



C16-M/RAC-104

6054

BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER—2020

DME—FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY & 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 unit cell and coordination number in ionic crystals.
3. Calculate the equivalent weights of (a)  $\text{H}_2\text{SO}_4$  (b)  $\text{HCl}$  (c)  $\text{Na}_2\text{CO}_3$ .
4. Define pH. Calculate the pH of 0.001 M  $\text{HCl}$  solution.
5. Define conductor, electrolyte and non-electrolyte with examples.
6. Write any three disadvantages of using hard water in industries.
7. What is PVC? Write its uses.
8. State the composition and uses of water gas.
9. Define the terms (a) BOD (b) COD (c) particulates.
10. What is global warming? Mention its impacts.

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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 the criteria for valuation are the content but not the length of the answer.

- 11.** (a) Write any five important postulates of Bohr's theory. 5  
(b) Define ionic bond. Explain it in the formation of NaCl. 5
- 12.** (a) Define molarity. Calculate the molarity of a solution containing 4 grams of NaOH in 500 ml solution. 5  
(b) Describe Bronsted-Lowry theory of acids and bases with examples. 5
- 13.** (a) Explain froth floatation process for concentration of a sulphide ore. 4  
(b) Explain calcination, roasting and smelting with examples. 6
- 14.** (a) State and explain Faraday's laws of electrolysis. 6  
(b) Distinguish between electrolytic cell and galvanic cell. 4
- 15.** (a) Define corrosion. List out the factors which influence the rate of corrosion. 5  
(b) Explain sacrificial anode method for prevention of corrosion. 5
- 16.** (a) Explain permutit process for softening of hard water with a neat diagram. 6  
(b) Write the names and chemical formulae of salts which cause for temporary and permanent hardness of water. 4
- 17.** (a) Write any six differences between thermoplastics and thermosetting plastics. 6  
(b) Define and explain addition polymerization with an example. 4

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- 18.** (a) Define <sup>\*</sup> air pollution. What are the causes of air pollution? 6
- (b) What is deforestation? What are the causes for deforestation? 4

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