मेतीलाल नेहरू राष्ट्रीय प्रौद्योगिकी संस्थान इलाहाबाद
प्रयागराज–२११००४ (भारत)

Motilal Nehru National Institute of Technology Allahabad
Prayagraj & 211004 (India)

Mid- Semester Examination 2022-23

Programme Name: B.Tech. (Group: G, H, I, J, K, L, M, N) **Semester:** 1st

Course Code: **Course Name:** Introduction to Environment & Climate Change

Branch: ME, CE, BT, CHE, PI & EE **Student Reg. No.:**

Duration: 1.5Hours **Max. Marks: 20**

Instructions: *Marks and number of questions to be attempted from the section is mentioned before each section.*

PART – A: Attempt all the questions (7+3= 10)

Q.1. Q1. Answer the following questions in brief (1X7=7)

a. Define Biosorption and give example.
b. Define Bioaccumulation with example.
c. What is food chain? Illustrate it using a figure.
d. Define biomagnifications and illustrate the phenomenon using a figure.
e. Define phytoremediation and cite any two of its advantages over other conventional technologies.
f. Differentiate between *ex-situ* and *in-situ* conservation.

Q.2. Q2. Answer the following questions very briefly [0.5x6=3]

a. List the factors which affect the process of biosorption.
b. Define commensalism.
c. Define phytovolatalization.
d. Name any xenobiotic pollutant which can undergo biomagnifications.
e. Define genetic diversity.
f. List any two properties of a chemical pollutant that can cause it to undergo biomagnification.

PART –B: Attempt all the questions (4 × 2.5 = 10)

Q.1. a) Define Chemical Oxygen Deman (COD). What is the permissible limit of Cr (VI) in drinking water.
b) The exhaust gas from a motor vehicle shows a carbon monoxide concentration of 2 percent by volume. What is the concentration of carbon monoxide in ppm?

Q.2. a) Give some methods to reduce soil pollution. You can write in points.

Q.3. a) What are the main sources of water pollution?
b) Differentiate between point and non-point sources of water pollution.

Q.4. a) Why is environmental impact assessment (EIA)important for sustainability?
b) What are the types of environmental monitoring?

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End- Semester Examination 2022-23

Programme Name: B.Tech. 1st Semester (Group: G, H, I, J, K, L, M, N) Duration: 2.5 Hours

Course Name: Introduction to Environment & Climate Change Max. Marks: 50

Branch: ME, CE, BT, CHE, PI & EE Student Reg. No.: 2 0 2 2 2 0 6 8

Instructions:
Write separately the answers of part A and part B (do not mixed Part A and Part B answers).

PART – A: Attempt all the questions

Q1. Answer the following questions briefly. *(2X7 = 14 marks)*

a) What is bioenergy? How can bioenergy be produced utilizing bio-waste? Write a small note on it.

b) What are the different stages of the municipal wastewater treatment system and how much BOD is removed in each stage?

c) What do you understand by energy transfer in ecosystem? Explain briefly.

d) Why it is important to conserve the biodiversity of ecosystem?

e) With a well labeled diagram show the mechanism of EPS interaction with metal ions.

f) Differentiate between bioaccumulation and biomagnification.

g) Define phytoremediation and mention any two advantages of it.

Q2. Identify and tick the correct option. *(0.5X6= 3 marks)*

a) In a case study: a city has hundreds of storage tanks for oil, chemicals, or other types of potential contaminants both in above ground or below ground areas. And over the years landfill became dumping ground of these tanks, which started leaking due to corrosion etc., contaminating the ground. Meanwhile housing societies started growing nearby by this place. Once a contamination site has been identified in a populated area, the EPA (Environmental Protection Agency) establishes a plan to clean up the area. What could be done to prevent contamination from storage tanks near homes?
a) Have builders test for soil pollution at sites before building.
b) Stop building new homes.
c) Remove leaking storage tanks and dispose of them safely.
d) Move houses to safer locations.

b) Bioaugmentation involves:
(a) Eliminating sludge (b) Plants usage for bioremediation (c) Addition of microbes to a cleanup site (d) Bioventing

c) This cleanup approach includes removal of groundwater or soil from its natural setting to permit for bioremediation
(a) Bioaugmentation (b) in situ bioremediation (c) ex situ bioremediation (d) Phytoremediation

d) At this stage of wastewater treatment, methanogenic microbes are the most significant?
(a) Sludge digestion (b) Primary treatment (c) Secondary treatment (d) Biological oxidation

e) Biodegradation involves
(a) Break down of complex molecules into simpler ones
(b) Joining of two smaller molecules to form a large compound
(c) Accumulation of xenobiotics in living organisms
(d) None of the above

f) Which of the following gases contribute to greenhouse effect?
(a) Methane (b) Carbon dioxide (c) Both of the above (d) None of the above

Q3. Fill in the blanks. ***(0.5X6= 3 marks)***

a) ..... scheme was launched by GoI to ensure cleanliness in villages by converting bio-waste including cattle waste, kitchen leftovers, crop residue and market waste to improve the lives of villagers.

b) 2011 is distinctive for the establishment of the ..... by the Ministry of Environment and Forests (MoEF) to provide strict penalty for damage arising out of environmental hazards.

c) The .....programme is being implemented by the National Mission for Clean Ganga (NMCG) at the national level and State Program Management Groups (SPMGs) at the state level.

d) The .....scheme is launched on the occasion of World Environment Day 2020 with an aim of developing 200 Urban Forests pan India in the coming five years.

e) BOD stands for .....

f) The full name for DDT (an organochlorine insecticide) is .....

PART – B: Attempt all the questions

Q 4. a) Briefly explain the steps involved for solid waste management. Define waste disposal and point out the factors to be considered while disposing solid waste. ***5 marks***

b) Write short note on legal aspects of environment protection act. ***5 marks***

Q5. a) Discuss in details about the air pollution and give some techniques adopted to control the air pollution from industries. ***5 marks***

b) Explain the sustainable development goals (SDG). Describe the role of environment impact assessment for sustainable development goals. ***5 marks***

Q6. a) Write the short note on global warming and explain the various adverse effect of climate change. ***5 marks***

b) Explain the carbon ecology footprint and discuss its role for environment protection. ***5 marks***