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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)

OCT/NOV—2013

FIRST YEAR (COMMON) EXAMINATION

ENGINEERING CHEMISTRY AND
ENVIRONMENTAL STUDIES

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

PART—A

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 any three properties of ionic bond.

2. Distinguish between orbit and orbital.

3. Calculate the weight of Na_2CO_3 required for the preparation of 250 ml of 0·25 m solution.

4. Discuss briefly about ionic product of water.

5. Define chemical equivalent and electrochemical equivalent. How are they related?

6. Define degree of hardness. List out the chemicals which cause hardness to water.

7. What are the disadvantages of using plastics?

8. Write any six characteristics of good fuel.

9. Define the following terms :

(a) Hydrosphere

(b) BOD

(c) Ecosystem

10. What are the consequences of greenhouse effect?

PART—B

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)* Explain covalent bond formation in oxygen and nitrogen molecules using Lewis dot method. 5

(b) Write the properties of fundamental particles of an atom. 5

12. *(a)* Discuss Arrhenius theory of acids and bases. 5

(b) Explain the equivalent weight of acids and bases. 5

13. *(a)* Write any two methods for extraction of crude metal from ore. 6

(b) Define the following terms : 4

(i) Mineral

(ii) Slag

(iii) Flux

(iv) Gangue

14. *(a)* Describe the construction of a galvanic cell with a neat diagram. 6

(b) Calculate the EMF of the cell $Mg / Mg^{2} // Ag / Ag$. Given, E^{o} of Ag / Ag 0 8V and E^{o} of Mg / Mg^{2} 2 37V. 4

15. *(a)* Write any five factors which influence the rate of corrosion. 5

(b) Describe the formation of *(i)* composition cell and *(ii)* stress cell. 5

16. *(a)* Explain Permutit process for softening of hard water with a neat diagram. 6

(b) State any four disadvantages of using hard water in industries. 4

17. *(a)* Distinguish between thermoplastics and thermosetting plastics. 4

(b) Describe the preparation and uses of the following : 6

(i) Buna-S

(ii) Teflon

(iii) Polystyrene

18. *(a)* Discuss about the renewable energy sources. 5

(b) Explain the various methods of control of air pollution. 5

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