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C16–EC/CHPC/PET–104

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BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2017

DECE—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. Write the electronic configurations of the following :

(a) Phosphorous

(b) Chromium

(c) Copper

2. Differentiate between oxidation number and valency.

3. Calculate the volume of water to be added to 100 ml of 0·5 *M* HCl solution is diluted to 0·1 *M* HCl solution.

4. Define ionic product of water. Give its value at 25 °C.

5. What is electrolysis? Write the electrode reactions for the electrolysis of fused NaCl.

6. State any three applications of reverse osmosis.

7. Define the terms plastic and elastomer. Write one example for each.

8. Define fuel. State any four characteristics of a good fuel.

9. What are producers and consumers? Write one example for each.

10. Define the following terms :

(a) Particulates

(b) COD

(c) BOD

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)* Write any six differences between properties of ionic compounds and covalent compounds. 6

(b) Explain azimuthal quantum number and magnetic quantum number. 4

12. *(a)* Define equivalent weight of acid and base with one example for each. 5

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

13. *(a)* Describe froth flotation process for the concentration of the ore. 5

(b) Write any five characteristics of metals. 5

14. *(a)* What is galvanic cell? Describe and explain the working of a galvanic cell. 6

(b) Distinguish between electrolytic cell and galvanic cell. 4

15. *(a)* What is rusting of iron? Explain its mechanism with equations. 6

(b) Explain stress cell and composition cell. 4

16. *(a)* Write the names and formulae of salts that are responsible for permanent hardness of water. 4

(b) Write any six essential qualities of drinking water. 6

17. *(a)* Distinguish between thermoplastics and thermosetting plastics. 6

(b) Define addition polymerization. Explain it with an example. 4

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

(b) Write a short note on depletion of ozone layer. 4

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