

Total No. of Questions : 12]

SEAT No. :

P1198

[4659]-248

[Total No. of Pages : 3

**B.E.(Petrochemical Engineering)
ENVIRONMENTAL ENGINEERING
(2008 Course) (Semester-I)**

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answers any 3 questions from each section.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn, wherever necessary.*
- 4) *figures to the right indicate full marks.*
- 5) *Use of electronic pocket calculator is allowed.*
- 6) *Assume Suitable data if necessary.*

SECTION-I

- Q1) a)** Discuss five major impacts of man on environment and their effects. [6]
- b) What is procedure to claim the carbon credits? What advantage the developing countries get through the Kyoto protocol? [6]
- c) Discuss in detailed about separation, handling and transportation of Biomedical waste. [6]

OR

- Q2) a)** State various adverse effects of climate change on the environment with examples. [9]
- b) How the project is decided for CDM? What are its criteria? What are examples of projects in CDM? [9]

- Q3) a)** Flue gases from thermal power station, flowing at rate of 1000 m³/min and containing particles in size range of 1 to 100 microns, are sent to multi tray settling chamber for preliminary separation of particles. The settling unit, 5 m long and 5 m wide, contains 25 trays including bottom shelf, spaced uniformly 30 cm apart. Determine minimum particle size that can be separated in the unit. Assume stroke's law to be applicable:

Data: Temperature of gases = 200 °C

Density of gases = 0.001 g/cm³

Viscosity of gases = 0.035cp

Density of particles = 2.2 g/cm³

[12]

P.T.O.

- b) Give the detailed classification of primary and Secondary air pollutants with their adverse effects for any two each. [4]

OR

- Q4)** a) Discuss the principle, working, advantages and applications for removing specific gaseous pollutant from gas streams through Combustion, Absorption and Adsorption. [10]

- b) What is the basis used for selecting the air pollution control equipment? What are the factors affecting choice of air pollution control equipment? [6]

- Q5)** a) Discuss with neat sketches five types of 'Plume Behaviors' with the conditions required for formation of these Plumes and impact created on surrounding. [8]

- b) Discuss the principle, working, advantages and disadvantages for removing particulate matter from gas streams in a wet Scrubber. [8]

OR

- Q6)** a) Discuss Primary and Secondary Meteorological factors influencing air pollution. [8]

- b) Why ESPs – Electrostatic Precipitators mandatory for Cement Plants? Explain the principle and working of ESPs. [8]

SECTION-II

- Q7)** a) Discuss the general limits / norms specified for disposal of treated wastewater on land, in river and in sea water? [8]

- b) Discuss the detailed classification of all solids found in waste water with their average size. [8]

OR

- Q8)** a) Discuss the various operations for generation of wastewater in any process plant. [8]

- b) Name five physical and chemical characteristics of waste water. [8]

Q9) a) Discuss principle, construction, working, advantages and disadvantages of 'Activated Sludge Process' (ASP) with neat sketch. [10]

b) Differentiate between Anaerobic and Aerobic process (Minimum 5 points). [6]

OR

Q10)a) What do you mean by Suspended growth process and Attached growth process? Explain with example. What are preconditions needed to operate these processes. Which process you will recommend municipal sewage treatment and why? [8]

b) Discuss principle, construction, working, advantages and limitations of 'Up-flow Anaerobic Sludge Blanket' (UASB) process with neat sketch. [8]

Q11) a) Discuss the sources and method of treatment for paper and pulp industry waste with neat sketch. [9]

b) Discuss the sources and treatment method for wastes from Refining operation plant. [9]

OR

Q12) Write a short note on (Any four): [18]

- a) Sludge volume index (with formula).
- b) Trickling filter.
- c) ISO 14000.
- d) OSHA.
- e) Significance of DO.
- f) Advantages of Aerobic reactors.
- g) Hazardous waste classification.

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