C16-A-AA-BM-CHST-AEI-
CHOT-M-RAC-CHPP-EE-CHPC-EC-
PET-C-CM-MET-MNG-TT-IT–104

6004

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2021

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. Distinguish between an orbit and an orbital.

2. Define oxidation number. What is the oxidation state of sulphur in H_2SO_4?

3. Define solute, solvent and mole.

4. What is p^H? Calculate the p^H of 0·01 *M* HCl solution.

5. Define the following :

(a) Equivalent Weight

(b) Electrochemical Equivalent

6. Write any three disadvantages of using hard water in industries.

7. Define plastic. Write any two advantages of plastics over traditional materials.

8. State any three chatacteristics of good fuel.

9. Define primary pollutant and secondary pollutant. Give examples.

10. Write any three threats to biodiversity.

PART—B

10×5=50

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)* Explain Aufbau's principle with a suitable example. 5

(b) Define ionic bond. Explain the formation of ionic bond in NaCl. 5

12. *(a)* Define Normality. Calculate the normality of 500 ml of solution containing 9·8 grams H_2SO_4 (M. Wt. of H_2SO_4 = 98). 5

(b) Explain Bronsted-Lowry theory of acids and bases. 5

13. *(a)* Define the following : 5
(i) Mineral
(ii) Ore
(iii) Gangue
(iv) Flux
(v) Slag

(b) Explain roasting and smelting process of ore. 5

14. *(a)* State and explain Faraday's laws of electrolysis. 6

(b) A current of 0·965 amp is passed through a solution of $AgNO_3$ for 10 minutes. Calculate the weight of silver deposited on the cathode (At. Wt. of Ag is 108). 4

15. *(a)* What is Rust? State the factors which influence the rusting of iron. 5

(b) Explain impressed voltage method. 5

16. *(a)* Define soft water and hard water. What are the salts causing temporary and permanent hardness? 5

(b) Define reverse osmosis. State any two applications of reverse osmosis. 5

17. *(a)* Write the preparation and uses of *(i)* PVC and *(ii)* Polystyrene. 6

(b) Write any four characteristics of vulcanised rubber. 4

18. *(a)* Define air pollution. Explain any four causes of air pollution. 5

(b) Write short note on *(i)* Greenhouse effect and *(ii)* Ozone layer depletion. 5

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