THAPAR UNIVERSITY
Department of Biotechnology and Environmental Sciences

BE IV Year [Civil Engg.]
End-Semester Examination – May 28, 2009
Time : 3 hours; Maximum Marks : 60

Q1 a. What is the basis on which substances are ranked as hazardous? What are the
techniques applicable for defining risk of a substance? 5
b. What are the various hazardous waste management options starting from waste
reduction to disposal? 3
c. What are the industrial processes that would possibly result in hazardous waste
generation? 2

Q2. a. Describe the fate of hazardous substances in human body. 5
b. Briefly describe the dispersion pattern of hazardous substances in air. 3
c. How are the manifestations of hazardous substances evaluated? 2

Q3. a. Describe the processes that (i) enhance; (ii) reduce the mobility of contaminants in
subsurface environment. 5
b. Describe soil vapour extraction process. 3
c. Differentiate between SCF and SCWO. 2

Q4. a. Give a brief description and advantages of steam stripping process and differentiate it
with air stripping. 5
b. Briefly describe how temperature, time and turbulence influence incineration process. 3
c. Write a short note on principle underlying function of a cyclone. 2

Q5. a. Describe the various steps associated with anaerobic digestion of MSW. What are the
factors that can influence methane production in an anaerobic digestor? 5
b. What are proximate and ultimate analyses of MSW? 3
c. How the heat value of the MSW is determined and what is the derivation associated
with it? 2

Q6. Write short notes on:
i. Terminal settling velocity ii. Hornification iii. ESP-Corona
iv. Atomizer iv. alpha, beta and gamma irradiation 2 x 5

EVALUATED ANSWER SHEETS CAN BE SEEN ON JUNE 1, 2009 BETWEEN
10.00 TO 12.00 AM AT DEPT. BIOTECH.& ENVIRON. SCIENCES