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Total Number of Pages: 2

**B.Tech**  
**HSSM3303**

**6<sup>th</sup> Semester Regular / Back Examination 2016-17**

**ENVIRONMENTAL ENGINEERING AND SAFETY**

**BRANCH(S): AEIE, AERO, AUTO, BIOMED, CHEM, CIVIL, ECE, EEE, EIE, ELECTRICAL, ETC, IEE, MINERAL, MINING**

**Time: 3 Hours**

**Max Marks: 70**

**Q.CODE: Z288**

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

**Q1 Answer the following questions: (2 x 10)**

- a) Define Food Chain & Food Web.
- b) What is 10% rule of Energy flow in Ecosystem?
- c) Name two Grit Collection devices in waste water treatment.
- d) What do you mean by super adiabatic condition of the atmosphere?
- e) List some Bio-Medical Hazardous Wastes.
- f) Explain the sound pressure level and its unit.
- g) Differentiate between batch reactor and flow reactor
- h) Differentiate between Lifecycle Assessment (LCA) and Environmental Impact Assessment (EIA).
- i) Differentiate between Incineration & pyrolysis.
- j) Calculate the Combustion Efficiency of an incinerator where the outlet gas concentration for CO is 0.1% and inlet CO<sub>2</sub> is 25.8%.

**Q2 a) Name any two House hold hazardous solid wastes. (2)**

**b) Discuss the Sources, Generation, Transport & Management i.e, Transport, Storage and disposal of Hazardous Solid wastes. (8)**

**Q3 a) What are the different processes taking place in the Nitrogen Cycle? What is nitrogen fixation? (5)**

**b) An Air conditioner generates a noise of 65dB for ten minutes every hour. If the back ground noise level is 55dB, compute Equivalent continuous Label L<sub>eq</sub> ? (5)**

- Q4 a)** Draw a flow chart diagram for Environmental clearance procedure for New industries or projects in India. **(5)**
- b)** BOD of an effluent sample incubated for 1 day at 30<sup>0</sup>C was found to be 100mg/L. What would be the 5 day BOD at 20<sup>0</sup>C (Kd = 0.12 day<sup>-1</sup> at 20<sup>0</sup>C.) **(5)**
- Q5 a)** Write the operating principle and give the labeled diagram of a condenser for control of gaseous pollutants. Also write the formula to calculate the heat exchange coefficient. **(5)**
- b)** Calculate the Severity rate of Accident in an industrial plant from the following Data: **(5)**  
Number of Workers in the plant: 3000  
Number of Days Lost due to accident: 100  
Average number of days worked by the worker per year: 2000
- Q6 a)** Briefly discuss the plume behavior under different stability conditions by means of neat diagrams. **(5)**
- b)** Draw a flow diagram of Waste management technique in India. **(5)**
- Q7** What is the need for Integration of Safety, Health & Environment? Write about the safety procedures adopted in an Integrated steel plant. **(10)**
- Q8** **Write short answer on any TWO:** **(5 x 2)**
- a)** Oxygen Sag Curve
- b)** Anaerobic Digestion
- c)** Flue Gas Desulphurization (FGD)
- d)** MSW Treatment