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**Presidency University**

**Bengaluru**

 **SCHOOL OF ENGINEERING**

**Make-Up Examinations, July 2024**

**Winter Semester**: 2023 - 24

**Course Code**: CIV2027

**Course Name**: Environmental Pollution and Control

**Program & Sem**: B.Tech, & II Sem (2021 batch)

**Date**: 01 JULY 2024

**Time**: 01:30PM – 04:30PM

**Max Marks**: 100

**Weightage**: 50%

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

**Part A [Memory Recall Questions]**

**Answer any SIX Questions. Each question carries FIVE marks. (6Qx5M=30M)**

1. Adiabatic lapse rate is a change of temperature with a change in altitude of an air parcel without gaining or losing heat to the environment. Differentiate super adiabatic and sub adiabatic lapse rate.

 (C.O.NO.2) [Comprehension]

2. Biodegradation is a natural and complex process of decomposition facilitated by biochemical reactions of aerobic and anaerobic bacteria. Explain aerobic biodegradation with biochemical reaction.  (C.O.NO.1) [Comprehension]

3. Air pollution is caused due gaseous pollutants and particulate matter. What is Particulate matter? List the types of particulate matter based on size with examples. (C.O.NO.2) [Comprehension]

4. Differentiate infrasound and ultra sound? Write the formula to calculate Sound Pressure Level (SPL).

 (C.O.NO.3) [Knowledge]

5. Environmental Audit can be defined as a basic management tool comprising a systematic, documented, periodic and objective evaluation. What is environmental compliance audit? List the benefits of environmental compliance audit.

 (C.O.NO.4) [Knowledge]

6. Waterborne diseases are conditions caused by pathogenic micro-organisms that are transmitted in water Enlist the categories of waterborne Infectious diseases with examples.

 (C.O.NO.4) [Knowledge]

7. Differentiate primary and secondary air pollutants with two examples each.

 (C.O.NO.2) [Knowledge]

 **Part B [Thought Provoking Questions]**

**Answer any FOUR Questions. Each question carries TEN marks. (4Qx10M=40M)**

8. Activated sludge refers to biological treatment processes that use a suspended growth of organisms to remove BOD and suspended solids. Discuss activated sludge process with flow diagram. (C.O.No.1) [Comprehension]

9. Plume refers to the path and extent in the atmosphere of the gaseous effluents released from a source usually a stack. The atmospheric conditions play a major role in dispersion of air pollutants. Identify one plume type each in unstable, neutral and sable atmospheric conditions and discuss with figure. (C.O.No.2) [Comprehension]

10. Excessive noise is one of the pollutant in industry, which is required to be control for preventing the workers from various disease. Although it is not possible to complete control the noise in the industry, we can reduce the intensity of noise. Suggest the ways to control noise at industry and discuss any two of it. (C.O.NO.3) [Comprehension]

11. Biodegradation is a natural and complex process of decomposition facilitated by biochemical reactions of aerobic and anaerobic bacteria. Discuss aerobic anaerobic biodegradation processes with biochemical reactions. (C.O.NO.4) [Comprehension]

12. Mobile sources such as cars, buses, planes, trucks, and trains. stationary sources such as power plants, oil refineries, industrial facilities, and factories. area sources such as agricultural areas, cities, and wood burning fireplaces. natural sources such as wind-blown dust, wildfires, and volcanoes. Enlist any any five major gaseous air pollutants and explain their sources and effects.

 (C.O.NO.2) [Comprehension]

**Part C [Problem Solving Questions]**

**Answer any TWO Questions. Each question carries FIFTEEN marks. (2Qx15M=30M)**

13. Trickling filter is an attached growth process of biological waste water treatment to remove BOD and suspended solids. (C.O.No.1) [Application]

a) Discuss the working principle of trickling filter with neat sketch.

b) Enlist the advantages and disadvantages of trickling filter.

14. Many devices are available to remove particulate matter from industrial stack air. The choice of which depends on characteristics of particulate matter, flow rate, collection efficiency and cost.     (C.O.No.2)[Application]
a) Identify and depict the working principle of the device, which can be used to remove even acidic gases with particulate matter.
b) Identify and depict the working principle of the device which can be used remove even submicroscopic particles.

15. The vehicular emission and industrial stack air are the major sources of air pollution. illustrate the control measures for industrial and vehicular air pollution.