



C16S- A/AA/C/CHST/CM/EC/EE/EH
M/MET/MNG/IT/TT/PKG -104

5104

BOARD DIPLOMA EXAMINATION, (C-16S)
OCTOBER/NOVEMBER-2018
FIRST SEMESTER EXAMINATION

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES - I

Time : 3 Hours]

[Total Marks: 80

PART-A

2X15=30

Instructions : 1. Answer any 15 questions.
2. Each question carries 2 marks.
3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Define atomic number and mass number.
2. Write the electronic configuration of Carbon (Z=6) and sulphur (Z=16)
3. Define orbit and orbital.
4. Define oxidation and reduction. Give an example each.
5. Give any two differences between ionic and covalent compounds.
6. Define (i) Solute and (ii) Solvent.
7. What are saturated and unsaturated solution?
8. Find the weight of 0.4 moles of H₂SO₄
9. Calculate the weight of Na₂CO₃ required to prepare 0.4 N 200ml solution.
10. Define Bronsted Lowry acid and base.
11. Calculate the PH of 0.001 M HCl solution
12. What is neutralization according to Lewis acid base theory?
13. Write any two uses of buffer solution.
14. Define soft water and hard water.

16. What are the disadvantages of using hard water in boilers for steam generation purpose?
17. Define degree of hardness in terms of "ppm"
18. Calculate the hardness of sample water containing 12 mg of MgSO₄ per litre.
19. Define pollutant and contaminant.
20. Define Lithosphere and Hydrosphere.
21. Mention any two threats to biodiversity.

PART-B

10X5=50

Instructions : 1. Answer any Five questions.
2. Each question carries ten marks.

22. (a) State the postulates of Bohr's atomic theory. Write any two of its limitations
(b) State and explain Hund's Rule.
23. (a) Explain Quantum numbers
(b) Draw the shapes of 's' and 'p' orbitals.
24. (a) Define ionic bond and explain its formation in 'NaCl' and 'MgO'
(b) Find the oxidation number of 'N' in HNO₃ and NH₃
25. (a) How the equivalent weights of acids, bases and salts are calculated. Give the formula and explain with one example each
(b) Define Molarity. Find the molarity of a solution containing 0.4 gm of NaOH in 500ml volume.
26. (a) Explain Arrhenius theory of acids and bases with its limitations.
(b) What is ionic product of water? Give its units.
27. (a) Write any six essential qualities of drinking water
(b) Explain the method of softening of hard water by ion exchange method.
28. (a) Explain the municipal treatment of water for drinking purpose
(b) Write any two advantages of reverse osmosis.
29. (a) Define ecosystem and explain the biotic and abiotic components of ecosystem.
(b) Write a note on renewable and non-renewable energy sources.

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