

Only one correct :

1. Which of the following statement is **CORRECT** ? [3]
 (A) N_2O_4 produces two mole of HNO_2 on hydrolysis
 (B) Hydrolysis of XeF_2 is possible by redox reaction
 (C) On partial hydrolysis of PCl_5 , 1 mole of HCl is produced
 (D) At room temperature on hydrolysis of NCl_3 produce 3 mole of hydra acid
2. Select **CORRECT** statement about hydrolysis of BCl_3 and NCl_3 [3]
 (A) NCl_3 is hydrolysed and gives HOCl but BCl_3 is not hydrolysed.
 (B) Both NCl_3 and BCl_3 on hydrolysis gives HCl
 (C) NCl_3 on hydrolysis gives HOCl but BCl_3 gives HCl
 (D) Both NCl_3 and BCl_3 on hydrolysis gives HOCl
3. Which of the following halides cannot be hydrolysed easily? [3]
 (I) TeF_6 (II) SF_6 (III) NCl_3 (IV) NF_3

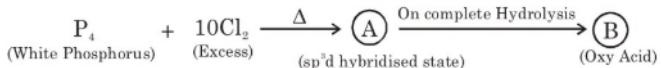
Choose the **CORRECT** code :

- (A) III & IV (B) I, II & III (C) I, II & IV (D) II & IV
4. In which of the molecule on hydrolysis proton donor oxyacid is not formed from their central atom- [3]
 (A) NCl_3 (B) PCl_3 (C) SF_4 (D) P_4O_{10}
5. Which of the following compound produce two types of acid on complete hydrolysis. [3]
 (A) XeF_6 (B) NCl_3 (C) PCl_5 (D) BiCl_3
6. Select the **CORRECT** order with respect to rate of hydrolysis ? [3]
 (A) $\text{PCl}_3 < \text{PF}_3$ ~~X~~ (B) $\text{BF}_3 < \text{BCl}_3$ (C) $\text{AlCl}_3 < \text{MgCl}_2$ (D) $\text{SiCl}_4 < \text{SiF}_4$

One or more than one may be correct :

7. Which of the following chemical species on hydrolysis form one of the product as amphoteric hydroxide [3]
 (A) BeCl_2 (B) AlCl_3 (C) BCl_3 (D) NCl_3
8. For which of the following molecule, the hydrolysis product (s) is/are only acidic in nature (i.e. proton donor acid) [3]
 (A) NCl_3 (B) SbCl_3 (C) SF_4 (D) PCl_3
9. Choose the **CORRECT** statement regarding H_3PO_4 and H_3PO_3 [3]
 (A) H_3PO_3 is dibasic and reducing agent. (B) H_3PO_3 is dibasic and non reducing agent.
 (C) H_3PO_4 is tribasic and reducing agent (D) H_3PO_4 is tribasic and non reducing agent.

Paragraph for Q. No. 10 to 11



10. Number of P–O–P linkage in each molecule of anhydride of (B) is:- [3]

11. $2 \text{ B} - \text{H}_2\text{O} \rightarrow \text{C}$
 (Oxy Acid) (Oxy Acid) [3]

the compound (C) is

(A) $\text{H}_4\text{P}_2\text{O}_8$ (B) $\text{H}_4\text{P}_2\text{O}_7$ (C) $\text{H}_4\text{P}_2\text{O}_6$ (D) $\text{H}_4\text{P}_2\text{O}_5$

Subjective :

12. Total number of molecules which hydrolysed at room temperature and hybridisation of central atom is sp^3d in transition state : [3]

CCl_4 , SiCl_4 , PCl_3 , AsCl_3 , SF_6 , SeF_6

RACE # 15

M.M. : 36

Only one correct :

1. Ans. (B)
 2. Ans.(C)
 3. Ans.(D)
 4. Ans.(A)
 5. Ans. (C)
 6. Ans. (B)

One or more than one may be correct :

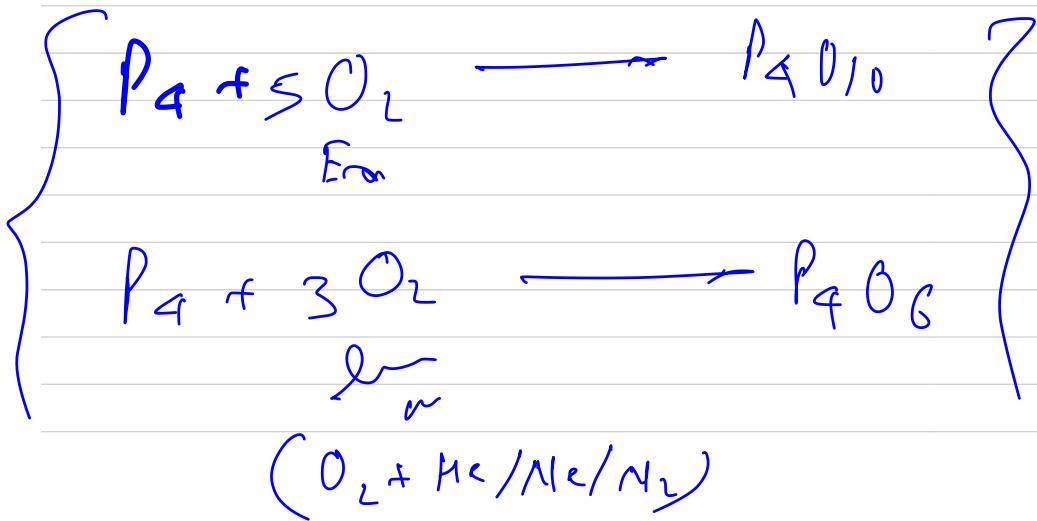
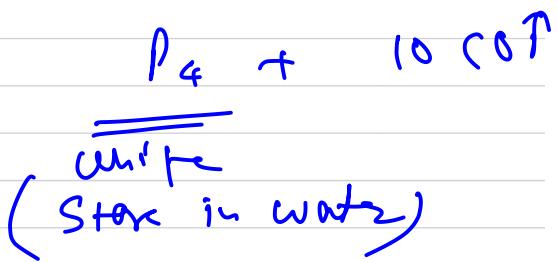
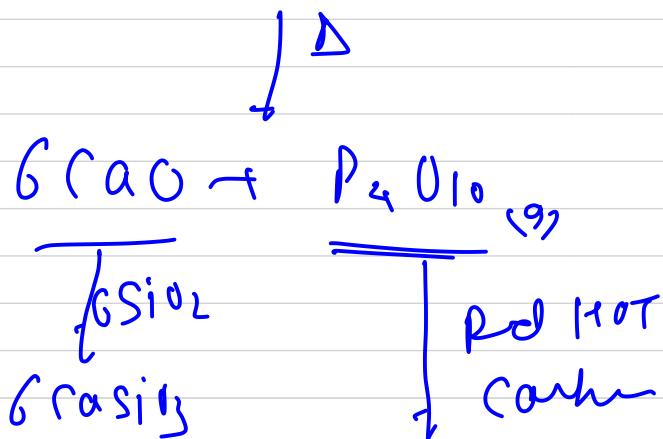
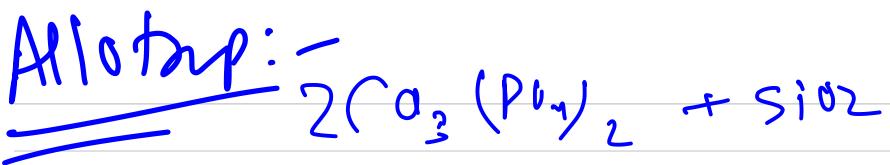
7. Ans. (A, B)
8. Ans.(C,D)
9. Ans.(A,D)

Paragraph for Q. No. 10 to 11

10. Ans. (D)
11. Ans. (B)

Subjective :

12. Ans. (3)

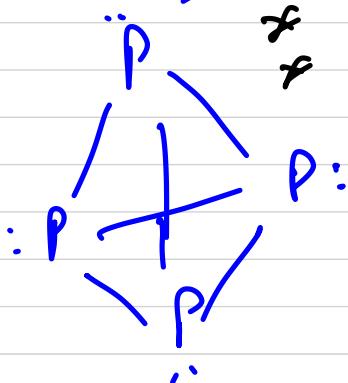


white Phos.

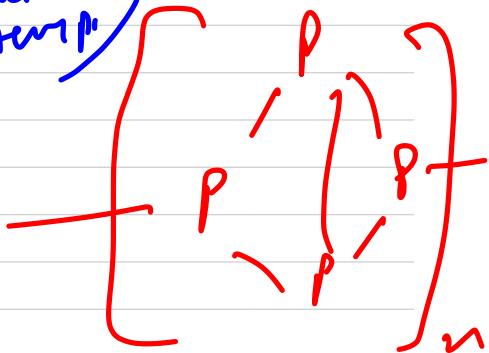
$\xrightarrow[uv]{250^\circ C}$

Red Phos

(P₄)

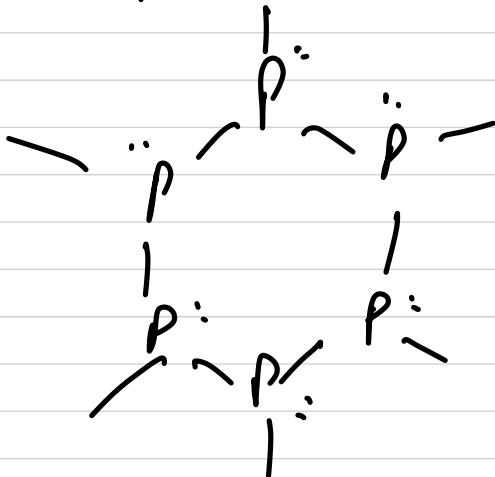


(Intert
act. P⁺)



only white P
dim CS₂

black Ph



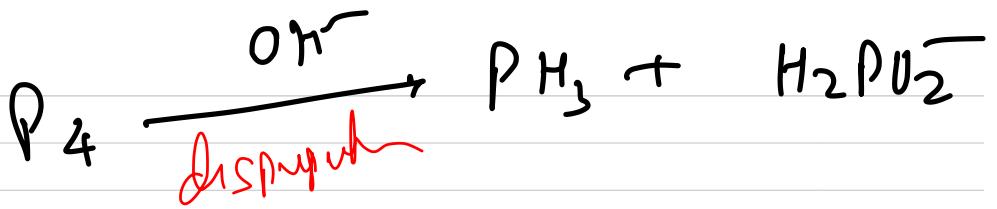
* Melting, Luster

* Conductivity (semi)

Th. dynamically

most stable

form, of Phos

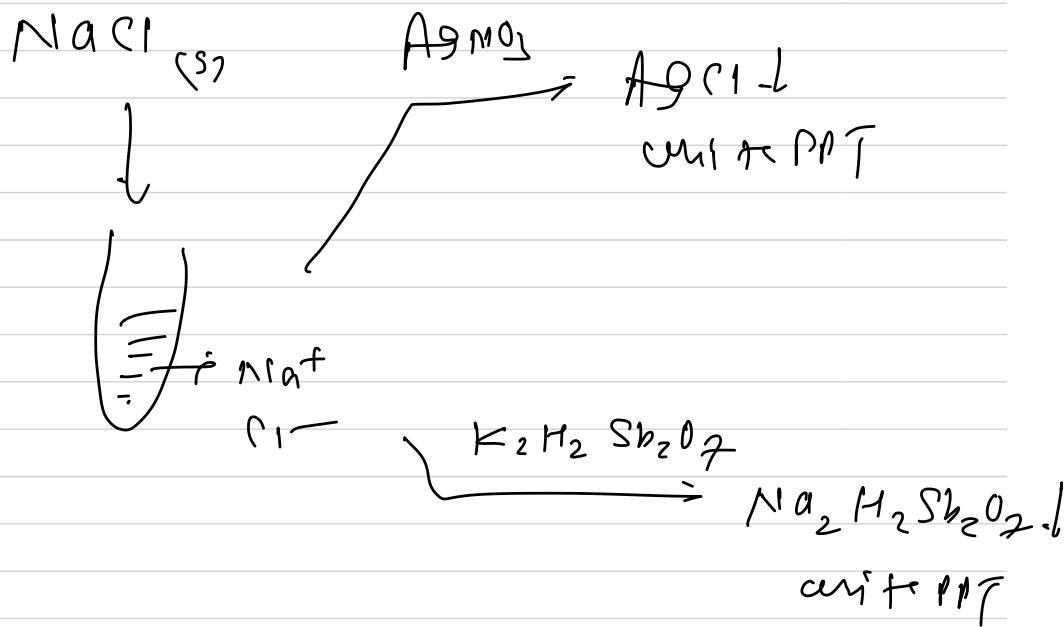


allotropes of carbon:-

[Co-ordination Chemistry]

1. Introduction
2. Ligands
3. IUPAC
4. Isomers
5. Bonding \longleftrightarrow Wav, EAN
 \longleftrightarrow VBT
 \downarrow CFT
6. Applications

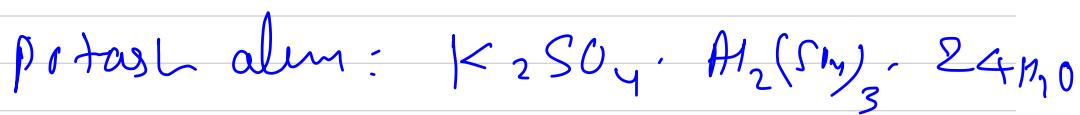
Simpler Salt:



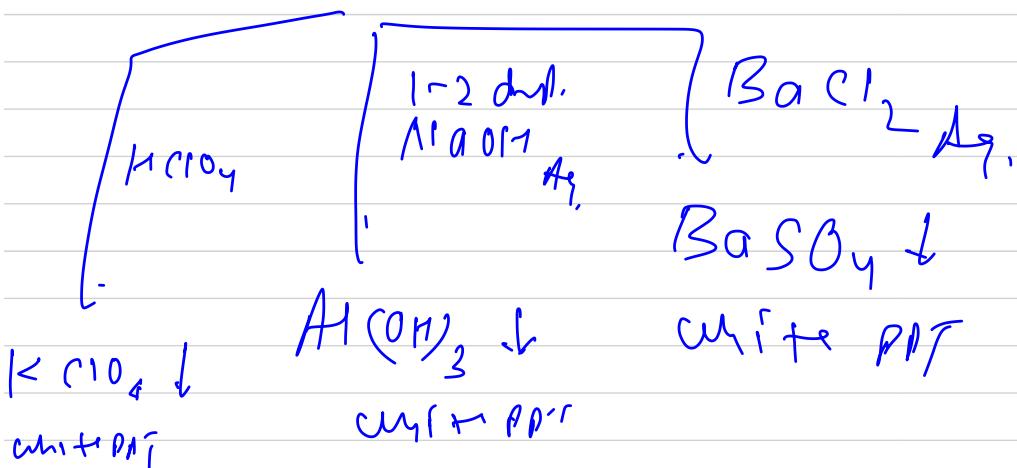
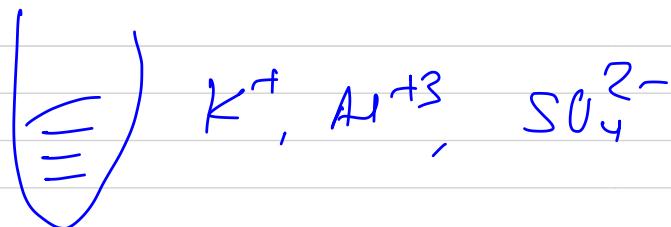
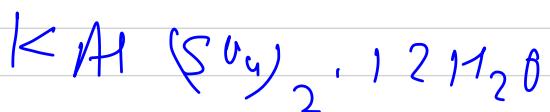
Qs- K_2SO_4 , KCl , KBr

$\text{Al}_2\text{Si}_2\text{O}_5$ etc.

Darbile Salt :-



or



$\mathcal{S} = \times$ Potassium alum (Whit)

\times Chrome alum

(Vigilant) $K_2SO_4 \cdot Cr_2(SO_4)_3 \cdot 24H_2O$

\times Feric alum:

$(AlMg)_2SO_4 \cdot Fe_2(SO_4)_3 \cdot 24H_2O$

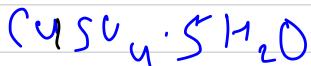
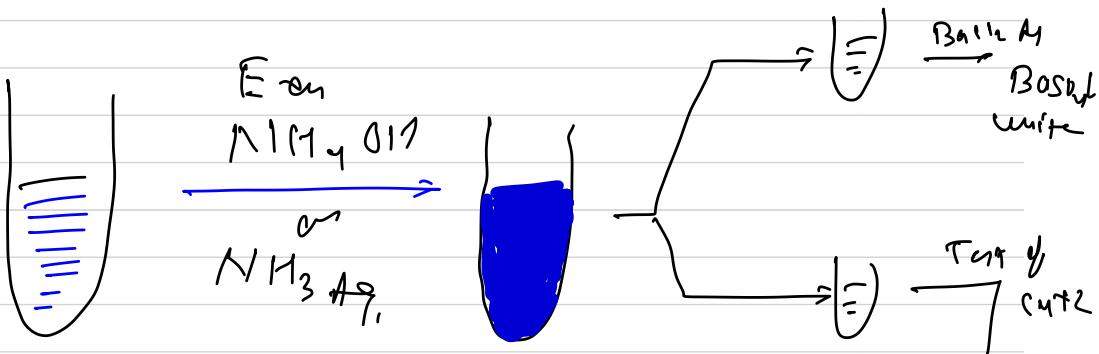
\times Carnalite

$KCl \cdot MgCl_2 \cdot 6H_2O$

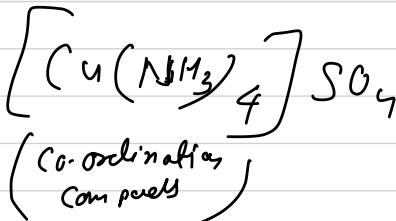
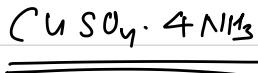
\times Mohr's salt (FAS)

$FeSO_4 \cdot (AlMg)_2SO_4 \cdot 6H_2O$

Complex Salt:-

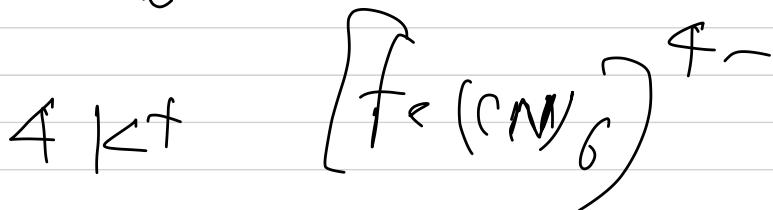
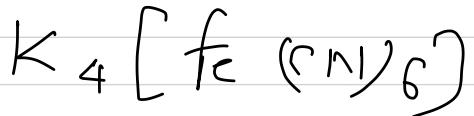
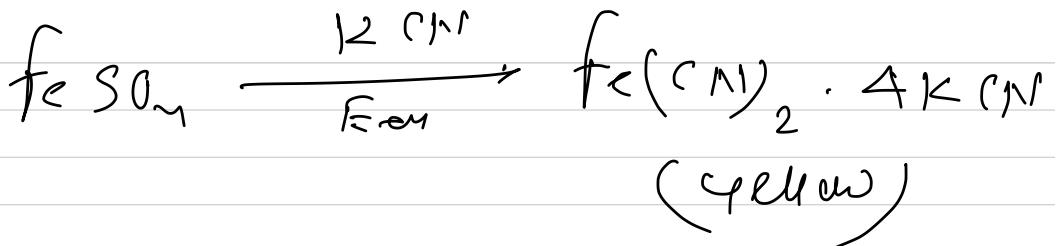


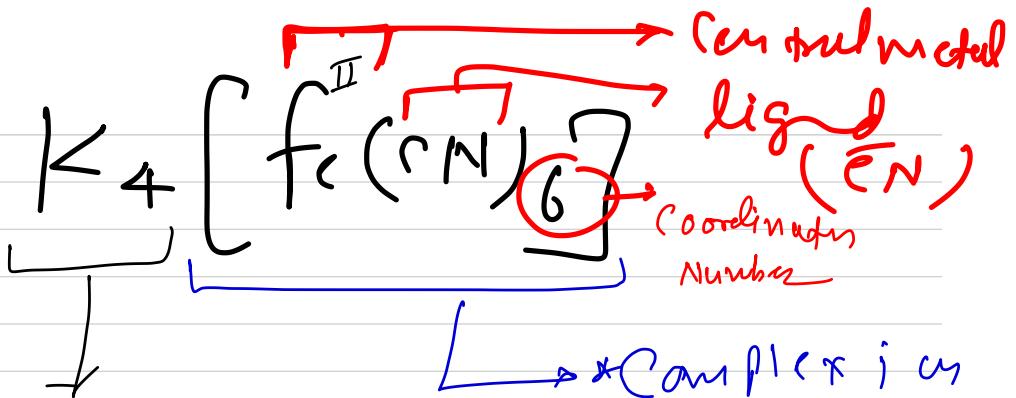
(1. Blue)



(Swartz's salt)

(Homoleptic)

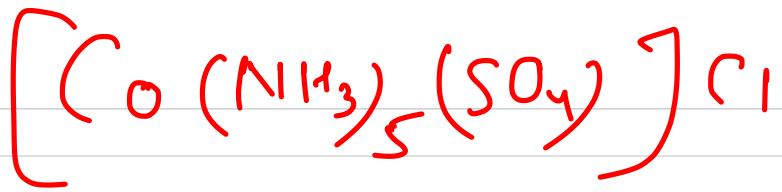




Counter ion
 or
 Simple ion

$$+4 +x - 6 = 0$$

$$1x = +2$$



- ions around metal = 2
- Counter ion = c_1^-
- complex ion = $[\text{Co}(\text{NH}_3)_5\text{SO}_4]^+$
- Central metal = Co
- O.M. of Co(II) = +3
- $\text{BaCl}_2 \text{ Ag} = \text{AgCl}$ ppt
- $\text{AgNO}_3 \text{ Al} = \text{AgCl}$ ppt (white)
- Ag with Show reactivity: ✓
- Vant Hoff factor = 2
- Coordination of metal = 6

i. Central Method: -

RACE # 11

(H.W.)

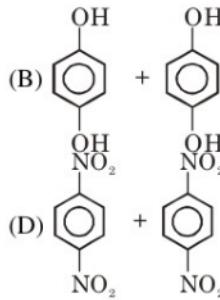
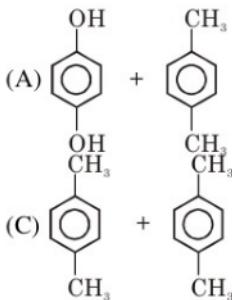
~~INORGANIC CHEMISTRY~~

~~TIME : 10 Min.~~

Only one correct

More than one may be correct

7. In which of the following pair of compounds, the predominant inter molecular interaction energy is dependent on the r^{-6} (r is distance) between the species :- [3]



Comprehension (Q.8 to Q.10)

[9]

The existence of intermolecular forces is supported by the facts : non ideality of real gases, Joule-thomson effect, liquefaction of gases. The electrical field of a dipole can induce a dipole moment in adjacent molecule (which may be polar or non polar) then the induced dipole can interact electrostatically with the polarising dipole.

Matching list

- | 11. | Column-I
(Given process) | Column-II
(type of interaction involved) | [4] |
|---|---|---|-----|
| (P) Dissolution of alcohol in water | (1) London force | | |
| (Q) Interaction between CO_2 molecules | (2) Kessom force | | |
| (R) Solubility of NaCl in water | (3) Debye force | | |
| (S) Solubility of Noble gas in water | (4) Ion-dipole interaction | | |

Code

- | (P) | (Q) | (R) | (S) |
|-------|-----|-----|-----|
| (A) 1 | 3 | 2 | 4 |
| (B) 2 | 1 | 4 | 3 |
| (C) 2 | 3 | 1 | 4 |
| (D) 1 | 2 | 3 | 4 |

FILL THE ANSWER HERE