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C09–A–104/C09–AA–104/C09–AEI–104/C09–BM–104/
C09–CHST–104/C09–FW–104/C09–IT–104/
C09–MET–104/C09–MNG–104/
C09–PKG–104/C09–TT–**104**

3004

BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2014

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. Distinguish between orbit and orbital.

2. Define *(a)* oxidation, *(b)* reduction. Give example.

3. Find the number of moles present in *(a)* 20 gm of NaOH, *(b)* 90 grams of water.

4. Write any three applications of buffer solution.

5. Mention the differences between electrolytic cell and galvanic cell.

6. What are osmosis and reverse osmosis?

7. Define the following terms :

(a) Plastic

(b) Elastomer

(c) Vulcanization

8. Give the composition and two uses of producer gas.

9. Define the following terms :

(a) Sink

(b) Particulate

(c) Atmosphere

10. Classify air pollutants based on their origins. Give examples.

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 any six properties each of ionic compounds and covalent compounds.   6

(b) State and explain *(i)* Pauli's exclusion principle and *(ii)* Aufbau's principle.   4

12. *(a)* Define molarity and normality. Give equations and their units. 5

(b) Discuss Lewis acid-base theory. 5

13. *(a)* Distinguish between metals and nonmetals. 6

(b) What is an alloy? State any three properties of alloys. 4

14. *(a)* Explain the electrolysis process by taking fused NaCl as example. 6

(b) A certain quantity of electricity is passed through aqueous solution of $AgNO_3$ and $CuSO_4$ connected in series. The amount of silver deposited at the cathode is 1·08 gm. What is the amount of copper deposited? (Atomic weight of Ag = 108, Cu = 63·54) 4

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

(b) How can corrosion be prevented by impressed voltage method? 5

16. *(a)* Describe the method of municipal treatment of water for drinking purpose. 6

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

17. *(a)* Write any four properties of vulcanized rubber. 4

(b) Write the method of preparation and uses of the following : 6

(i) PVC

(ii) Teflon

(iii) Buna-S

18. *(a)* Give the effects of water pollution on living things. 4

(b) Define producers, consumers and decomposers with examples. 6

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