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Total Number of Pages: 02

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

**6<sup>th</sup> Semester Regular / Back Examination 2015-16**

**ENVIRONMENTAL ENGINEERING AND SAFETY**

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

**Time: 3 Hours**

**Max Marks: 70**

**Q.CODE: W424**

**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) What are the most commonly used industrial scale disinfectants?
- b) What is the formula to calculate frequency rate (F.R) of accident in industrial plant?
- c) What are Lechate and land fill gas?
- d) What are Pretreatment processes?
- e) Define Food Chain & Food Web?
- f) Name some green House gases present in the atmosphere?
- g) What are the two common types of Reactors in waste water treatment?
- h) What are Criteria Pollutants of Air, Why they are named as such?
- i) In EIA study what is Public hearing?
- j) What are the features of Environmental Protection Act?

**Q2 a) Discuss the operation of nitrogen cycle in nature involving the important steps in it? (5)**

**b) Mention the various environmental laws which have been enacted in our country to tackle environmental pollution. Name the statutory bodies dealing with various environmental laws in our country? (5)**

- Q3 a)** Explain the different stability conditions in the atmosphere with respect to ideal lapse rate with the help of a diagram? **(5)**
- b)** Compute the total carbonate and non-carbonate hardness of a water sample having the following analysis report; **(5)**  
 Calcium as  $\text{Ca}^{2+} = 80 \text{ mg/L}$   
 Magnesium as  $\text{Mg}^{2+} = 36 \text{ mg/L}$ .  
 Sodium as  $\text{Na}^+ = 20 \text{ mg/L}$   
 Carbonate and bicarbonate as  $\text{CaCO}_3 = 134 \text{ mg/L}$
- Q4** Give a classification of types of ecosystems with suitable examples. Explain the energy flow in an ecosystem as an ecosystem process with the help of an energy flow model. **(10)**
- 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)** Compute the appropriate quantity of biogas to be generated in an anaerobic digester having a flow of  $3600 \text{ m}^3/\text{h}$ . Assume biodegradable fraction as 0.85 and COD concentration in waste water as  $5000 \text{ mg/L}$ . **(5)**
- Q6 a)** What are the safety precautions for preventing Electric Shock? **(5)**
- b)** What is ASP (Activated Sludge Treatment Process)? **(5)**
- Q7 a)** What are the objectives & benefits of OH & S management system? **(5)**
- b)** Give a List of Chemicals Causing Industrial hazard? **(5)**
- Q8 Write short notes on any two:** **(5 x 2)**
- Cyclone Separator
  - Wind rose Diagram
  - Fire Extinguishers
  - LPG Bottling plant

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