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C14–A/AA/AEI/BM/C/CHOT/CHPC/
CHPP/CHST/CM/EC/EE/IT/M/MET/
MNG/PET/RAC/TT–**104**

4004

BOARD DIPLOMA EXAMINATION, (C–14)
OCT/NOV—2018
DTT—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 *s* and *p* orbitals.

2. Calculate the oxidation number of nitrogen atom in the following :

(a) HNO_3

(b) NH_4Cl

(c) N_2O

3. Define molarity. How much amount of NaOH is required to prepare 500 ml of 0.1M NaOH solution?

4. What is ionic product of water? Write its significance.

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5. Define Conductor, insulator and electrolyte. Write one example for each.
6. Write any three disadvantages of using hard water in industries.
7. Define the term elastomer. Write any two examples for elastomers.
8. Write the compositions of water gas and producer gas. Give their uses.
9. What is deforestation? State any two effects of deforestation.
10. What are primary and secondary air pollutants? Write one example of each.

PART—B

10×5=50

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

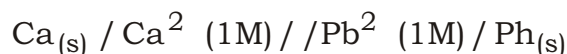
(2) Each question carries **ten** marks.

(3) The 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? Write any two limitations
(b) Write the Electronic configurations of
 - (i) Sodium
 - (ii) Phosphorous
 - (iii) Chromium
 - (iv) Zinc
12. (a) Define Normality. Calculate the normality when 9.8 grams of sulphuric acid is present in 2 litre solution.
(b) Define P^H , Calculate the P^H of 0.001M NaOH solution
13. (a) What is smelting and Roasting. Explain with Example
(b) Explain the purification of Metal by Electrolytic refining.

14. (a) What is electrolysis? Explain the electrolysis of fused sodium chloride.

(b) Define EMF. Calculate the EMF of a following cell.



The standard reduction potentials of Ca & Pb are -0.29V and -0.12V respectively.

15. (a) What is Rusting of Iron? Explain its mechanism with equations.

(b) Explain impressed voltage method for the prevention of Corrosion of Metals.

16. (a) Define soft water and hard water. Write one example for each.

(b) Explain the softening of hard water by ion-exchange process with a neat sketch.

17. (a) State any four characteristic properties of plastics.

(b) Write the method of preparation and any two uses of the following polymers.

(i) Polythene

(ii) Bakelite

(iii) PVC

18. (a) Define and Explain the following terms:

(i) TLV

(ii) DO

(iii) COD

(iv) BOD

(b) Write the effects of Air Pollution of Human beings

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