the basis of degradation capability?

(g) Name few important microorganisms which are used in the waste treatment processes.

(h) What does activated sludge and biofilm mean?

(i) What do you understand by the term detection time and sparging time?

(j) What are the general characteristics of waste water?

Section-B

2. Attempt any five questions from this section. (5×10 = 50)

(a) What is environmental biotechnology and state its role in pollution management?

(b) Describe trickling filters with its key role in biological treatment.

(c) "Bioremediation means giving nature a helping hand". Justify the statement with your views.

(d) Differentiate between aerobic and anaerobic treatment process.

(e) Explain the term recirculation. How can it improve the efficiency of the biological process?

(f) Illustrate the various steps involved in the treatment of sewage and industrial water.

(g) What are the different growth kinetic phases of microorganisms in an ASP?

(h) What are rotatory biological contactors? What are its merits and demerits over its use in an industrial waste water treatment process?

Section-C

Attempt any two questions from this section. (2×15 = 30)

3. (a) What is an Activated sludge process (ASP)? Explain with diagrams and growth kinetics parameters associated with the process.

(b) Write the modifications of ASP that dealt to increase the process efficiency.

4. How can you convert the degradable organic waste into utilizable products? Give the ' various methods involved in the conversion and examples of such products.

5. "Methanogenesis is an anaerobic process". Write points in favor of this statement. Also write about the reactors involved in the biogas production.