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C16–A/AA/BM/CHST/AEI/MET/
MNG/TT/IT—104

6004

BOARD DIPLOMA EXAMINATION, (C–16)

OCT/NOV—2017

FIRST YEAR (COMMON) 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. Define atomic number and mass number. Give one example for each.

2. Calculate the oxidation state of S in H_2SO_4, Mn in $KMnO_4$, Cr in $K_2Cr_2O_7$.

3. Define mole, molarity and normality.

4. What is pH? Calculate the pH of 0·002*M* H_2SO_4 solution.

5. What is electrochemical series? Give its significance.

6. Define soft water and hard water. Give the reactions of soft water and hard water with soap.

7. What are the disadvantages of using plastics?

8. Define fuel. Give the classification of fuels.

9. Write a short note on ozone layer depletion.

10. Define the following terms :

(a) DO

(b) BOD

(c) COD

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)* Briefly explain the principal quantum number and azimuthal quantum number. 5

(b) What is the ionic bond? Explain the formation of ionic bond in NaCl. 5

12. *(a)* Calculate the molarity and normality of H_2SO_4 solution containing 9·8 g of H_2SO_4 dissolved in 250 ml of the solution. 5

(b) What is buffer solution? Explain the types of buffer solution with examples. 5

13. *(a)* Discuss about calcination, roasting and smelting with examples. 6

(b) Define alloy. Give the composition and uses of brass and German silver. 4

14. *(a)* Explain electrolysis of fused NaCl solution. 5

(b) Explain electrochemical equivalent and chemical equivalent. 5

15. *(a)* Write the different types of galvanic cells with examples. 6

(b) Describe the impressed voltage method. 4

16. *(a)* Explain the Permutit process for the softening of water. 5

(b) Write the types of hardness. Give the formulas of salts which cause hardness. 5

17. Write the preparation and uses of the following : 10

(a) Polythene

(b) PVC

(c) Teflon

(d) Buna-S

(e) Urea-formaldehyde

18. *(a)* What are the causes of air pollution? 5

(b) Write the control methods of water pollution. 5

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