1. Atomic Structure:

• Short Questions (2-marks) :-

1. (a) charge of electron is _____.
mass of electron is _____.

(b) what is the charge and mass of proton?

(c) Find the numbers of electron, Proton & neutron present in Cl^-, O^{2-}.

(d) Find the numbers of protons and electrons present in Ca^{2+}.

(e) An element having protons = 19 and neutrons = 20, then identify & calculate the mass of that element.

(f) Write the electronic configuration of
O^{2-}, N^{3-}, Cl^-, Na, Ca^{2+}, Fe, Fe^{2+}, Co

(h) Define (i) isotope with example (2)
(ii) isotone with example (2)
(iii) Isobar with example (2)

(i) State (i) Pauli's exclusion principle (2)
(ii) Hund's rule (2)
(iii) Aufbau's principle (2)

(j) what is (n+l) rule? Arrange 1S, 2S, 3P, 3P, 2S, 4S, 3d in the increasing order of their Energy.

• Long Type Questions :-

2. (a) State and explain Rutherford's gold foil experiment. (7)

(b) Write the Drawback of Rutherford's atomic model. (4).

(c) Write the postulates of Bohr's atomic model. How Bohr rectify the rutherford atomic model. (5+3).

(d) Write the Postulates of Bohr-Bunny Scheme (4)

2. Chemical Banding.

• Short Questions :-

1. Define (a) ionic bond with example (2)
(b) covalent bond with example (2)
(c) coordinate bond with example (2).

2. Identify the covalent, ionic & coordinate compounds (2
from the following; H_2O_2, NH_4^+, O_2, NaCl, CO_2, $HgCl_2$

• Long Questions :-

(1) Write the difference between ionic compound and covalent compound. (Any four points) (4)

(2). Explain the formation of (a) NH_3 molecule [4]
(b) NH_4^+ molecule (4)
(c) H_2O molecule (4)
(d) CH_4 molecule (4)
(e) H_3O^+ molecule (4).

3. Acid, Base And Salt

- **Short Questions :-**

1. (a) Define conjugate acid-base pairs of a substance (2).

   (b) What is the conjugate acid-base pairs of.

   (i) HCl (ii) H_2SO_4 (iii) H_2O (iv) NH_4^+ (v) HCO_3^- (2) (vi) HCOOH (2).

2. Write the limitations of Arrhenius concept (2).
3. What are the advantages of Bronsted-Lowry concept over the Arrhenius concept. (2)
4. Write the limitations of Bronsted-Lowry Concept. (2)
5. Define amphoteric substance, Give any two examples.

- **Long Questions -(4 marks)**

1. Compare Arrhenius concept with Lowry-concept.
2. What are the salient feature of Lewis concept?
3. Compare Lowry concept with Lewis concept.

4. Salts

- **Short Questions :-**

1. Define Salt / Neutralisation reaction with example. (2)
2. What is the difference between the double salt and complex salt. (2)
3. What is double salt, Give any two examples (2).

- **Long Questions :-**

1. Define Salt & Explain about Various types of Salts. (7).

5. Solutions.

• Short Questions:-

1. calculate the gram equivalent mass of

(a) HCl (2)
(b) H_2SO_4 (2)
(c) NaOH (2)
(d) KOH (2)
(e) Na_2CO_3 (2)
(f) $CaCO_3$ (2)
(g) $Ca(OH)_2$ (2)
(h) $Al_2(SO_4)_3$ (2).

2. Write the basicity of

(a) HCl (1)
(b) H_2SO_4 (1)
(c) HNO_3 (1)
(d) CH_3COOH (1)
(e) H_3PO_4 (1)
(f) HCOOH (1)

3. Write the acidity of :-

(a) NaOH (1)
(b) KOH (1)
(c) $Ca(OH)_2$ (1)
(d) $Al_2(OH)_3$ (1)

4. Define (a) Normality (2)
(b) Molarity (2)
(c) Molality (2)

5. (a) calculate the molarity of a Solution contain 4.9gm of H_2SO_4 in 2 litre of its Solution. (2)

(b) calculate the molarity of a Solution contain 4.0gm of NaOH in 500ml of its Solution. (2).

(c) calculate the normality of a Solution contains 9.8 gm of H_2SO_4 in 2l of its Sol^n.

(d) calculate the molarity of 2.5gm of Na_2CO_3 in 250gm of water. (2).

(e) calculate the normality of a Solution contains 5.3gm of Sodium bicarbonate in 2 l of its Solution. (2).

REST ON NEXT >>>

continuing 5. Solutions

(f). 4.9 g of H_2SO_4 is present in 2 l of its Solution having density 1.4 g/l. calculate molarity of the Solution.

(g). calculate the molality of 0.2 M Solution of KCl. The density of the Solution is 0.12 g/ml. (2).

6. convert 10^{-2}M H_2SO_4 into normality.

7. calculate the amount of Solute present in

(a) 0.01 M, 500 ml H_2SO_4 (2)
(b) 300 ml, 0.1 N HCl (2)
(c) 0.1 M 2l KOH (2).

8. How much Sodium carbonate is required to prepare 1N Solution. (2).

6. PH

• Short Questions.

1. Define PH. (2)

2. calculate the PH of (a) 0.001 N HNO_3 (2)
(b) 0.001 N H_2SO_4 (2)
(c) 0.001 N KOH (2)
(d) 0.0001 N NaOH (2)

3. calculate the PH of a Solution contains 4.9 g of H_2SO_4 in 2l of its Solution.

• Long Questions

1. How many grams of KOH are required to prepare 2l of its Solution having PH=12.

2. calculate the PH of a Solution contains 4.0g of NaOH present in 1l of its Solution.

3. 11.2g of caustic potash are present in 5l in its Solution. Find the PH of the Solution.

4. Write the application of PH in paper industry. Sugar industry.

7. Electrochemistry.

• Short Questions.

(1). Define:-
(a) Electrolysis (2)
(b) Electrolytes (2).

(2.) Define electrochemical equivalent (2).

(3). What is Faraday's constant. (2).

• Long Questions.

1. Define electrolysis. State and explain Faraday's 1st law of electrolysis. (6).

2. State and explain Faraday's Second law of electrolysis.

3. State and explain faraday's first law of electrolysis. Find the mass of copper dipasited from $CuSO_4$ Solution by a current of 0.25 A flowing for 1 hr. (At. mass of Cu=63) (6).

4. Write Short notes on.

(a) Electrolysis (4)

(b) Electroplating (4).

(c) Electrorefining (4).

8. Corrosion

• Short Questions

1. (a). Define corrosion. Give any two examples. (2).

(b). Define rusting of iron. What is the formula of rusted iron. (2).

(c) What is Galvinisation? (2).

• Long Questions

1. a. What is atmospheric corrosion? Explain the mechanism of rusting of iron. (2+5).

(b) Explain ~~the corrosion~~ waterline Corrosion. (5).

9. Metallurgy

• Short Questions

1. a. Define ore with an example. (2).

b. What is the difference between ore and minerals. (2)

c. What is gauge. (2).

d. What is flux. (2).

e. What is concentration. (2).

continuing Metallurgy.

2. Define. (a) calcination (2)
(b) Roasting (2)
(c) Smelting (2)
(d) Leaching (2)
(e) Oxidation (2).

• Long Questions.

1. Write notes on:-
(a) Heavity Separation. (5)
(b) Magnetic Separation. (5)
(c) Froath floation. (5)

2. what is flux. Explain about diffrent type of flux. (5).

10. Allay.

• Short Questions.

1. a. Define Allay. Give an examples. (2)
b. what is the diffrence between ferroalloy and non-ferroallay (2).
c. what is Analgen. (2).

• Long Questions.

1. Write the canposition and uses of (8).
(a) Brass (c) Alnico
(b) Bronze (d) Duralumin.

11. Hydrocarbons

• Short Questions

1. What are Hydrocarbons? Give two examples. (2).
2. What is the difference between Saturated hydrocarbons and unsaturated Hydrocarbons?
3. Write the IUPAC name of the following compound:- [1×12]

(i) $CH_3C(Br_2)CHCHCH(C_2H_5)CH_3$

(ii) CH_2CHCH_2CCH

(iii) $CH_3CHClCHClCH(OH)CH_3$

(iv) $CH_3-CHClCHBrCH_2CH_3$

(v) $CH_3CHCHCH_2CH(Br)CH_3$

(vi) $CH_3CH(CH_3)CH_3$

(vii) $CH_3-C(CH_3)_2CH_3$

(viii) $CH_2C(CH_3)CH_2CH_3$

(ix) $CH-C-C(CH_3)_2-CH_3$

(x) $CH_3C(Br)_2CHClCH_3$

(xi) $CH_3CH_2CH(CH_3)CH(Cl)OH$

(xii) $CH_3CHCHCH_2CCH$

4. Write the structure of these following organic compounds. [1×12]

(i) Isobutane

(ii) Isopentane

(iii) BHC

(iv) Isoprene

(v) Benzene

(vi) Benzoic acid

(vii) Phenol

(viii) Ethyl alcohol

(ix) 3-bromo, 4-chloro Pent-2-en-2-ol.

(x) 4-Bromo, 3-nitro Pent-3-en-1-yne.

(xi) 2-bromo-5-chloro 3,4 diethyl Hexene

(xii) Pentenol.

• Long Questions.

1. Define and explain Huckel's rule of aromaticity with suitable example. (5).

2. Write the uses of benzoic acid, napthalene and phenol. (6)

3. Write the uses of Benzene, Toulene & BHC. (6).

12. Water.

• Short Questions.

1. What is hard water? (2)
2. What is temporary hard water? (2)
3. What is Permanent hard water? (2)
4. How to remove temporary hardness of water? (2)
5. How to remove permanent hardness of water by using lime water? (2)
6. How to remove permanent hardness of water by using Sodium carbonate? (2)

• Long Questions.

1. Write the difference between cold lime Soda process & Hot lime Soda process. (6)

2. What are the advantages of hot lime soda process over cold lime Soda process. (5).

3. Explain organic ion-exchange process of water Softening (7).

13. Lubricants.

- **Short Questions.**

1. Define lubricants. Give example. (2)
2. Give Any two example of Solid Lubricants and where it is used? (2)

- **Long Questions.**

1. Define lubricants. what are the functions of Lubricants ? (6)
2. write the uses of graphite, oil & grease as lubricants.

14. Fuel.

- **Short Questions.**

1. what are primary fuels? Give examples of two gaseous primary fuels ? (2)
2. Define calorific Value of a fuel. (2)

- **Long Questions.**

1. write the composition, calorific Value and uses of
   (a) Diesel (5)
   (b) Petrol (5)
   (c) Kerosene (5)
2. Write the composition, calorific Value & uses of.
   (a) Water Gas (5)
   (b) Producer gas (5).

3. What are the features to choice of a good fuels ? (5)

4. What is the difference between LPG & CNG.

15. Polymer.

• Short Questions.

1. Define monomer. (1).
2. What is the difference between homopolymer and copolymer. (2)
3. Define degree of polymerisation. (2)
4. What do you mean by Vulcanised rubber.
5. Define elastomer. (2).

• Long Questions.

1. Write the difference between Thermosetting and Thermoplastic. (5).
2. Write the difference between Vulcanised rubber and raw-rubber.
3. Define Polymer. Write the composition and uses of polythene. [1+2+2].
4. Write the composition and uses of
   (a) Poly-Vinyl chloride. (5)
   (b) Bakelite. (5)
5. Write the advantages of Vulcanised rubber. (5).

16. Chemicals in Agriculture.

• Short questions.

1. What is Pesticides? Give two uses of pesticides. (2)
2. What is insecticides? Give two uses of Insecticides. (2)
3. Define Herbicides. Write two uses of herbicides. (2)
4. Define fungicides. Write two uses of fungicides. (2)

• Long Question.

1. What are biofertilisers? write the uses of biofertilizers in agriculture. (5)