Unit-1 Water and its applications

Q.1 Define and classify Water hardness. What factors are responsible for hardness of water? Why it is expressed in ppm $CaCO_3$ equivalents?

Q.2 Explain EDTA titration method used for determination of temporary, permanent and total hardness of water.

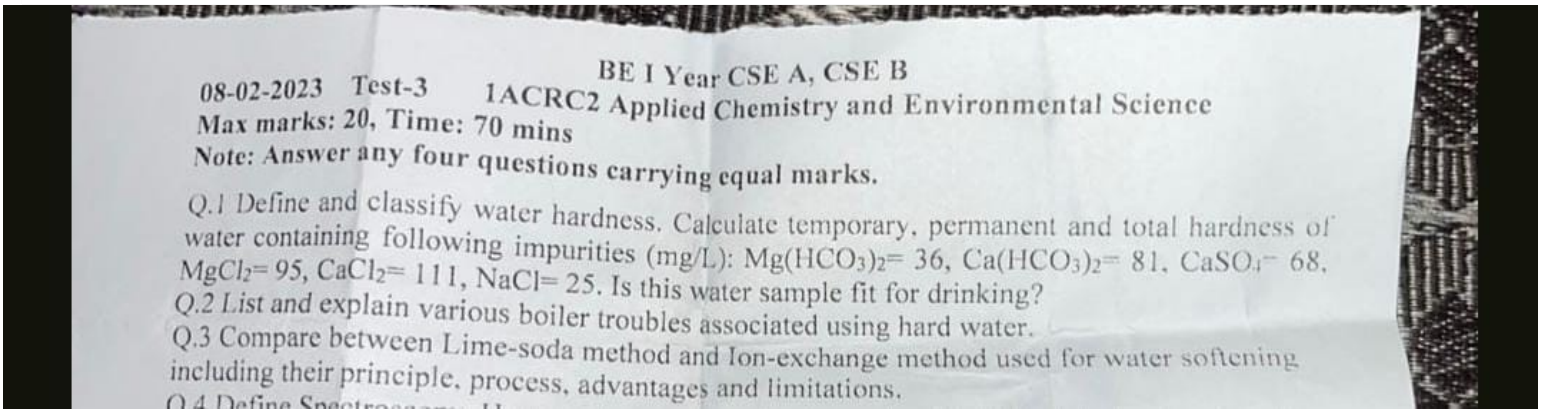
Q.3 20 ml of hard water sample requires 17 ml of N/100 ETDA solution. 20 ml of same sample after boiling followed by filtering requires only 10 ml of similar EDTA solution. Calculate temporary, permanent and total hardness of water sample. Is this water fit for drinking?

Q.4 List and explain various troubles caused by using hard water in boilers.

Q.5 What basic principles are involved in any water softening method? Explain and Compare between Lime-soda, Zeolite and Ion-exchange method used for water softening.

Q.6 List and classify various water quality parameters and informations obtained from each parameter.

Q.7 Calculate temporary, permanent and total hardness of water containing following impurities (in ppm): $Mg(HCO_3)_2$= 73, $Ca(HCO_3)_2$= 162, $CaSO_4$= 136, $MgCl_2$= 95, $CaCl_2$= 111, NaCl= 50.



BE I Year CSE A, CSE B

08-02-2023 Test-3 1ACRC2 Applied Chemistry and Environmental Science

Max marks: 20, Time: 70 mins

Note: Answer any four questions carrying equal marks.

Q.1 Define and classify water hardness. Calculate temporary, permanent and total hardness of water containing following impurities (mg/L): $Mg(HCO_3)_2$= 36, $Ca(HCO_3)_2$= 81, $CaSO_4$= 68, $MgCl_2$= 95, $CaCl_2$= 111, NaCl= 25. Is this water sample fit for drinking?

Q.2 List and explain various boiler troubles associated using hard water.

Q.3 Compare between Lime-soda method and Ion-exchange method used for water softening including their principle, process, advantages and limitations.

Q.4 Define Spectro

ACR1C2 Chemistry and Environmental Science

Unit-5 Environmental Science

1. Describe various segments of Environment and process involved therein. (Environment- Atmosphere, Hydrosphere, Lithosphere, Biosphere including our interactions with these segments)

2. Describe role of various Natural resources in Engineering and development. (including their role/ impact in our life)

3. List and explain various adverse effects of development on our environment. (take many examples, how it affects our lives, control measures)

4. Describe Air, water, Land, Noise Pollution (including definition, classification of pollutants with examples, their sources, harmful effects and control measures.)

5. Greenhouse effect is essential for sustaining life on earth but Global warming

is causing various adverse effects to our environment, but science of both is same. Justify this statement.

6. Chlorinated compounds are present in very small amount but causing maximum damage to Ozone layer in stratosphere. Why and how?

7. What causes Acid rains and what are its adverse effects to our environment?

8. What is Eutrophication? What factors are responsible for this? Why this is considered very serious problem associated with water bodies?

9. Why Rain water harvesting is essentially required in present times? Explain various methods available for Rain water harvesting. (with examples)

10. What is Environment Impact Assessment? What steps are involved in EIA? How it is helpful in environment protection and pollution control?

11. Explain the concept and need for Sustainable development. (including Smart cities, local is vocal, economy, health, education, environment, good governance).

Q.4 List and classify air pollutants including their examples, sources, harmful effects and possible control measures.

Q.5 Name four segments of Environment. Explain any one segment in detail including our interactions with it.