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C16–EC/CHPC/PET–104

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BOARD DIPLOMA EXAMINATION, (C–16)

OCTOBER—2020

DECE—FIRST YEAR EXAMINATION

ENGINEERING CHEMISTRY & 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. What is electronic configuration? Write the electronic configuration of Cr and Cu.

2. Write any 3 differences between orbit and orbital.

3. Define molarity. Give mathematical formula.

4. Define pH. Calculate the pH of 0·1 M HNO_3 solution.

5. What is electrochemical equivalent and chemical equivalent? Give the relation between them.

6. Write any three disadvantages of using hard water in industries.

7. Write any three properties of plastics.

8. Write any three characteristic properties of good fuel.

9. Write any three causes of deforestation.

10. Write a note about acid rain.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

11. *(a)* What are quantum numbers? Explain the significance of quantum numbers. 5

(b) Define covalent bond. Explain the formation of O_2 by Lewis dot method. 5

12. *(a)* Define solution. Explain about unsaturated, saturated and super saturated solutions. 5

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

13. *(a)* Write the differences between metals and non-metals. 5

(b) Describe about Froth Floatation process with a neat labelled diagram. 5

14. *(a)* Write the differences between electrolytic cell and galvanic cell. 5

(b) Define EMF. Calculate the standard EMF of the following cell : 5

$$Ni|Ni^{2+}\ (1M)\ ||\ Ag^{+}\ (1M)|\ Ag$$

Standard reduction potential of Ag = 0·80 V, Standard reduction potential of Ni = –0·24 V.

15. *(a)* What is composition cell? Explain with an example. 5

(b) Explain about sacrificial anode method. 5

16. *(a)* Describe about permutit method of softening of hard water with a neat labelled diagram. 6

(b) Write the essential qualities of drinking water. 4

17. *(a)* Write the preparations and uses of PVC, teflon and polystyrene. 6

(b) Describe about processing of natural rubber. 4

18. *(a)* Define water pollution and explain any four causes for water pollution. 5

(b) What is bio-diversity? Mention the threats to bio-diversity. 5

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