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C14–EC–104/C14–CHPC–104/C14–PET–104

4036

BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2016

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. State Pauli's exclusion principle. Give one example.

2. Distinguish between oxidation number and valency.

3. Define *(a)* solution, *(b)* solvent and *(c)* solute.

4. What is buffer solution? Write any two applications of it.

5. Define chemical equivalent and electrochemical equivalent.

6. Define degree of hardness and give its units.

7. Write the names and structures of monomers for the following polymers :

(a) PVC

(b) Neoprene

(c) Teflon

8. Write any three characteristics of a good fuel.

9. Define the following terms :

(a) Pollutant

(b) Receptor

(c) Sink

10. Write a brief note on greenhouse effect.

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 is ionic bond? Explain the formation of NaCl. 5

(b) State any five properties of covalent compounds. 5

12. *(a)* Define equivalent weight of acid and base with one example each. 4

(b) Explain Bronsted-Lowry theory of acids and bases with suitable examples. 6

13. *(a)* Explain Froth flotation process with a neat sketch. 5

(b) Define alloy. Write the composition and uses of brass and nichrome. 5

14. *(a)* What is galvanic cell? Explain the working of a galvanic cell. 6

(b) What is electrochemical series? Write its significance. 4

15. *(a)* Define corrosion. State and explain any four factors that influence the rate of corrosion. 6

(b) How to prevent the corrosion of metals by sacrificial anode method? Explain. 4

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

(b) Define osmosis and reverse osmosis. State any two advantages of reverse osmosis. 4

17. *(a)* Write any six differences between thermoplastics and thermosetting plastics. 6

(b) Define vulcanization of rubber. Explain with equations. 4

18. *(a)* Define water pollution. Explain any four causes of water pollution. 6

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

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