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C16-EC/CHPC/PET-104

6030

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2018

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. Draw the shapes of *sp^d* orbitals.
2. Write the electronic configuration of chromium and copper.
3. Define the terms 'solution', 'solute' and 'solvent'.
4. Find the pH of 0.001 N HCl solution.
5. Define (a) electrochemical equivalent and (b) chemical equivalent.
6. State the three essential qualities of drinking water.
7. Define the term 'plastics' and mention their types.
8. Define fuel. Write any two characteristics of good fuel.
9. Define (a) particulates, (b) contaminant and (c) pollutant.
10. Write a short note on Greenhouse effect.

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) Define covalent bond. Explain the formation of covalent bond in H_2 , O_2 and N_2 . 7
12. (a) Explain the Lewis theory of acid and bases with examples. 5
(b) Define mole. Calculate the number of moles in (i) 3.65 g of HCl and (ii) 4.9 g of H_2SO_4 . 5
13. (a) Explain the method of electrolytic refining of metal. 6
(b) Define the terms (i) mineral, (ii) gangue, (iii) ore and (iv) slag. 4
14. (a) State the differences between an electrolytic cell and galvanic cell. 5
(b) A current of 0.5 ampere is passed for 30 minutes through a cell containing copper sulphate solution. What is the weight of copper deposited? (Atomic weight of copper is 63.5) 5
15. (a) Explain impressed voltage method of prevention of corrosion. 5
(b) Define corrosion. Explain any four factors which influence the rate of corrosion. 5
16. (a) Explain ion-exchange process of softening of hard water. 5
(b) State the disadvantages of using hard water in industries. 5
17. (a) What are the characteristics of vulcanized rubber? 5
(b) Write the differences between thermoplastics and thermosetting plastics. 5
18. (a) What are the effects of deforestation? 4
(b) Explain the methods of control of air pollution. 6
