* 6030 *

C16–EC/CHPC/PET–**104**

6030

BOARD DIPLOMA EXAMINATION, (C–16)

SEPTEMBER/OCTOBER - 2020

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 and explain Hund's principle with an example.

2. Distinguish between oxidation state and valency.

3. Define solute, solvent and solution.

4. Write any three applications of buffer solutions.

5. Write any three differences between electrolytic cell and galvanic cell.

6. Define reverse osmosis. State any two applications of reverse osmosis.

7. Define monomer and polymer. Give one example each.

8. Write the composition of *(a)* water gas and *(b)* producer gas.

9. Define the following :

(a) Pollutant

(b) Receptor

(c) BOD

10. Define biodiversity. List any four benefits of biodiversity.

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 important postulates of Bohr's atomic theory. 6

(b) Define unit cell. Draw the structures of unit cell of NaCl and CsCl. 4

12. *(a)* Define equivalent weight. Calculate the equivalent weight of the following : 5

(i) NaOH

(ii) H_2SO_4

(iii) Na_2CO_3

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

13. *(a)* Explain froth flotation process with a neat diagram. 5

(b) Write any five characteristics of metals. 5

14. *(a)* State Faraday's laws of electrolysis. A current of 10 A is passed through a solution of $CuSO_4$ for 10 minutes. Calculate the weight of copper deposited on the cathode (At. Wt. of Cu is 63·5). 6

(b) Distinguish between metallic conductors and electrolytic conductors. 4

15. *(a)* Define corrosion. Write any five factors which influence the rate of corrosion. 6

(b) Explain sacrificial anode method. 4

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

(b) Mention any four essential qualities of drinking water. 4

17. *(a)* Write any five differences between thermoplastics and thermosetting plastics. 5

(b) Explain vulcanization of rubber with chemical equation. 5

18. *(a)* Define water pollution. Explain any four causes of water pollution. 5

(b) Write short notes on *(i)* Greenhouse effect and *(ii)* Acid rain. 5

★ ★ ★