

7051

BOARD DIPLOMA EXAMINATION, (C-20)

MAY—2023

DME - FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

Time : 3 Hours ]

[ Total Marks : 80

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**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. Draw the shapes of 'P' orbital.
2. Calculate the number of moles present in 32 gr of O<sub>2</sub> gas.
3. What is conjugate acid base pair? Give an example.
4. Define electrolyte and non-electrolyte. Give examples for each.
- \* 5. State any three salts responsible for permanent hardness of water.
6. Define thermosoft plastic. Give one example.
7. What is activated charcoal? Write any two applications of it.
8. State any three characters of a good fuel.
9. State any three causes of water pollution.
10. Define pollutant, contaminant and sink.

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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.** Explain the significance of four quantum numbers.

**(OR)**

Define Ionic bond and Covalent bond. Write any four differences between Ionic and Covalent compounds.

**12.** Define normality. Calculate the normality of solution prepared by dissolving 5.3 gr of  $\text{Na}_2\text{CO}_3$  in 500 ml solution.

**(OR)**

Explain Arrhenius theory of acids and bases with examples. Mention any two limitations.

**13.** Define the following and give one example for each :

- (a) Mineral
- (b) Ore
- (c) Flux
- (d) Alloy

**(OR)**

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Explain the structure and working of galvanic cell with a neat diagram.

**14.** What is cathodic protection? Explain sacrificial anode method with a neat diagram.

**(OR)**

Explain permutit process of softening of hard water with a diagram.

**15.** What is meant by elastomer? Explain the preparation of BUNA-S with equation and mention two applications.

**(OR)**

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Write short notes on (a) deforestation and (b) greenhouse effect.

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## 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.** Explain vulcanization of natural rubber with chemical equation. Write any three properties of vulcanized rubber.

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