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**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)* $H_2SO_4$ *(b)* HCl *(c)* $Na_2CO_3$.

**4.** Define pH. Calculate the pH of 0·001 M 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.

## 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 forth 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

**18.** *(a)* Define 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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