1705N504

Candidate's Seat No :_____

IIS EMBA in EMS (Rep) Sem.-2 Examination

IISe-EMS-13

Env. Pollution, Monitoring & Control

Time : 2-30 Hours] May-2025 [Max. Marks : 70

Instructions:

- ***Question no 1 to 4 carry 14 marks each, with both the questions mentioned in question 1 to 4 of 7 marks each.***
- ***Question no 5 carries 14 marks (each question of 2 marks). Out of the 12 questions, attempt any seven.***

Question 1

i. Explain the diurnal and seasonal variation of air pollution. What is the role of mixing height in defining these patterns?

ii. Explain the terms bioaccumulation and biomagnification. How do they impact biotic and abiotic components of Earth?

OR

i. Differentiate between BOD and COD. What other water parameters are studied to understand water pollution.

ii. Why do you think the government plans to phase out diesel based on old vehicles? In this relation, explain different types of smokes emitted from diesel vehicles.

Question 2

i. What is hazardous waste? Explain acute and chronic exposure by taking examples of hazardous waste. How hazardous waste are handled at the industries in India?

ii. Explain briefly **any two** of the following:
   a. Net Zero Discharge
   b. Street Canyon Effect
   c. Exhaust and non-exhaust emissions of vehicles

OR

i. Why the national capital Delhi usually leads the Indian cities in case of air pollution? Explain the underlying causes.

ii. How is wastewater treated in India? Explain by taking example of any industry.

Question 3

i. What are the major water pollution issues in mega cities of India? How they can be managed?

ii. Why do you think coal is a necessity in India's energy scenario? Explain methods used to make coal utilization relatively clean?

OR

i. What is Bharat Standard? What pollutants are considered in it? The transition from Bharat Standard IV to Bharat Standard VI was a praiseworthy decision taken by Indian government, why? From your industry experience, how some of the biggest challenge in air pollution can be managed in India?

ii. It is said that the next world war would be for water. How do you think this can be true, when Earth is the Blue planet?

(P.T.O.)

N-Sol-2

Question 4

Read the paragraphs below and answer the linked questions:

Human health is affected by air pollution, causing cardiometabolic, respiratory, and neurological disease and increased mortality. Pollutants include gases [for example, nitrogen dioxide (NO_2), NO_x, and ozone] and particulate matter, which is commonly characterized by its aerodynamic diameter of less than 2.5 μm ($PM_{2.5}$) or less than 10 μm (PM_{10}). Air pollutants are mainly emitted by energy production, industry, traffic, heating, and agriculture. Exposure to air pollution affects most organ systems, causing a wide array of physiological changes, organ dysfunction, and manifest clinical disease (*1*, *2*). Therefore, a burden of disease assessment that adequately reflects all related exposure-outcome relationships and their impacts on disease and mortality in the target population is important to guide population-based prevention.

Chronic exposure to air pollutants elicits oxidative stress, pulmonary and systemic inflammation, and impairment of the autonomic nervous system, which leads to vascular dysfunction, atherogenesis, impaired metabolism, and other adverse subclinical effects (*1*). Over time, manifest disease develops, including ischemic heart disease, stroke, hypertension, congestive heart failure, and arrhythmias. Pulmonary effects, such as lower respiratory tract infections, chronic obstructive pulmonary disease (COPD), asthma, lung cancer, and acute and chronic bronchitis, are also associated with air pollution. Likewise, the incidence of type 2 diabetes mellitus, dementia, Parkinson's disease, decreased birth weight, and premature birth are increased with exposure to air pollution. Depleted or not fully developed defense mechanisms, resulting from either very young or old age, chronic disease, social disadvantage, and genetic susceptibility, are also thought to be important modifiers of the risk of developing illness from air pollution. Hence, populations with a high prevalence of aging, chronically diseased, and socially disadvantaged people are particularly susceptible to air pollution–associated disease. Thus, in aging societies, the burden of disease from air pollution will continue to pose an important public health concern.

i. What kind of measures are currently taken to reduce the levels of PM in air in India? Why are PM10, PM2,5, and PM1 considered a concern for human health?

ii. Besides the solutions for reducing air pollution, how government and industries can take up initiatives to make people aware of air pollution, and do their individual share for the reduction of air pollution?

OR

i. Air pollution is an omnipresent threat that is silently killing people. Justify this statement for the current sedentary lifestyle.

ii. How industrial-academic collaborations can help nation reach its pollution reduction targets soon?

Question 5

Attempt any seven out of twelve.

1. What is **not** the effect of soil pollution?
   - i. Soil erosion
   - ii. Acid rain
   - iii. Deforestation
   - iv. Loss of fertility

2. Which of the following is **not** a lentic water source?
   - i. Pond
   - ii. River
   - iii. Stream
   - iv. None of the above

3. Wat is the total percentage of Nitrogen in Earth's atmosphere?
   - i. 12
   - ii. 21
   - iii. 78
   - iv. 87

N- Sol-3

4. In case of "Inversion", which of the following relation between temperature and altitude will be correct?
   i. 800 m= 30°C; 1500 m= 28°C
   ii. 800 m= 30°C; 1500 m= 30°C
   iii. 800 m= 30°C; 1500 m= 32°C
   iv. Cannot be determined

5. Syngas, a product of indirect burning of coal is a mixture of
   i. CO & H_2O
   ii. CO_2 & H_2O
   iii. CO & H_2
   iv. CO_2 & H_2

6. Smog is derived from-
   i. Smoke
   ii. Fog
   iii. Water vapor
   iv. Fog and smoke

7. ..... is a waste disposal method where solid organic wastes are converted to the residue and gaseous products through combustion.
   i. Incarnation
   ii. Incineration
   iii. Incarceration
   iv. Incubation

8. Hypoxia denotes ..... dissolved oxygen values whereas Anoxia denotes .....dissolved oxygen value in an aquatic environment.
9. Which gas is produced by the incomplete combustion of wood?
10. In relation with soil pollution, technogenic materials can include ..... & .....
11. The quantity of DDT at each trophic level in the food chain decreases. ***State true or false.***
12. In context of household waste, MSW stands for .....