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BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

DECE - FIRST YEAR 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. Calculate the number of protons, electrons and neutrons in Ca^{+2}.

2. Define mole. Calculate the no. of moles present in 90 grams of water.

3. What is conjugate acid-base pair? Give an example.

4. Define chemical equivalent and electrochemical equivalent.

* **5.** Define soft water and hard water give example for each.

6. Write the preparation and uses of Nylon (6,6).

7. Define fuel. Write the composition and uses of water gas.

8. What is insect repellent? Give examples.

9. Write the threats to biodiversity.

10. Define contaminant, receptor and TLV.

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PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain the significance of quantum numbers.

(OR)

(b) Define covalent bond. Explain N_2, O_2 and H_2 as examples.

12. *(a)* Define normality. Write mathematical formula and units. Calculate the normality of a solution prepared by dissolving 53 grams Na_2CO_3 of in 1000 ml of solution.

(OR)

(b) What is buffer solution? Classify with examples and give its applications.

13. *(a)* What is dressing of ore? Explain dressing of ore by froth floatation.

(OR)

* *(b)* Define galvanic cell. Explain the construction and working of galvanic cell.

14. *(a)* Define corrosion. Write any three factors that influence the corrosion and explain sacrificial anode method of prevention of corrosion.

(OR)

(b) Explain ion exchange process of softening of hard water with a neat diagram.

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15. *(a)* Explain addition and condensation polymerization reactions with an example. Write any four differences between thermoplastics and thermosetting plastics.

(OR)

(b) Define air pollution. Write the causes of air pollution. (Natural and Man-made)

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) Question carries **ten** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. State and explain Faraday's laws of electrolysis. When 0·5 amp of current is passed through $CuSO_4$ for 30 min. Calculate weight of copper deposited at cathode. (At weight of cu 63·5)

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