C16–A/AA/BM/CHST/AEI/MET/

MNG/TT/IT—**104**

6004

BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—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 orbital. Draw the shapes of *P* orbitals.

2. Find the oxidation number of *(a)* N in NH_4, *(b)* Mn in $KMnO_4$ and *(c)* Cl in $ClO_4{}^1$.

3. Define solution, solvent and solute.

4. Write any three applications of Buffer solution.

5. Distinguish between metallic conductor and electrolyte.

6. Define osmosis and reverse osmosis.

7. Write the monomers used in preparing the following polymers :

(a) PVC

(b) Polystyrene

(c) Teflon

8. Write the composition and uses of (a) producer gas and (b) water gas.

9. What are primary pollutants and secondary pollutants?

10. What is acid rain? Write its effects.

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) Write any four limitations of Bohr's theory. 4

12. (a) Define molarity. Calculate the weight of Na_2CO_3 present in 100 ml of 0·05 M Na_2CO_3 solution. 5

(b) Explain Lewis theory of acids and bases with examples. 5

13. (a) Explain smelting and calcination with examples. 6

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

14. (a) State and explain Faraday's first and second laws. 6

(b) Calculate the weight of copper deposited when 0·5 amp current is passed through $CuSO_4$ solution for 10 minutes (atomic weight of copper   63   5). 4

15. *(a)* What is rusting of iron? Explain its mechanism with equations. 5

(b) Explain the sacrificial anode method in the prevention of corrosion of metal. 5

16. *(a)* Describe and explain softening of hard water by ion exchange process. 6

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

17. *(a)* Write any six differences between thermoplastics and thermosetting plastics. 6

(b) What is vulcanization of rubber? Explain it with chemical equations. 4

18. *(a)* Define air pollution. State any four causes of air pollution. 6

(b) What are renewable and nonrenewable energy sources? Give examples for each. 4

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