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Paper Code: ECH-033	Roll No.										

B. TECH.
SEVENTH SEMESTER EXAMINATION, 2015-2016
ENVIRONMENTAL POLLUTION MONITORING & CONTROL

Time: 3 Hours *Total Marks: 100*

Note: Attempt ***ALL*** questions. Assume suitable data, if required. All question carry equal marks.

1. Attempt any ***TWO*** parts of the following: - **(10x2)**

(a) What are the main causes of water pollution? Discuss the significance of dissolved oxygen in water. Also discuss the effect of chromium and lead present in water on human health.

(b) Describe a process for treating the effluent for pulp & paper industry. Also discuss the wastewater discharge pattern, before suggesting a treatment scheme.

(c) What do you mean by Pyrolysis? Also explain the pollution abatement process in a refinery, with the help of suitable example.

2. Attempt any ***TWO*** parts of the following: - **(10x2)**

(a) How will you measure smoke density and visibility? Discuss some suitable remedial measures to save human health from pollutants of petrol & diesel driven motor vehicles.

(b) Differentiate between dry adiabatic lapse rate and wet adiabatic lapse rate. Also discuss the various plume patterns for the different prevailing lapse rates.

(c) Explain wet and dry deposition of air pollutants in atmosphere. Also discuss primary and secondary air pollutants with suitable examples.

3. Attempt any ***TWO*** parts of the following:- **(10x2)**

(a) Discuss the any method of controlling particulate matter from gas streams, with suitable example. A plate type electrostatic precipitator consists of 22 equal channels having dimension as 0.18 m wide x 1.20 m high x 4.80 m long. The ESP handles 16.7 m/sec of gas containing dust. The effective possible drift velocity is 0.47 m/sec. calculate the % overall collection efficiency.

(b) What are the different types of solid wastes and enumerate the characteristics of municipal solid waste. Also explain various techniques used in solid waste management with the help of a neat flow diagram.

(c) Discuss *'Zero discharge concepts'* in an industry. Also describe a process for treating the effluent for fertilizer industry.

4. Attempt any ***TWO*** parts of the following:- **(10x2)**

(a) What are various important contaminants to be removed from industrial wastewater? Discuss, in brief, the common unit operation and unit processes used in the industrial wastewater treatment system.

(b) Define environment and discuss its various components. Also discuss the *Environmental Protection Act- 1986*

(c) Mention the characteristics of municipal solid waste. Explain the design and operation of landfills, with the help of a suitable example.

5. Attempt any ***TWO*** parts of the following: - **(10x2)**

(a) What is the working principle of ESP? Also give the advantages and disadvantages of electrostatic precipitator. A plate type electrostatic precipitator for use in a cement plant for removing dust particles consists of ten equal channels. The spacing between the plats is 0.15m, and the plates are 2 m height and 2m long. The unit handles 10,000m^3/h of gas. What is the efficiency of collection? What should be the length of plates for achieving 99% collection efficiency if the other conditions are same. v_{pm} = 0.10 m/s

(b) Define the term "BOD". What are major sources of BOD in dairy industries? The BOD_5 of a wastewater is determined at determined to be 150 mg/l at 20^oC. The *k* value is known to be 0.23 per day. What would the BOD_{10} be if the test were run at 12^oC?

(c) What are biodegradable and non biodegradable organics? What are common methods used to treat biodegradable organic present in the wastewater?