ENGINEERING CHEMISTRY

UNIT-A PHYSICAL CHEMISTRY.

Short Questions (2 marks)

1. Define isotope. Give an example.
2. Define isobar. Give an example.
3. Define isotone. Give an example.
4. Differentiate between isotope and isobar.
5. Write down the charge and mass of electron, proton and neutron.
6. State Bohr and Bury scheme.
7. Why do $_{29}Cu$ and $_{24}Cr$ exhibit anomalous electronic configuration?
8. Between 3d and 4s in which orbital will the electron enter first and why?
9. State Aufbau Principle.
10. Explain the formation of NaCl.
11. what is coordinate bond?
12. what is the structure and bond angle of NH_3 & CH_4?
13. How is SO_2 formed?
14. Write the Lewis structure of H_2O. what is the shape and bond angle of H_2O?.

(15) What is acidic salt? Give an example.

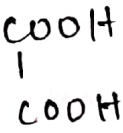
(16) What is basic salt? Give an example.

(17) What do you mean by Conjugate Acid Base Pair?

(18) Find out the Conjugate Acid of HO_2^-, $H_2PO_4^-$, HPO_4^{2-}, CH_3NH_2, NH_2^-, HS^-, S^{2-}, CH_3COOH, CO_3^{2-}.

(19) Find out the Conjugate Base of H_3O^+, H_2O, HSO_4^-, H_3PO_4, HPO_4^{2-}, CH_3COOH, H_2.

(20) Find out the equivalent weight of CH_3COOH and



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(21) Find out the equivalent weight of $Fe(OH)_3$.

(22) Find out the equivalent weight of $Al_2(SO_4)_3$.

(23) What is the role of pH in textile industry?.

(24) 200 ml of a solution contains 0.754 g of NaOH. Find out its molarity.

(25) Differentiate between strong and weak electrolyte.

(26) What is corrosion?

(27) What is waterline corrosion?

(28) State Faraday's 1st Law of Electrolysis.

(29) Calculate the electrochemical equivalent of Zinc. (Atomic No. = 65)

(30) State Faraday's 2nd Law of Electrolysis.

Long Questions

(1) Write down the postulates of Rutherford's Atomic Model. What are its limitations?

(2) Explain the Rutherford's X-ray scattering experiment with a neat labeled diagram.

(3) Explain Bohr's Atomic Model. What are its limitations?.

(4) How did Bohr's atomic model solved the limitations of Rutherford's Atomic Model?

(5) Explain the origin of Hydrogen spectrum.

(6) What is coordinate banding? Explain the formation of NH_4^+ & SO_2.

(7) Make a comparative study of Lewis Arrhenius and Bronsted-Lowry theory of Acids & Bases.

(8) Explain Lewis theory of Acids & Bases. What are its limitations?

(9) What is salt? Explain the different types of salt with an example each.

(10) What is the importance of pH in industry?

(11) 10 g of dibasic acid with molecular weight 90 is present in 2l of its solution. Find out the normality and molarity of the solution.

(12) 9.8 gms of H_2SO_4 is present in 2l of solution. Calculate the normality, molarity and pH of the solution.

(13) How many grams of NaOH is required to prepare 4l of the solution having pH 10?

(14) State and explain Faraday's 2nd law of electrolysis.

(15) State and explain Faraday's 1st law of electrolysis. Find the mass of copper deposited from $CuSO_4$ solution by current of 0.25 A flowing for 1 hr.
Atomic mass of Cu = 63.

(16) Explain the different methods of protection from corrosion.

UNIT-B INORGANIC CHEMISTRY

Short Questions

1. Differentiate between ore and mineral.
2. What is gangue?
3. What do you mean by flux?
4. Differentiate between roasting and calcination.
5. What is a ferroalloy? Give an example.
6. What is amalgam? Give an example.
7. What is slag?

Long Questions

1. Explain the Froth Floatation method with neat labelled diagram.
2. Explain the process of leaching with an example.
3. Explain the process of Smelting.
4. Write notes on the following:-
   a) Electrorefining
   b) Magnetic separation
5. What are the composition and uses of Brass, Bronze, Alnico and Duralumin.

UNIT-C ORGANIC CHEMISTRY

Short Questions

① What is the structure and use of BHC ?

② What is the use of Napthalene?

③ Write 2 uses of Benzoic Acid?

④ What is Huckel's Rule ?

⑤ Write Define aromatic compound with an example.

Long Questions

① How are hydrocarbons classified? Explain with examples.

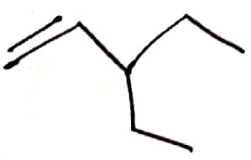
② Differentiate between aliphatic and aromatic hydrocarbon.

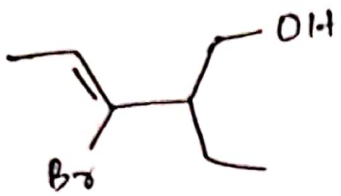
③ What are hydrocarbons? Explain saturated and unsaturated hydrocarbons with example.

④ Write down the IUPAC nomenclature of the following :-

(i) $CH_3-\underset{\underset{C_2H_5}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{CH_3}{|}}{CH}-CH_3$

(ii) $CH_2=CH-CH=CH-CH=CH_2$

(iii) 

(iv) 

(v) $H_2C=CH-\underset{\underset{Br}{|}}{CH}-\underset{\underset{C_2H_5}{|}}{CH}-CH_2-OH$

(5) write down the structure of the following:-

(i) Neopentane

(ii) 3-methyl butan-1-ol

(iii) 3-ethyl-2-iodo butane

(iv) 2,2-dimethyl butane

(v) 5-methyl hexa 1,4-diene

UNIT-D INDUSTRIAL CHEMISTRY

Short Questions

1. What causes permanent hardness in water?
2. Differentiate between temporary and permanent hardness.
3. What is regeneration?
4. Give two examples of solid lubricant.
5. What is calorific value?
6. Write any two properties of good fuel.
7. What should be the moisture content of a good fuel?
8. Write any two uses of CNG.
9. What is the composition of coalgas.
10. Define Polymer.
11. Define homopolymer. Give an example.
12. Define co-polymer. Give an example.
13. What is degree of polymerisation.
14. What is bayelite formed of?
15. What is vulcanisation of rubber.
16. Write any two advantages of vulcanised rubber over raw rubber.

(17) Write any two purpose of lubrication.
(18) What are biofertilizers?
(19) Give any two examples of Insecticides.
(20) What are the uses of herbicides?

Long Questions

(1) What is hardness of water? Explain the process of removal of hardness by lime soda method.
(2) Differentiate between hot lime soda and cold lime Soda method.
(3) What are the advantages of hot lime soda over cold lime soda method?
(4) Explain the Organic Ion Exchange method of softening of water.
(5) What are the advantages of Ion exchange method?
(6) Define lubricants. what are the types of lubricants? what~~s~~ write down the uses of Grease.
(7) Write down the composition and uses of :-
i) Diesel ii) Petrol
(8) Write down the composition and uses of :-
i) Producer Gas ii) Water Gas iii) LPG.

(9) Differentiate between thermoplastic and thermosetting Polymers.

(10) Write down the preparation & uses of PVC.

(11) Write down the preparation & uses of Bayelite.

(12) Explain the process of vulcanisation of rubber. What are the advantages of vulcanised rubber over raw rubber?

(13) Give a brief description of the following with an example and 2 uses:—

(i) Insecticides

(ii) Fungicides

(iii) Biofertilizers

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