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C09–C–104

3014

BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2013

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 the following terms :

(a) Oxidation

(b) Reduction

(c) Modern periodic law

2. Define orbital. Draw the shapes of *s*- and *p*-orbital.

3. Define equivalent weight of an acid. Find the equivalent weight of H_2SO_4.

4. Give any three uses of buffer solutions.

5. Briefly explain the mechanism of electrolysis of molten NaCl.

6. Write any three disadvantages of hard water in industry.

7. State the characteristics of plastics.

8. State any three characteristics of good fuels.

9. Define the following terms :

(a) Pollutant

(b) Contaminant

(c) Receptor

10. Write a brief note on greenhouse effect.

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 is the content but not the length of the answer.

11. Explain the formation of ionic and covalent bonds with suitable examples. 5+5

12. *(a)* Define normality. Calculate the normality of the solution, prepared by dissolving 4·9g of H_2SO_4 in 500ml. 1+4

(b) Explain Lewis theory of acids and bases with examples. 5

13. *(a)* Describe the froth floatation process. 4

(b) Explain calcination and roasting with examples. 6

14. *(a)* State and explain Faraday's laws of electrolysis. 8

(b) What are electrolytes and nonelectrolytes? 2

15. *(a)* Define corrosion. Explain the factors that influence the rate of corrosion. 6

(b) Explain the stress cell with examples. 4

16. *(a)* Briefly explain the ion exchange process. 6

(b) Write a brief note on reverse osmosis. 4

17. *(a)* State and explain addition polymerization. 4

(b) Give the preparations and uses of the following : 6

(i) Polyethene

(ii) PVC

(iii) Teflon

18. *(a)* Define the following and give examples : 6

(i) Producers

(ii) Consumers

(iii) Decomposers

(b) Explain any two causes of water pollution. 4

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