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C16–C/CM–104

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BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2017

DCE—FIRST YEAR 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 unit cell and coordination number in ionic crystals.

2. Distinguish between orbit and orbital.

3. Classify the solutions based on physical state with examples.

4. Define pH. Calculate the pH of 0·02 *M* HNO_3 solution.

5. What is salt bridge? Write its use in a galvanic cell.

6. State any three disadvantages of using hard water in industries.

7. What is copolymerisation? Give one example for it.

8. Define fuel. Classify the fuels based on their occurrence with examples.

9. Define the following terms :

(a) Pollutant

(b) Contaminant

(c) Receptor

10. Write a short note on global warming.

PART—B 10×5=50

Instructions : (1) Answer *any* **five** questions.

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

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* What are quantum numbers? Explain their significance. 6

(b) Define ionic bond. Explain ionic bond in the formation of NaCl. 4

12. *(a)* Define normality. Calculate normality when 4·9 gm of H_2SO_4 is dissolved in 1 litre of solution. 5

(b) Explain Bronsted-Lowry theory of acids and bases with examples. 5

13. *(a)* What are roasting and calcination? Write one example for each. 6

(b) Explain the purification of metal by electrolytic refining. 4

14. *(a)* What is electrochemical series? Explain its significance. 4

(b) State Faraday's first law. Calculate the weight of silver deposited when 5 amperes of current is passed through $AgNO_3$ solution for one minute and 40 seconds. (atomic weight of Ag = 108) 6

15. *(a)* Define corrosion. State any four factors that influencing the rate of corrosion. 5

(b) Explain the protection of iron metal from corrosion by impressed voltage method. 5

16. *(a)* Define soft water and hard water. Give examples for each. 4

(b) Explain the softening of hard water by Permutit process with equations. 6

17. *(a)* What is condensation polymerization? Explain the formation of bakelite. 4

(b) Write any six characteristic properties of plastics. 6

18. *(a)* Define water pollution. What are the causes of water pollution? 6

(b) Explain the effects of air pollution on human beings. 4

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