

**6019**  
**BOARD DIPLOMA EXAMINATION**  
**MARCH/APRIL - 2019**  
**DIPLOMA IN CIVIL ENGINEERING**  
**ENGINEERING CHEMISTRY & ENVIRONMENTAL STUDIES**  
**FIRST YEAR EXAMINATION**

Time: 3 Hours

Total Marks: 80

**PART - A**      **(3m x 10 = 30m)**

*Note 1: Answer all questions and each question carries 3 marks*

*2: Answers should be brief and straight to the point and shall not exceed 5 simple sentences*

1. Calculate the number of protons and electrons in the following species:  
 i) Na<sup>+</sup> ion    ii) Cl<sup>-</sup> ion    iii) O<sup>2-</sup> ion
2. State and explain Hund's Rule with an example
3. Define the following terms  
 (1) Solution      (2) Solvent      (3) Solute
4. State any three limitations of Arrhenius theory of acids and bases
5. Write the significances of Electrochemical series
6. Write any three dis-advantages of using hard water in Industries
7. Write a short note on elastomer
8. Classify the fuels based on their physical state with examples
9. What is Renewable energy sources? Give examples.
10. Suggest any three methods to control water pollution

**PART - B**      **(10m x 5 = 50m)**

*Note 1: Answer any five questions and each carries 10 marks*

*2: The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer*

- \* 11. a) Write the main postulates of Bohr's atomic theory 6M  
 (b) State any four limitations of Bohr's atomic theory 4M
12. (a) Define molarity. Calculate the weight of  $\text{Na}_2\text{CO}_3$  is required to prepare 0.1M  $\text{Na}_2\text{CO}_3$  in 250 ml solution.  
 (b) Define pH. Calculate the pH of following:  
 (i) 0.01 M HCl solution    (ii)  $10^{-3}$  M NaOH solution.

13. (a) Define following terms: (1) Mineral (2) Ore (3) Gangue (4) Flux (5) Slag (6) Alloy. 6M  
 (b) Write the uses and composition of German silver & Nichrome 4M
14. (a) Define and explain Faraday's laws of electrolysis 6M  
 (b) 5 amperes of electricity is passed through NaCl for 10 minutes. Find the weight of Sodium deposited on cathode? (Atomic Weight of Na =23) 4M
15. a) Define Corrosion, Explain composition cell 4M  
 b) Explain mechanism of rusting of iron 6M
16. a) Explain the softening of hard water by ion-exchange process. 6M  
 b) Write any four essential qualities of drinking water. 4M
17. a) Write differences between addition polymerisation and condensation polymerisation 4M  
 b) Write any six characteristics of plastics 6M
18. a) Explain the controlling methods of air pollution 6M  
 b) What are the causes for deforestation 4M

- xxx -

\*

\*