Registration No. : | | | | | | | | | | |

Total number of printed pages – 3

B. Tech

HSSM 3303

Fifth Semester Back Examination – 2014

ENVIRONMENTAL ENGINEERING AND SAFETY

BRANCH(S) : AEIE, CHEM, CIVIL, EC, EEE, EIE, ELECTRICAL, ETC, IEE, MINING

QUESTION CODE : L 257

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

(a) Mention the different steps of water cycle.

(b) Name two environmental laws for prevention and control of environmental pollution in India.

(c) Name two sources of ground water pollution.

(d) Differentiate between DO and BOD.

(e) What is wind rose and why it is important ?

(f) Differentiate between batch reactor and flow reactor.

(g) What are different types of incinerations for management of hazardous wastes ?

(h) What are fugitive emissions and how they can be controlled ?

(i) Name two hazard control methods for LPG bottling.

(j) Name four personal protective equipments.

P.T.O.

2. What do you understand by environmental gradients and what are its types ? Explain the tolerance level for environmental factors with the help of a graph. 10

3. Explain the concept of source-path-receiver with respect to noise pollution. How can you control noise pollution ? An air conditioner generates a noise of 75dB for five minutes every hour. If the back ground noise level is 55dB, compute the L_{Aeq} 10

4. Answer the following two questions :

   (a) Give a flow sheet for conventional water treatment process in India and discuss on it. 5

   (b) What is the importance of advanced water treatment process ? Explain fluoridation-de-fluoridation and reverse osmosis process. 5

5. (a) Write the concept of ALR and DALR. Sketch the different types of plume dispersion phenomena. 5

   (b) Following is the data of an unseeded domestic waste water BOD test : 5

   5ml of waste water in 300 ml BOD bottle, initial DO and DO after 5 days of the sample is 7.4 mg/l and 4.1 mg/l respectively.

   Calculate

   (i) 5 days BOD and

   (ii) ultimate BOD (Assume k=0.23/day).

6. (a) Explain the different steps of anaerobic pathway for methane production with the help of a flow diagram. 5

   (b) Find out the landfill area required for 20 years for a population of 200000. Assume the per capita/day solid waste generation is 500gm and the density of waste is 500 kg/m^3. And the height of the landfill will be 10m. 5

7. (a) What are different types of accidents ? Give a note on prevention of accidents involving hazardous substances. 5

(b) Describe the three stage model to recognize, evaluate and control of hazards for electrical safety. 5

8. Answer the following questions on any **two** : 5×2

(a) Water quality standards and parameters.

(b) Flue-gas desulphurization and NO_x removal.

(c) Stages of EIA for environmental clearance process for new projects in India.

(d) Hazard control measures in petroleum refineries.