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S. Hemalatha
XII-Std-M/Bio
Chemistry

Model question paper

chemistry

Total Qs:- 70 marks

Part-A

I choose the correct answer all the questions. 1×15=15m

1. Bauxite has the composition
   a) Al_2O_3 b) $Al_2O_3 \cdot nH_2O$ c) $Fe_2O_3 \cdot 2H_2O$ d) None of these

2. Electrochemical process is used to extract
   a) Iron b) Lead c) Sodium d) Silver

3. Zinc is obtained from ZnO by
   a) carbon reduction b) Reduction using silver
   c) Electro chemical process d) Acid leaching

4. In the electrolytic refining of copper, which one of the following is used as anode?
   a) pure copper b) Impure copper
   c) carbon rod c) platinum electrode

5. Which of the following plot gives ellingham diagram
   a) ΔS Vs T b) ΔG° Vs T
   c) ΔG° Vs $\frac{1}{T}$ d) ΔG° Vs T^2

6. An aqueous solution of borax is
   a) neutral b) acidic
   c) basic d) amphoteric

7. Which among the following is not a borane?

a) B_2H_6 b) B_3H_6 c) B_4H_{10} d) non of these

8. Which of the among the following is not a borane metals has the largest abundance in the earth's crust?

a) Aluminium b) calcium
c) Magnesium d) Sodium

9. In diborane, the number of electrons that accounts for banana bonds is

a) Six b) two c) four d) three

10. The element that does not show catenation among the following P-block elements is

a) carbon b) Silicon c) Lead d) germanium

11. on hydrolysis PCl_3 gives

a) H_3PO_3 b) PH_3 c) H_3PO_4 d) $POCl_3$

12. P_4O_6 reacts with cold water to give

a) H_3PO_3 b) $H_4P_2O_7$ c) HPO_3 d) H_3PO_4

13. The basicity of pyrophosphorous acid ($H_4P_2O_5$) is

a) 4 b) 2 c) 3 d) 5

14. The molarity of given orthophosphoric acid solution is 2M. its normality is

a) 6N b) 4N c) 2N d) none of these

15. The correct order of the thermal stability of hydrogen

halide is

a) HI > HBr > HCl > HF b) HF > HCl > HBr > HI

c) HCl > HF > HBr > HI d) HI > HCl > HF > HBr.

Part - B

6 x 2 = 12m

II Answer the following any 6. compulsory Q.NO: 24.

16. Application of copper.
17. Limitations of Ellingham diagram.
18. What is minerals?
19. What is Inert pair effect?
20. Uses of diborane?
21. Uses of Silicon tetrachloride?
22. Structure of ammonia.
23. What is unit cell?
24. To calculate the Bcc number?

Part - C

6 x 3 = 18m

III Answer the following any 6. compulsory Q.NO: 33.

25. classification of solids?
26. Structure of SC, Bcc, and Fcc.
27. classification point defects.
28. Application of zinc.
29. Structure of Boric acid.
30. Uses of Alum

31. Structure of P_4O_6
32. Structure of ozone
33. Unit cell, Primitive and non-primitive diagram.

Part-D

IV Answer all the questions:- 5 X 5 = 25m

34 a) Magnetic separation method?

(or)

b) Application of ellingham diagram?

35. a) Forth flotation method?

(or)

b) uses of nobel gases?

36. a) Difference between crystalline solids and Amorphous solids?

(or)

b) characteristic of ionic solids?

37. a) General characteristics of ionic solids?

(or)

b) Write short not on covalent solids and Molecular solids.

38. a) Explain schottky defect?

(or)

b) Metal excess defect?

Assignment

20.08.2020

Chemistry

Part-A

I) Choose the correct answer.

1. b) $Al_2O_3.nH_2O$
2. c) Sodium
3. a) Carbon reduction
4. b) Impure copper
5. b) ΔH° vs T
6. c) basic
7. b) B_3H_6
8. a) Aluminium
9. c) four
10. c) Lead
11. a) H_3PO_3
12. a) H_3PO_3
13. b) 2
14. a) 6N
15. b) HF > HCl > HBr > HI.

6. Application of copper.

* Copper is the first metal used by the human and extended use of its alloy bronze resulted in a new era, 'Bronze age'.

* copper is used for making coins and ornaments along with gold and other metals.

* Copper and its alloys are used for making wires, water pipes and other electrical Parts.

17. limitations of Ellingham diagram.

* Ellingham diagram is constructed based only on thermodyamic considerations. It gives information about the thermodynamic feasibility of a reaction. It does not tell anything about the rate of the reaction. More over, it does not give any idea about the possibility of other reactions that might be taking place.

* The interpretation of ΔG_T is based on the assumption that the reactants are in equilibrium with the products which is not always true.

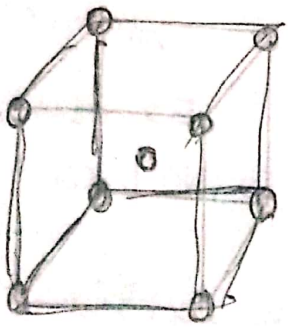
A naturally occurring substance obtained by mining which contains the metal in free state or in the form of compounds like oxides, sulphides etc... is called a mineral.

20. Uses of diborane

* Diborane is used as a high energy fuel for propellant.
* It is used as a reducing agent in organic chemistry.
* It is used in welding torches.

24. Bcc number

BCC → Body centered cubic unit cell



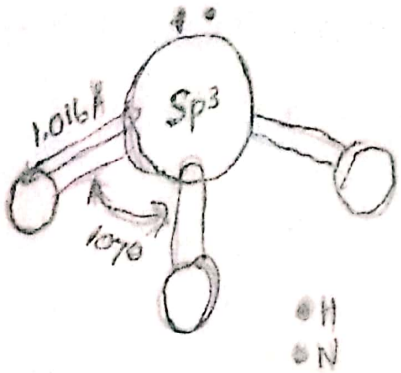
$N_c = 8$ $N_b = 1$

Number of atoms in a Bcc unit cell $= \left(\frac{N_c}{8}\right) + \left(\frac{N_b}{1}\right)$

$= \left(\frac{8}{8}\right) + \left(\frac{1}{1}\right)$

$= 1 + 1$

22. Structure of ammonia

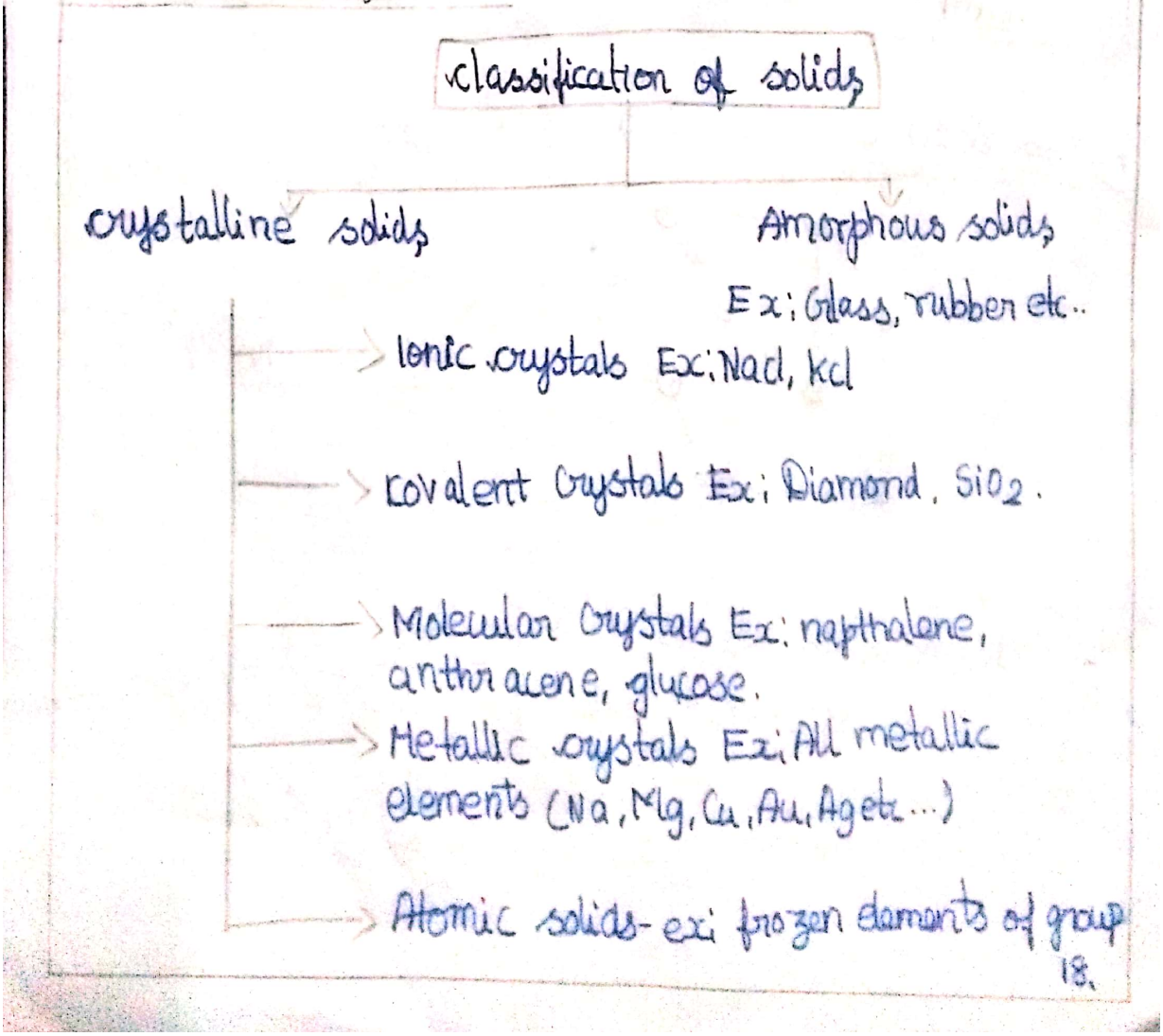


* Structure of ammonia.

Part-C

III) Answer the following Any 6. compulsory Q:NO:33

25. Classification of solids.



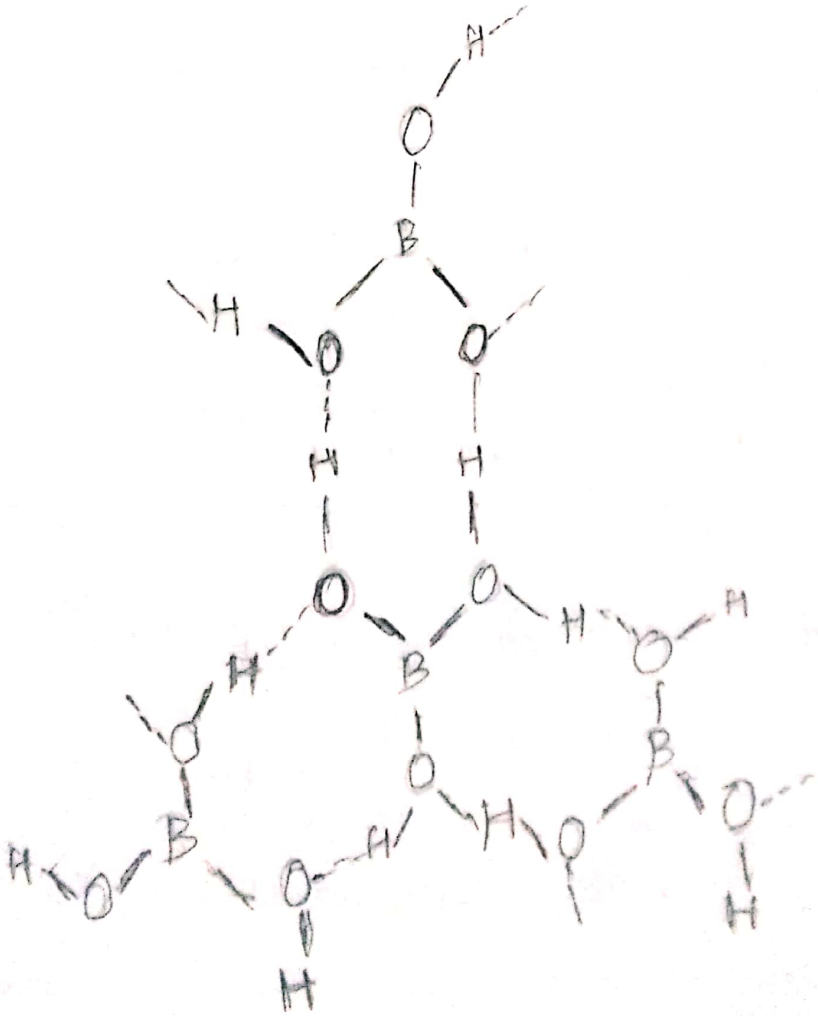
8. Application of zinc

* Metallic zinc is used in galvanising metals such as iron and steel structures to protect them form rusting and corrosion.

* Zinc is also used to produce die-castings in the automobile, electrical and hardware industries.

* Brass an alloy of zinc is used in water valves and communication equipment as it is highly resistant to corrosion.

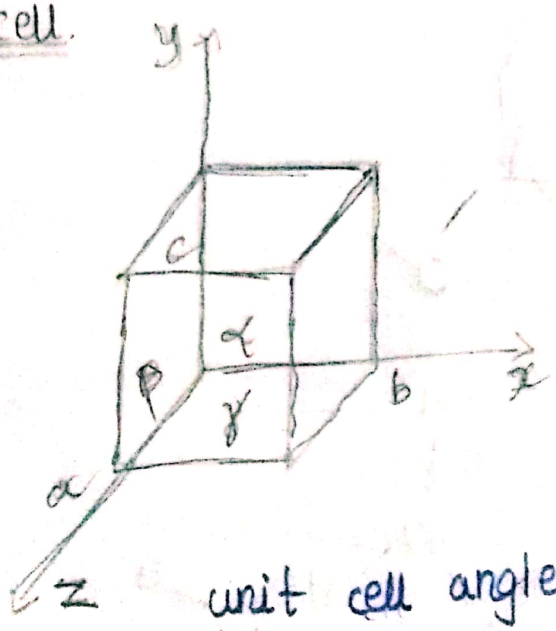
29. Structure of boric acid



31. Structure of P_4O_6

74. Structur of ozone

33. unit cell



unit cell angles α, β and γ

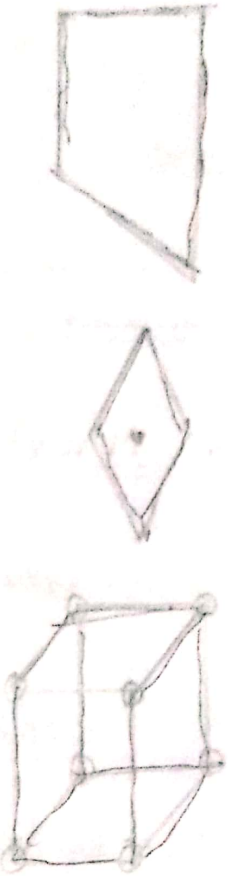
unit cell lattice Point } a, b, c

Three dimensional (x, y, z)

Unit cell type

Primitive unit cell

Non-primitive unit cell



Part - D

26. a)

Crystalline solids	Amorphous solids
Long range, orderly arrangment of constituents.	Short range, random arrangement of constituents
Definite shape	Irregular shape
Generally crystalline solids are anisotropic in nature	They are isotropic like liquids.

Definite heat of fusion	Heat of fusion is not definite.
They are true solids	They are considered as psudo solids are super cooled liquids
They have sharp melting point	Gradually soften over a range of temperature and so can be moulded
Ex: NaCl, diamond etc.	Ex: Rubber, plastics, glass etc.

7. a) General characteristics of solids.

*Solids have definite volume and shape.

*Solids are rigid and incompressible.

*Solids have strong cohesive force.

*They are short inter atomic, ionic are molecular distances.

*Their constituents (atom, ions or molecules) have fixed positions and can oscillate about their mean positions.

Uses of nobel gases

* The inertness of nobel gases is an important feature of their practical uses.

Helium:

* Helium is used to provide inert atmosphere in electric arc welding of metals.

* Heluim is has lowest boiling Point hence used in cryogenics (low temperature Science.

* It is much less denser than air and hence used for filling air balloons.

Neon:

* Neon is used in advertisement as neon sign and the brilliant red glow is caused by passing electric current through neon gas under low pressure.

Argon:

* Argon prevents the oxidation of hot filament and prolongs the life in filament bulbs.

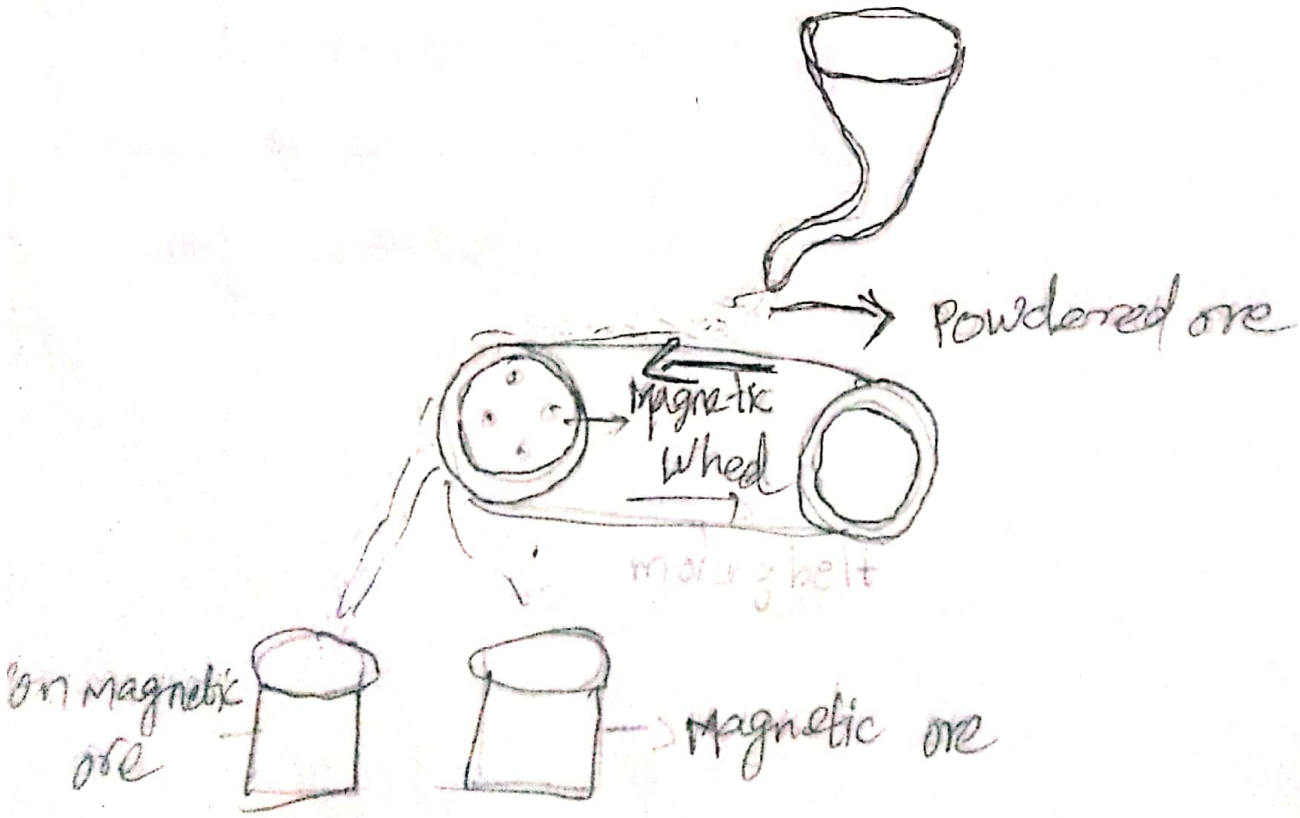
Xenon:

* Xenon is used in fluorescent bulbs. flash bulbs and lasers.

6. a) Magnetic Separation method?

* This method is applicable to ferromagnetic ores, and it is based on the difference in the magnetic properties of the ores and the impurities. For example tin stone can be separated from the wolframite impurities which is magnetic.

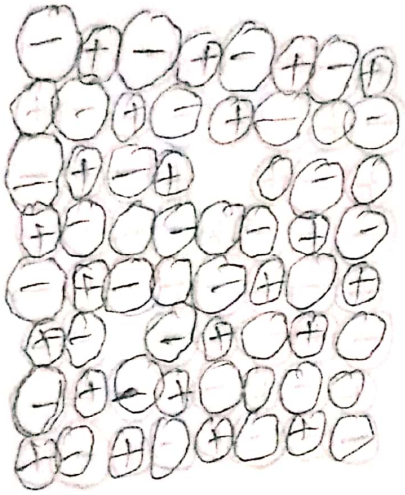
* Similarly, ores such as chromite, Pyrolusite having magnetic property can be removed from the non-Magnetic siliceous impurities. The crushed ore is poured on to an electromagnetic separator consisting of a belt moving over two rollers of which one is magnetic.



a) Explain Schottky defect

* Schottky defect arises due to the missing of equal number of cations and anions from the crystal lattice. This effect does not change the stoichiometry of the crystal.

* Ionic solids in which the cation and anion are of almost of similar size show schottky defect. Example: NaCl.



Na^+
Cl^-

* Presence of large number of schottky defects in a crystal, lowers its density. The theoretical density of vanadium monoxide (VO) calculated using the edge length of the unit cell is 6.5 g cm^{-3}, but the actual experimental density is 5.6 g cm^{-3}.

* It indicates that there is approximately 14% schottky defect in VO crystal Presence of schottky defect in the crystal Provide a simple way by which atoms or ions can move within the crystal lattice.

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