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C14–EE–104/C14–CHPP–104

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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2016

DEEE—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 rule with example.

2. Find the oxidation number of *(a)* S in H_2SO_4, *(b)* N in HNO_3, and *(c)* Mn in $KMnO_4$.

3. Define solute, solvent and solution.

4. Define ionic product of water. Mention the units of ionic product of water.

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

6. State three essential equalities of drinking water.

7. Write any six characteristics of plastics.

8. Mention any three characteristics of a good fuel.

9. Define COD and BOD.

10. Write any three threats to 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)* State the postulates of Bohr's atomic theory. 6

(b) State and explain coordinate covalent bond with example. 4

12. *(a)* Define molarity. Calculate the weight of NaOH present in 250 ml of 0·5 *M* solution. 5

(b) Define pH. Calculate the pH of 0·001 *M* NaOH solution. 5

13. *(a)* Define *(i)* ore, *(ii)* gangue, *(iii)* flux, and *(iv)* slag. 4

(b) Define alloy. Write the composition and uses of brass and nichrome. 6

14. *(a)* State and explain Faraday's laws of electrolysis. 6

(b) A current of 0·5 ampere is sent through a solution of $CuSO_4$ for 20 minute using platinum electrodes. Calculate the weight of Cu deposited. [At. wt. of Cu = 63·5] 4

15. *(a)* Explain the mechanism of rusting of iron. 5

(b) Explain impressed voltage process to prevent corrosion. 5

16. *(a)* Explain removal of hardness of water by permutite process. 7

(b) Write the names and formulae of the salts responsible for temporary and permanent hardness of water. 3

17. *(a)* Give a method of preparation and two uses of the following polymers : 6

(i) PVC

(ii) Polystyrene

(iii) Teflon

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

18. *(a)* Write short notes on *(i)* greenhouse effect, and *(ii)* ozone layer depletion. 6

(b) Explain any two methods to control water pollution. 4

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