PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST – 1

Winter Semester: 2021 - 22

Course Code: CIV 330

Course Name : Urban Air Pollution and Control

Program & Sem: B.Tech CIV & VI Sem

Date: 26th April 2022

Time: 01.30 PM to 02.30 PM

Max Marks: 30

Weightage: 15%

Instructions:
(i) *Read the question carefully and answer all the questions.*
(ii) *Question paper consists of 3 parts.*
(iii) *Scientific and Non-programmable calculators are permitted.*

Part A [Memory Recall Questions]

Answer all the Questions. Each Question carries TWO marks. (3Qx2M=06M)

1) Define: a) Air pollution and b) Primary air pollutants. (C.O.NO.1) [Knowledge]
2) List the various air pollutants. (C.O.NO.1) [Knowledge]
3) Write a note on London smog incidence. (C.O.NO.1) [Knowledge]

Part B [Thought Provoking Questions]

Answer both the Questions. Each Question carries SIX marks. (2Qx6M=12M)

4) The primary factor which controls gas absorption by the leaves is the degree of the opening of the stomata. When stomata are wide open absorption is maximum & vice versa. Predict the different forms of damage caused by air pollution to plants. (C.O.NO.1) [Comprehension]

5) There are many sources on the earth which are causing air pollution. Discuss the classification of emission sources of air pollution. (C.O.NO.1) [Comprehension]

Part C [Problem Solving Questions]

Answer the Question. The Question carries TWELVE marks.
(1Qx12M=12M)

6) The temperature gradient of atmosphere with respect to altitude has a significant impact on the concentration of air pollution in the city. Interpret the composition and structure of atmosphere. (C.O.NO.1) [Comprehension]

PRESIDENCY UNIVERSITY BENGALURU

SCHOOL OF ENGINEERING

TEST – 2

Semester & AY: Even Sem 2021-22   **Date**: 1st June 2022

Course Code   : CIV 330   **Time**: 01.30 PM to 02.30 PM

Course Name : Urban air pollution and control   **Max Marks**: 30

Program & Sem: B.Tech (Branch) & VI Sem   **Weightage**: 15%

Instructions:

  (i)   ***Read the question carefully and answer all the questions.***
  (ii)   ***Question paper consists of 3 parts.***
  (iii)   ***Scientific and Non-programmable calculators are permitted.***

Part A [Memory Recall Questions]

**Answer both the Questions. Each Question carries three marks.
(2Qx3M=6M)**

1) Temperature actually increases with altitude near the ground before it begins to decrease with altitude. This results in warm, low-density air riding on top of cool high density air; a very stable air column that traps pollution near the ground. This is called Inversion. Write a note on radiation and subsidence inversion.   (C.O.NO.2)
[Knowledge]

2) Sampling methods introduce many possible ways to quantify the volume or concentration of the air pollutants as well as check the air quality, whether it is safe to inhale or not. List the various methods of air sampling.   (C.O.NO.2)
[Knowledge]

Part B [Thought Provoking Questions]

**Answer both the Questions. Each Question carries six marks.
(2Qx6M=12M)**

3) Sampling acts as the pollutants monitoring tool, which detects the concentration of the particulate matter and microbial content in the atmosphere to ensure the environmental safety. Discuss the sampling technique used to collect settleable particulate matter that settle out of the atmosphere as a result of the gravitation force.   (C.O.NO.2)
[Comprehension]

4) Meteorologist use these diagrams to summarize the distribution of wind speed and direction over a defined observation period. Describe the same diagrams which comprises of 8, 16 or 32 radiating spokes, which represent wind directions in terms of the cardinal wind directions (North, East, South, West).   (C.O.NO.2)
[Comprehension]

Part C [Problem Solving Questions]

**Answer the Question. The Question carries twelve marks.
(1Qx12M=12)**   5) Plume refers to the path and extent in the atmosphere of

the gaseous effluents released from a source, usually a stack. Based on meteorological conditions the plume exhibits different behavior. Briefly explain the different behavior of plume. (C.O.NO.2) [Comprehension]

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

End Term Examination

Semester & AY: Even Sem 2021-22
Course Code   : CIV 330
Course Name : Urban air pollution and control
Program & Sem: B.Tech (Civil Engineering) & VI Sem

Date: 30th June 2022
Time: 09:30 AM to 12:30PM
Max Marks: 100
Weightage: 50%

Instructions:
  (i)   ***Read the question carefully and answer all the questions.***
  (ii)   ***Question paper consists of 3 parts.***
  (iii)   ***Scientific and Non-programmable calculators are permitted.***

Part A [Memory Recall Questions]

Answer all the Questions. Each Question carries SIX marks.
(5Qx6M=30M)

1) The major emission sources are industries, transportation, biomass burning, brick kilns, pollen, desert dust, agriculture, sea salt, etc. It is shown that these emission sources can release a large amount of inorganic and organic pollutants to the atmosphere. Classify the emission sources.

(C.O.NO.1)

[Knowledge]

2) The lapse rate is considered positive when the temperature decreases with elevation, zero when the temperature is constant with elevation, and negative when the temperature increases with elevation. Depict normal condition and inversion condition with a neat figure.

(C.O.NO.2)

[Knowledge]

3) The primary factor which controls gas absorption by the leaves is the degree of the opening of the stomata. When stomata are wide open absorption is maximum & vice versa. Predict the different forms of damage caused by air pollution to plants. (C.O.NO.1)

[Knowledge]

4) Plume refers to the path and extent in the atmosphere of the gaseous effluents released from a source, usually a stack. Based on meteorological conditions the plume exhibits different behavior. List the different behavior of plume. (C.O.NO.2)

[Knowledge]

5) Air pollution is basically the presence of foreign substance or particle in air in excessive concentration, which adversely affects the wellbeing of the individual or causes damage to

property. What are primary and secondary air pollutants? (C.O.NO.1)
[Knowledge]

Part B [Thought Provoking Questions]

Answer all the Questions. Each Question carries TEN marks.
(5Qx10M=50M)

6) Poor air quality has harmful effects on human health, particularly the respiratory and cardiovascular systems. Pollutants can also damage plants and buildings, and smoke or haze can reduce visibility. Discuss how zoning and use of tall Stacks helps in controlling air pollution.

(C.O.NO.3)

[Comprehension]

7) The pollutant discharged at source must be reduced by use of controlling equipment's. Many equipment's are available for controlling Particulate Matter. Summarize advantages and disadvantages of the equipment which uses gravitation force to separate dust particles from gas.

(C.O.NO.3)

[Comprehension]

8) A cyclone is a centrifugal separator in which particles, due to their mass, are pushed to the outer edges as a result of centrifugal force. Draw Cyclone Separator.

(C.O.NO.3)

[Comprehension]

9) Gravity settling chambers are the oldest and simplest means of removing large diameter suspended particles from a gas. High-efficiency settling chambers are often fitted with baffles or deflectors to change the gas flow direction. Explain the settling chamber.

(C.O.NO.3)

[Comprehension]

10) Wet Scrubbers are effective air pollution control devices for removing particles and/or gases from industrial exhaust streams. Distinguish any two wet scrubber.

(C.O.NO.3)

[Comprehension]

Part C [Problem Solving Questions]

Answer the Question. The Question carries TWENTY marks.
(1Qx20M=20M)

11) Inertial separators concentrate or collect particles by changing the direction of motion of the flowing gas, in such a way that the particle trajectories cross over the gas steam lines and the particles are either concentrated into a small part of the gas flow or are separated by impingement onto a surface. Illustrate any two inertial separators. (C.O.NO.3) [Comprehension]