6004

C16-COMMON–104

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BOARD DIPLOMA EXAMINATION, (C-16)

JULY—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. Write the number of protons and neutrons in $_7N^{14}$.

2. Name the bonds in the following compounds :

(a) NaCl

(b) HCl

(c) N_2

3. How many grams of sodium carbonate is present in 5 moles of Na_2CO_3?

4. What is conjugate acid-base pair? Give one example.

5. State Faraday s First and Second laws.

6. Write the names and formulae of salts causing hardness to water sample.

7. What is addition polymerization? Give one example.

8. Define fuel. Mention any three characteristics of good fuel.

9. Define the terms *(a)* pollutant, *(b)* contaminant and *(c)* sink.

* **10.** Define producers and consumers. Give example.

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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)* Write the important postulates of Bohr's atomic theory. 6

(b) Write the values of four quantum numbers for valence electron in sodium atom. 4

12. *(a)* Define normality. Calculate the weight of sulphuric acid (H_2SO_4) required to prepare 100 ml of 0·5 N solution. (Mol.wt. of H_2SO_4 = 98) 4

(b) Explain Lewis acid-base theory. 6

13. *(a)* Write any five differences between metals and non-metals. 5

(b) Explain roasting and calcination with examples. 5

14. *(a)* 9·65 amperes of current is passed for 10 minutes through $CuSO_4$ solution. Calculate the weight of copper deposited at the cathode. (Atomic weight of Cu = 63·5) 5

(b) What is electrochemical series? Write its significance. 5

15. *(a)* Explain the formation of composition cell, stress cell and concentration cell with examples. 6

(b) Explain the mechanism of rusting of iron. 4

16. *(a)* Explain ion exchange method for softening of hard water. 5

(b) Write the essential qualities of drinking water. 5

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17.* *(a)* Write the advantages of plastics over traditional materials. 4

(b) What are elastomers. Write the preparation and uses of Buna-S. 6

18. *(a)* Explain any two causes and two control methods of air pollution. 6

(b) What are conventional and non-conventional energy sources? Give examples. 4