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C16-A-AA-BM-CHST-AEI-MET-MNG-TT-IT-104

6004

BOARD DIPLOMA EXAMINATION, (C-16)

JANUARY/FEBRUARY—2022

FIRST YEAR (COMMON) EXAMINATION

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State Pauli's exclusion principle. Give an example.
2. Calculate the oxidation number of 'N' in HNO_3 , 'S' in H_2SO_4 and 'Mn' in KMnO_4 .
3. Define solute, solvent and solution.
4. Write any three applications of buffer solutions.
5. Write any three differences between electrolytic cell and galvanic cell.
6. Define soft water and hard water. Give examples.
7. Write the preparation and two uses of Buna-S rubber.
8. Write any three characteristics of a good fuel.
9. Define (a) pollutant and (b) contaminant. Give an example for each.
10. Write a short note on acid rain.

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PART—B

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** (a) State the postulates of Bohr's atomic theory. 6
(b) Distinguish between ionic compounds and covalent compounds. 4
- 12.** (a) Define Normality. Calculate the Normality of a solution containing 10.6 grams of Na_2CO_3 dissolved in 1 litre of solution. 5
(b) Explain the Bronsted-Lowry theory of acids and bases with examples. 5
- 13.** (a) Define (i) mineral, (ii) ore, (iii) flux and (iv) gangue. 4
(b) Describe the froth flotation process with a neat diagram. 6
- 14.** (a) Explain Faraday's laws of electrolysis. 6
(b) 5 amperes of current is passed through molten NaCl solution for 10 minutes. Find the weight of sodium deposited on the cathode. (atomic weight of Na = 2.3) 4
- 15.** (a) Explain the mechanism of rusting of iron with chemical equations. 6
(b) State any four factors which influence the rate of corrosion. 4
- 16.** (a) Explain the softening of hard water by ion-exchange process. 6
(b) Write any four essential qualities of drinking water. 4

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- 17.** (a) Explain the method of preparation and uses of the following plastics :
(i) Polythene
(ii) PVC
(iii) Teflon 6
- (b) Write any four characteristics of vulcanized rubber. 4
- 18.** (a) Explain any three controlling methods of air pollution. 6
- (b) State renewable and non-renewable energy sources. Give examples. 4
