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C14-EC/CHPC/PET-104

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BOARD DIPLOMA EXAMINATION, (C-14)

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 four quantum numbers for valency electron in hydrogen atom.
2. Define covalent bond. Give two examples for covalent compounds.
3. Define molarity and molality.
4. Define ionic product of water. Write its value at 25 °C.
5. Define electrochemical equivalent. Give its units.
6. Define soft water and hard water.

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7. Write the preparation and uses of Teflon.
8. What are primary and secondary fuels? Give examples.
9. What is acid rain? Name the chemicals causing acid rain.
10. What is deforestation? What are the main causes for deforestation?

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) Define orbital. Draw the shapes of s and p orbitals. 5
(b) Define ionic bond. Explain the formation of NaCl. 5
12. (a) Find the volume of water to be added to 250 ml of 0.05 N HCl solution to get 0.01 N solution. 5
(b) Explain Lewis acid-base theory. 5
13. (a) Write any four characteristic properties of metal. 4
(b) Explain the terms (i) roasting, (ii) calcination and (iii) smelting with examples. 6
14. (a) State Faraday's laws. How many faradays of electricity are required to deposit 216 grams of silver from AgNO₃ solution by electrolysis? 5
(b) Define electrochemical series and state its significance. 5

15. (a) What is rusting? Explain rusting mechanism of iron. 5
(b) Explain sacrificial anode method. 5
16. (a) Explain the softening of hard water by Permutit process with relevant equations. 6
(b) What is reverse osmosis? Give its advantages. 4
17. (a) Define plastic. What are the advantages of plastics over traditional materials? 5
(b) Write five differences between thermoplastics and thermosetting plastics. 5
18. (a) What are the main causes of water pollution? 4
(b) Explain the following terms : 6
(i) BOD
(ii) COD
(iii) TLV
