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**PRESIDENCY UNIVERSITY
BENGALURU
SCHOOL OF ENGINEERING**

MIDTERM EXAMINATION

Even Semester: II Sem (AY 2021-22)

Date: 14-MAY-2022

Course Code: CIV 2027

Time: 01:30 PM to 03:00 PM

Course Name: Environmental Pollution and Control

Max Marks: 50

Program & Sem: B.Tech, & 2nd Semester

Weightage: 25%

Instructions:

- (i) *Read the question properly and answer accordingly.*
 - (ii) *Question paper consists of 3 parts.*
 - (iii) *Scientific and Non-programmable calculators are permitted.*
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Part A [Memory Recall Questions]

Answer all the Questions. Each question carries 1 marks. (10Qx1M=10M)

1. Comminutor is a device using in preliminary treatment generally located between _____ and _____. (C.O.NO.1) [Knowledge]
a. grit chamber and screen b. grit chamber and primary settling tank
c. grit chamber and clarifier d. none of these
2. The sewage is oxidized by the bacteria producing effluent in the form of _____. (C.O.NO.1) [Knowledge]
a. New cells b. Gases c. Food d. both a & b
3. If the water is very poor quality and restricted use for irrigation, the Water Quality Index lies between _____. (C.O.NO.1) [Knowledge]
a. less than 50 b. 51-100 c. 100-150 d. more than 151
4. In sewage treatment floating matter like oil, fat, grease forms scum on the surface of the settling tanks and interfere with the _____. (C.O.NO.1) [Knowledge]
a. activated sludge process b. sedimentation process
c. neutralization process d. none of these

5. Which of the following Lake ecosystem is contaminated with high amount of nutrients?
(C.O.NO.1) [Knowledge]
a. Eutrophic b. Meromectic c. Dystrophic d. Desert
(C.O.NO. 1) [Knowledge]
6. Which of the following is not a nonpoint source of water pollution?
(C.O.NO.1) [Knowledge]
a. Street run off b. Agriculture run off
c. Industrial sewage d. animal feedlot
7. Secondary air pollutant formed by interaction of two primary air pollutants. Which of the following is not a secondary air pollutant?
(C.O.NO.2) [Knowledge]
a. Ground level Ozone b. Sulfur dioxide c. Peroxy Acetyl Nitrite d. Smog
8. Oxidation of Non-Methane Volatile Organic Compounds (NMVOCs) in presence of Nitrogen oxides (NO_x) forms _____.
(C.O.NO.2) [Knowledge]
a. Photochemical smog b. PAN c. Ozone d. CFCs
9. During the night the ground cools off and radiating heat to the sky leads to an inversion is an example of _____.
(C.O.NO.2) [Knowledge]
a. radiation inversion b. subsidence inversion c. double inversion d. none
10. Atmospheric stability is the ability to resist vertical motion of the plume, which affects
(C.O.NO.2) [Knowledge]
a. concentration of pollutants b. dispersion of pollutants
c. thermal inversion d. none of these

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries FIVE mark. (4Qx5M=20M)

11. The conventional water treatment is designed to remove organic matter and solid from solution. Enlist the stages and sketch the flow chart of wastewater treatment plant process.
(C.O.NO. 1) [Comprehension]
12. The phenomenon of oxygen sag in river and streams is usually related to the release of organic pollutants or nutrient elements, which promote the growth of oxygen consuming microorganisms. Draw the neat sketch of oxygen sag curve.
(C.O.NO.1)[Comprehension]
13. 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 subadiabatic lapse rate.
(C.O.NO.2) [Comprehension]
14. 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]

Part C [Problem Solving Questions]

Answer all the Questions. Each question carries TWO mark. (2Qx10M=20M)

15. 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]

16. 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 atleast one plume type each in unstable, neutral and stable atmospheric conditions and discuss with the figures. (C.O.No.2) [Comprehension]

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**PRESIDENCY UNIVERSITY
BENGALURU
SCHOOL OF ENGINEERING**

ENDT ERM EXAMINATION

Even Semester: II Sem (AY 2021-22)

Date: 29th June 2022

Course Code: CIV 2027

Time: 01:00 PM to 04:00 PM

Course Name: Environmental Pollution and Control

Max Marks: 100

Program & Sem: B.Tech, & II Semester

Weightage: 50%

Instructions:

- (i) *Read the question properly and answer accordingly.*
 - (ii) *Question paper consists of 3 parts.*
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Part A [Memory Recall Questions]

Answer all the Questions. Each question carries FIVE marks. (6Qx5M=30M)

1. What is lentic aquatic ecosystem? Enlist any four types of lake organisms with examples. (C.O.NO.1) [Knowledge]
2. Define biodegradation? Write the biochemical reactions for aerobic and anaerobic biodegradation. (C.O.NO.1) [Knowledge]
3. What is Particulate matter? List the types of particulate matter based on size with examples. (C.O.NO.2) [Knowledge]
4. What is lapse rate? Differentiate adiabatic and ambient lapse rate. (C.O.NO.2) [Knowledge]
5. Define carbon credit? Differentiate VER and CER. (C.O.NO.2) [Knowledge]
6. When the swachh bharath mission was launched by Indian government? List the top ten cleanest cities in India as per swachh survekshan survey 2019. (C.O.NO.4) [Knowledge]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries TEN marks. (4Qx10M=40M)

7. Trickling Filter also known as percolating or sprinkling filter is like a well having depth up to about 2m and filled with some granular media. The sewage is sprinkled over the media which percolates through filter media and is collected through the under-drainage system. Explain the working principle of trickling filter with neat sketch.

(C.O.NO. 1) [Comprehension]

8. Water-borne diseases in India cause a huge disease burden while also resulting in significant loss of life. Since water-borne diseases can only be reduced by access to safe drinking water, the government launched the National Rural Drinking Water Programme (NRDWP) in 2009, which is now called the Jal Jeevan Mission. Identify the causative organisms, diseases for water based and water related infections and suggest the appropriate control measures to these diseases.

(C.O.NO. 3) [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 the plume types for unstable, and stable atmospheric conditions and discuss the same with the figures.

(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.1) [Comprehension]

Part C [Problem Solving Questions]

Answer both the Questions. Each question carries FIFTEEN marks.

(2Qx15M=30M)

11. Biological treatment processes that use a suspended growth of organisms to remove BOD and suspended solids. The process requires an aeration tank and a settling tank. Identify and depict the suspended growth process which is developed by England in 1914 with flow diagram and factors affecting it.

(C.O.No.1) [Comprehension]

12. 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.

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 to remove even submicroscopic particles.

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



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