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Total number of pages:[2]

Total number of questions:06

**B.Tech. || CHE || 5<sup>th</sup> Sem**  
**Industrial Pollution Control**

**Subject Code: BTCH-501A**

**Paper ID:**

**Time allowed: 3 Hrs**

**Max Marks: 60**

**Important Instructions:**

- All questions are compulsory
- Assume any missing data

**PART A (2×10)**

Short-Answer Questions:

All Cos

1. (a) CO is present in the standard atmospheric air at a concentration of 50 ppm. Express the concentration in  $\mu\text{g}/\text{m}^3$ .  
(b) What do you mean by hardness of water?  
(c) What are the disadvantages of using fabric filter for removing particulate matter from air?  
(d) What is oxygen sag curve?  
(e) Name the different mechanisms applied in air pollution control equipments.  
(f) What is stack sampling?  
(g) Name the methods for coagulation of the water treatment?  
(h) What is temperature inversion?  
(i) How dissolved oxygen in water varies with temperature?  
(j) What is Sludge volume Index?

**PART B (8×5)**

- Q 2. What are the effects of various air pollutants on human, animals, vegetation and materials? CO1

OR

- (a) Explain the different plume behaviours. CO1
- (b) Classify air pollutants based on their characteristics.

- Q 3. (a) What is Biological Oxygen Demand (BOD)? How BOD is calculated? (4) CO2  
(b) Explain the method for calculation of COD of waste water sample. (4)

OR

- (a) What is grab and composite water sampling? (4) CO2
- (b) The  $\text{BOD}_5$  of waste water is determined to be 150 mg/l at 20°C. The k

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value if known to be 0.23 per day. What would be the  $BOD_8$  be if the test were run at  $15^{\circ}C$ ? (4)

Q 4. (a) Explain activated sludge method and trickling filter method of waste water treatment. CO3

(b) Name various pre-treatment processes for waste water and explain any one in detail.

OR

(a) What is Anaerobic digestion? What is its significance? (4) CO3

(b) Explain any one advanced treatment technique of waste water. (4)

Q 5. Before the installation of an electrostatic precipitator (ESP), the stack gas of a power plant contained 6.0 g particulates per  $m^3$  of gas. The gas flow rate is  $350 m^3/min$  and the new precipitator can remove 2500 kg particulates per day. CO4

(a) What is the emission rate of particulates per before and after pollution control in kg/day?

(b) What is the efficiency of the ESP?

(c) Will the new system meet an emission standard of  $0.7 g/m^3$ ?

OR

(a) What is the principle of a cyclone separator? What is 'cut size' in a cyclone separator? CO4 (4)

(b) Explain the principal and working of Gravity Settling chamber for removing air pollutants mentioning advantages and disadvantages. (4)

Q 6 Explain the gasification of solid wastes? What are the gases produced during gasification? Write the chemical reactions involved. CO5

OR

Differentiate landfilling, pyrolysis and composting for the solid wastes. CO5