7004

C20-COMMON–104

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BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

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. Define atomic number and mass number and write the atomic number and mass number of sodium (Na).

2. Define solute, solvent and solution.

3. Write any three applications of buffer solution.

4. Define electrochemical equivalent and chemical equivalent.

5. Define hard water and soft water. Give examples.

6. Define addition polymerization. Give an example.

7. Define fuel. How are the fuels classified?

8. Define soap and detergent. Give an example of each.

9. Define the following terms :

(a) Pollutants

(b) Contaminant

(c) Sink

10. State the renewable and nonrenewable-energy sources with examples.

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)* Write the postulations of Bohr's atomic theory.

(OR)

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

12. *(a)* Define normality. Calculate the normality of 10 grams of NaoH present in 500 ml of solution.

(OR)

(b) Explain Lewis theory of acids and bases with suitable examples. Give its limitations.

13. *(a)* Explain calcination and roasting with examples.

(OR)

(b) Define galvanic cell. Explain the working of the galvanic cell.

14. *(a)* What is rusting of iron? Give its mechanism.

(OR)

(b) Describe the softening of hard water by ion exchange process.

15. *(a)* What are thermoplastics and thermosetting plastics? Write the differences between thermoplastics and thermosetting plastics.

(OR)

(b) Define air pollution. Explain the causes of air pollution.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the 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 $CuSO_4$ solution for 30 min, calculate the weight of copper deposited. (Atomic weight of Cu = 63.5)

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