

JAMIA HAMDARD
DEPARTMENT OF CHEMISTRY
SCHOOL OF CHEMICAL AND LIFE SCIENCES
B.SC-HONS. WITH RESEARCH. CHEMISTRY

Roll No. _____

SEMESTER I

End term Examination 2023

Paper Name: Water Treatment and Management Studies
Time: 2hrs

Paper Code: BCH-SEC-101
Max. Marks: 45

Note: This paper has 3 sections A, B, and C, Attempt all the three sections

Section A: Answer all the questions; **Section B:** Answer any 2 out of 4; **Section C:** Answer all the questions, each question has an internal choice

Abbreviations Used CO- Course Outcome, CLO- Course Learning Outcome, PO- Program Outcome, PLO- Program learning Outcome, BTL- Bloom Taxonomy Level: BT level 1-Remember; BT level 2- Understand; BT level 3- Apply; BT level 4-Analyze; BT level 5- Evaluate, BT level 6- Create

SECTION A

Very Short Type Questions (Attempt all)

Q. No	Question	Marks	BTL-	CLO	PLO
1	Expand the following terms a) TDS; b) TSS c) BOD d) COD	1	1,2	1,2	1,2,3
2	Briefly Define Chelation.	1	1	2	2,3
3	What will be the resulting TDS (in ppm) for the following combination: 2.0 L of 32ppm water with 1.0 L of 180ppm water Also, mention whether the formed solution will have a TDS value within permissible limits.	1	2	1,2	2,4
4	What are the elements which are being found in water resources due to E-waste?	1	1,2	2,3	1,3
5	Enlist any two changes observed in water with an excess of Fe^{+2} /or Fe^{+3} ions	1	1,2	3	1,2,4
6	Differentiate between coagulation and precipitation	1.5	2	2,3	1,2,3
7	Define melting point and depression in freezing point	1	2	1,2	1,2,3
8	What is the role of activated charcoal in water purification?	1.5	2,3	3	3,4
9	What is the role of UV-irradiation in water treatment?	1	2,3	3	3,4
10	Arrange the following in decreasing trend of TDS a) Rainwater; b) Sea water; c) River water Justify your answer.	1	1,2	1,2,3	3,4,5

SECTION B

Long type Questions (Attempt any two out of four)

Q. No	Question	Marks	BTL-	CLO	PLO
1	Define briefly about Biological Index, and explain how <i>E.coli</i> enters the water body. Which of the following will have the highest BOD and Biological Index: a) hot spring water; b) sea water and c) ice berg. Justify your answer.	6.5	3,4,5	2-3	3,6,7
2	On the basis of the periodic table mention elements or groups which affect water and air on Earth.	6.5	3,4,5	1-3	3-4

	Also discuss the elements abundant in E-waste.				
3	Classify water on Earth with the help of a distribution chart or bar diagram.	6.5	1,2,3,4	1-2	2-4
4	What are various methods for removing i) Insoluble solid; ii) Suspended Solid; iii) Colloidal Solid and Dissolved Solid Arrange the following gases in increasing trend of their solubility in water also mention their reaction with H ₂ O (if any) a) CO ₂ ; b) SO ₂ ; c) NO ₂ ; d) CO and e) H ₂ S	6.5	3,4	2-3	2-5

SECTION C

Short-type Questions. (Attempt all questions, each question has an internal choice)

Q. No	Question	Marks	BTL-	CLO	PLO
1	Write the reactions involved in formation of acid rain. Or Explain the reasons of color in water also explain the oxidation states of metal involved in color of water (if any)	3	4,5	2-3	3-4
2	Explain the effect of CO ₂ as a) Water pollutant b) Air pollutant Or Explain the effect of SO ₂ as a) Water pollutant b) Soil pollutant	3	3,4	3-4	3-5
3	Differentiate between temporary and permanent hardness. Also explain the method for determining the temporary and permanent hardness. Or Explain the health hazards associated with Hg ⁺² . Give a simple method for determining mercury in water.	3	4,5	2-4	3-7
4	Enlist any two disadvantages of chlorination method in water treatment. Or Enlist any two methods for removing Iron during in water treatment.	3	3,4	3-4	3-5
5	How Human Impact on the environment could be measured. Or. Briefly explain AMOEBA approach in assessing Human Impact on the environment.	3	4,5	4	3,5,7
6	What are the various components of environment. Or How we can classify pollutants based on periodic table.	3	2,3	2,3	3-5
7	Explain Thiele's tube method for the determination of boiling point. Justify the effect on boiling point of impure water then in comparison to distilled water. Or Stepwise explain the method for determination TDS and TSS for a given sample of water in laboratory.	3	5,6	4	5-7

-----XXx-----