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C16–A/AA/CHST/C/CM/EC/EE/
M/AEI/MET/MNG/IT/TT/PKG–104

5004

BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2018

FIRST YEAR (COMMON) EXAMINATION

ENGINEERING CHEMISTRY AND
ENVIRONMENTAL STUDIES

Time : 3 hours] [*Total Marks* : 80

PART—A 2×15=30

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

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

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Write any four differences between orbit and orbital.

2. Write electronic configuration of Cr (Z 24) and Cu (Z 29).

3. Define coordinate covalent bond with example.

4. Define oxidation number. Calculate oxidation number of N in HNO_3.

5. Define the terms 'solute' and 'solvent'.

6. What is normality? Give its formula.

7. What is pH? Calculate pH of 0·01*M* HCl solution.

8. Define buffer solution. Write two applications of buffer solution.

9. What are chemical equivalent and electrochemical equivalent?

10. Write four differences between electrolytic cell and galvanic cell.

11. Write the names of salts and their formulae which are responsible for permanent hardness.

12. Write any two disadvantages of using hard water.

13. Write four advantages of plastics over traditional material.

14. Write the preparation and two uses of polythene.

15. Write four characteristics of a good fuel.

16. Write the composition and two uses of producer gas.

17. Define producers and consumers.

18. Define BOD and COD.

19. Classify air pollutants based on their origin and give example for each.

20. What is greenhouse effect? Write two consequences of greenhouse effect.

PART—B

10×5=50

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

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

21. *(a)* Write the postulates of Bohr's atomic theory. 7

(b) Write any three properties of ionic compounds. 3

22. *(a)* Define molarity. 4 gm of NaOH is dissolved and prepared 100 ml of solution. Find the molarity. 1+4

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

23. *(a)* Explain roasting and calcination with suitable equations. 6

(b) Write any four characteristics of metals. 4

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

(b) A current of 0·965 ampere is passed through an aqueous solution of $AgNO_3$ for 10 minutes during electrolysis. Calculate the the mass of Ag deposited at cathode (atomic weight of Ag = 108 gm and valency = 1). 4

25. *(a)* What is rusting? Explain the mechanism of rusting of iron with chemical equations. 6

(b) Explain sacrificial anode method for prevention of corrosion. 4

26. *(a)* Explain zeolite process for softening of hard water. 6

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

27. *(a)* Write any four differences between thermoplastics and thermosetting plastics. 4

(b) What is vulcanisation? Explain the process of vulcanisation with chemical equation. 6

28. *(a)* Define air pollution. Explain any two causes of air pollution. 1+4

(b) What is biodiversity? Give any four threats to biodiversity. 5

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