Name: **Enrolment No:**	

UPES

End Semester Examination, December 2023

Course: Industrial Chemical and Environment **Semester:**

Program: BSc (H) Chemistry **Time : 03 hrs.**

Course Code: CHEM 3018 **Max. Marks: 100**

Instructions:

1. **Attempt all questions.**
2. **Read the questions carefully.**

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Recall Contact process for the industrial production of sulfuric acid.	**4**	**CO3**
Q 2	Discuss how solar energy can be used in our daily life as energy source.	**4**	**CO1**
Q 3	What is greenhouse effect?	**4**	**CO2**
Q 4	How will you separate nitrogen and argon from air?	**4**	**CO3**
Q 5	Elaborate lock and key mechanism for biocatalytic application.	**4**	**CO1**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Support by examples, how primary pollutants can lead to generation of secondary pollutants?	**10**	**CO2**
Q 7	Demonstrate how electrolytic refining can be used to purify Copper.	**10**	**CO3**
Q 8	What is acid rain? Describe its origin and impact on the environment and surroundings. Or Identify different water pollutants and include the various water purification methods that can be used to purify water.	**10**	**CO2**
Q 9	Mention the 12 principles of green chemistry and give your views on their importance.	**10**	**CO1**

SECTION-C (2Qx20M=40 Marks)			
Q 10	i) Define and derive the formulas for Gross and Net calorific values. Mention the importance of each variable included in the equations. ii) Solve for GCV and NCV when 3 g of fuel containing 3.5% of hydrogen is burnt in a bomb calorimeter by taking 2100 g of water, water equivalent of bomb calorimeter is 400 g and the change in temperature observed was 5.12°C. The cooling correction, and acid corrections were 30 cal, and 43 cal, respectively. The latent heat of steam is 587 cal/g. Or i) Mention different types of enzyme-based biocatalysts and describe their functions. ii) Show how Ibuprofen can be synthesized using green chemistry route.	**15 + 5** **Or** **10 + 10**	**CO1**
Q 11	Outline the different components of waste management. Expand on the different disposal methods.	**20**	**CO2**