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C14–M–104/C14–CHOT–104/C14–RAC–104

4052

BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2016

DME—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. State Aufbau's principle. Illustrate with example.

2. Differentiate between oxidation number and valency.

3. Define solute, solvent and solution.

4. Define acid and base as per Lewis theory. Give examples.

5. Define electrochemical equivalent and chemical equivalent.

6. List any three advantages of reverse osmosis.

7. Define addition polymerization. Give two examples for addition polymers.

8. State any three characters of good fuel.

9. Define pollution, pollutant and receptor.

10. State any three disadvantages of overexploitation of forest.

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)* Explain the quantum numbers. 6

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

12. *(a)* Define equivalent weight. Calculate the equivalent weight of *(i)* H_2SO_4, *(ii)* Na_2CO_3 and *(iii)* KOH. 5

(b) Define pH. 4 grams of NaOH is dissolved in 5 lit of solution. Calculate the pH of the solution. 5

13. *(a)* Explain froth flotation process with neat diagram. 6

(b) State the composition and uses of brass and nichrome. 4

14. *(a)* Write any five differences between electrochemical and electrolytic cell. 5

(b) Find the weight of copper deposited at cathode on passing 20 amperes of current for 90 minutes through $CuSO_4$ solution (atomic weight of Cu = 63·5). 5

15. *(a)* Describe the formation of *(i)* composition cell, *(ii)* stress cell and *(iii)* concentration cell. 6

(b) Write a short note on sacrificial anode method. 4

16. *(a)* Define vulcanization. Explain vulcanization with chemical reactions. 6

(b) State the properties of vulcanized rubber. 4

17. *(a)* Define soft and hard water. List the compounds causing harness to the water with formulae. 6

(b) State any four essential qualities of drinking water. 4

18. *(a)* Discuss any three methods to control air pollution. 6

(b) What are the main threats to the biodiversity? 4

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