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C16–M/CHOT/RAC–104

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BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2017

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 the charge and mass of fundamental particles.

2. Define oxidation number. What is the oxidation number of Cl in ClO_4?

3. Calculate the equivalent weights of *(a)* HCl, *(b)* NaOH and *(c)* Na_2CO_3.

4. Define the terms *(a)* ionic product of water and *(b)* pH.

5. Write the three differences between Electrolytic cell and Galvanic cell.

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

7. Write the characteristics of plastics.

8. What are primary and secondary fuels? Give examples.

9. Define *(a)* atmosphere, *(b)* hydrosphere and *(c)* lithosphere.

10. State any three uses of forests.

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 the differences between oxidation number and valency? 3

(b) What are quantum numbers? Explain the significance of various quantum numbers. 7

12. *(a)* Explain the Arrhenious theory of acids and bases with suitable examples? 5

(b) Define Normality. Calculate the normality of 9·8 gm of H_2SO_4 dissolved in 2 litres of water. 5

13. *(a)* Explain the froth floatation process. 5

(b) Explain roasting and calcination with suitable examples. 5

14. *(a)* Explain the electrolysis of fused sodium chloride (NaCl). 5

(b) Describe the construction of a Galvanic cell. 5

15. *(a)* What is rusting? Explain the mechanism of rusting of iron with chemical equations. 5

(b) Explain the sacrificial anode process of prevention of corrosion. 5

16. *(a)* Describe ion-exchange process of softening of hard water. 6

(b) Define osmosis and reverse osmosis. 4

17. *(a)* Explain vulcanization of rubber with chemical equations. 5

(b) State the advantages of plastics over traditional materials. 5

18. *(a)* Define 'water pollution' and explain the causes of water pollution. 6

(b) What are non-renewable and renewable energy sources? Give examples. 4

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