ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

(COMMON-104)

IMPORTANT QUESTIONS

LONG ANSWERS:

1. Write about the postulates of Bohr's atomic model? Give Merits and limitations.
2. Explain about FOUR Quantum Numbers.
3. Define orbital. Drawn the shapes of s, p, d, orbitals.
4. What is an ionic bond? Explain the formation of ionic bond in NaCl and MgO.
5. What is covalent bond? Explain the formation of H_2, O_2, N_2 molecules in terms of Lewis dot model.
6. Write the properties of Ionic compounds and covalent compounds. Differences between Ionic compounds and covalent compounds.
7. Define Molarity, Normality. If 5.3 grams of Na_2CO_3 present in 250 ml of Na_2CO_3 Solution. Find the Molarity and Normality of the solution.
8. Calculate the Volume of Water to be added to 100 ml of 0.5M HCl solution is diluted to 0.1 M solution.
9. State and Explain the Arrhenius theory of acids and bases. Mention the limitations of theory.
10. Write the postulates of Electronic theory of valency.
11. Define solute,solvent,solution. Explain the types of solutions based on its solubility
12. What is Buffer solution Explain the classification and applications of buffer solutions
13. Define Alloy. Write the composition and uses of Brass, German silver, and Nichrome.
14. Explain about the Electrolysis of fused or molten NaCl.
15. What is Galvanic cell? Explain the construction and working of Galvanic cell.
16. Explain about Lead storage battery and Lithium-ion Battery
17. Explain construction and working of H_2-O_2 fuel cell
18. Write the differences between Anodic and cathodic coatings
19. Write the difference between the Electrolytic cell and Galvanic cell.

20.What is Electro chemical series? What is its significance?

21.Define corrosion. Write the factors influencing the rate of corrosion.

22.Write about the formation of composition cell, concentration cell, and stress cell.

23.Explain about rusting of iron? Give its reaction mechanism

.

24.Explain sacrificial anode and impressed voltage methods of prevention of corrosion.

25.Explain about Ion-exchange process for the softening of hard water.

26..Define Osmosis and Reverse Osmosis. Mention applications and advantages of Reverse Osmosis

27. What is Hardness and give the types of Hardness. Write the disadvantages of using Hard water

28.Write preparation and following uses of plastics.

. a) PVC b) Teflon c) Polysterene d) Nylon 6, 6

29. What are elastomers? Write about preparation and uses of 1) Buna-S 2) Neoprene rubber

30. Explain briefly:

a) Greenhouse effect b) Acid rains c) Ozone layer depletion

31. Define deforestation. State the impacts of deforestation

32. Define Air pollution and write the causes, effects and control methods of Air pollution.

33. Define water pollution and write its causes, effects and control methods of water pollution

.SHORT ANSWERS:

1. What are the fundamental particles of an atom? Write their mass and charges.
2. Define Atomic number and Mass number.
3. Write the differences between Orbit and Orbital.
4. Write about Aufbau's principle, Hund's rule, and Pauli's exclusion principle.
5. Write the Electronic configuration of Ne, Cr, Cu and Ca.
6. Find the number of protons and electrons in Na^{+}, Cl^{-}, O^{-2} and Mg.
7. Draw the Atomic structures of Si& Ge.
8. Define Solute, Solvent and solution.
9 Classify the solutions based on relative amounts of Solute and solvent.
10. Define Mole. Calculate no of moles present in (a) 90 grams of water (b) 22 grams of CO_2.
11. Define equivalent weight. Calculate the equivalent weight of HCl, H_2SO_4, NaOH, Na_2CO_3, and CaCO3.
12. Define Ionic Product of Water. Give its value at different temperatures.
13. Define P^H. Give P^H ranges. What is the importance of P^H Scale?
14. Define P^H. Calculate the P^H of 0.001M HCl solution.
15. Define the terms Conductors, Insulators and Electrolytes.
16. Write the Differences Between Metallic Conduction and Electrolytic Conduction.
17. Define the following. (i) Electrode potential, (ii) Standard Electrode potential..
18. Define Soft Water and Hard Water with respect to soap action.
19. Define Hardness of water and Classify the Hardness of water.
20. Define Hardness of water. Give names and formulas for hardness causing salts.
21. What are the disadvantages of using hard water?
22. Calculate the Hardness of water containing following salts per litre of water.
    $Ca(HCO_3)_{2}$-16.2
23. Define Osmosis and Reverse Osmosis. Give examples.
24. What are the characteristic properties of Plastics?
25. Write the Preparation and Engineering applications of polythene.

26.Write the classification of fuels?

27.What are the characteristics of good fuel?

28.Give the composition and uses of Water gas, Producer gas, natural gas, bio gas, coal gas.

29.Give the Chemical composition, applications, health aspects and pollution impact of Soaps and Detergents.

30. Define addition and Condensation State polymerization.

31.Define the following terms (a) Pollutant (b) Pollution (c) Contaminant (d) receptor (e) sink (f) particulates (g) dissolved oxygen (h) TLV (i) BOD (j) COD.

32.What is Blue gas? Why is so called. Write the uses.

33.Define Bio diversity. Write any three threats to Bio Diversity.

34.Explain about Renewable and non-renewable energy sources.

35.What is E-polluton.Write the health aspects and control measures of E-pollution

36. What is Green chemistry? Write the benefits of green chemistry.