

Topic : Basic Inorganic Chemistry

Type of Questions

Subjective Questions ('-1' negative marking) Q.1 to Q.8

(4 marks, 5 min.)

M.M., Min.

[32, 40]

1. Write down the chemical name of following compounds :

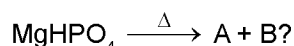
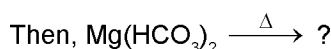
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|------------------------------------|--|--|------------------------------------|
| (i) NaAlO_2 | (ii) NaBO_2 | (iii) $\text{K}_4\text{P}_2\text{O}_7$ | (iv) Na_2ZnO_2 |
| (v) $\text{Hg}_2(\text{BO}_2)_2$ | (vi) $\text{K}_2\text{Cr}_2\text{O}_7$ | (vii) NaH_2PO_4 | (viii) Na_2HPO_4 |
| (ix) Na_3PO_4 | (x) $\text{Ca}(\text{H}_2\text{PO}_4)_2$ | (xi) CaHPO_4 | (xii) $\text{Ca}_3(\text{PO}_4)_2$ |
| (xiii) $\text{Mg}(\text{ClO}_3)_2$ | (xiv) NaOBr | (xv) $\text{Ca}(\text{ClO}_2)_2$ | (xvi) CuPbO_2 |
| (xvii) KClO_3 | (xviii) $(\text{NH}_4)_2\text{MoO}_4$ | (xix) BaCrO_4 | (xx) Na_2SnO_3 |
| (xxi) FeWO_4 | (xxii) K_2MnO_4 | (xxiii) KH_2PO_2 | |

2. Write the chemical formula of following compounds :

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| (i) Magnesium phosphate | (ii) Calcium nitrite | (iii) Calcium metaborate |
| (iv) Ferric phosphate | (v) Calcium hypochlorite | (vi) Meta phosphate ion |
| (vii) Ammonium pyroantimonate | (viii) Arsenous oxide | (ix) Sodium pyrosulphate |
| (x) Potassium perchlorate | (xi) Silver sulphite | (xii) Silver arsenite |
| (xiii) Lead(II) dichromate | (xiv) Zinc nitrate | (xv) Silver plumbate |
| (xvi) Sodium ammonium hydrogen phosphate | | |

3. Write the name of following acidic radicals :

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|--------------------|--------------------|-----------------------------|--------------------|---------------------------|--------------------|---------------|
| CO_3^{2-} | SO_3^{2-} | S^{2-} | NO_2^- | CH_3COO^- | Cl^- | Br^- |
| I^- | NO_3^- | $\text{C}_2\text{O}_4^{2-}$ | BO_3^{3-} | PO_4^{3-} | SO_4^{2-} | |

4. If you are given that $2\text{Na}_2\text{HPO}_4 \xrightarrow{\Delta} \text{Na}_4\text{P}_2\text{O}_7 + \text{H}_2\text{O}$, then predict this reaction :5. It is given that, $2\text{FeCl}_3 \xrightarrow{\Delta} 2\text{FeCl}_2 + \text{Cl}_2$.Can you predict the product if we heat CuBr_2 ? Write the chemical name of CuBr_2 and product.6. It is given that, $2\text{NaHCO}_3 \xrightarrow{\Delta} \text{Na}_2\text{CO}_3 + \text{CO}_2 + \text{H}_2\text{O}$.Write the chemical formula and name of solid product, if the chemical name of Na_2CO_3 is Sodium carbonate.

7. James Bond has revealed a case involving an intricate murder. The element (A) responsible for poisoning forms a compound (B) with sodium. (A) also forms two chlorides (C) and (D), covalent in nature. Both (B) and (C) contain four atoms per molecular formula of the substance. If (A) is neither a pure metal nor a pure non-metal, identify (A) to (D) and help Mr. Bond solving the case. Suggest all possibilities if more than one such possibilities exist.

8. Certain elements combine with oxygen as well as halides to form oxyhalides. e.g. (i) Bi^{3+} can form BiOCl (obtained by replacing two Cl atoms in BiCl_3 by one O atom) (ii) S (VI) can form SO_2Cl_2 (obtained by replacing one O atom in SO_3 by two Cl atoms). In a similar fashion, write the oxyhalide formulae containing:

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| (a) S (IV), O and Cl | (b) Xe (VI), O and F (two possibilities) |
| (c) S (VI), O and F (two possibilities) | (d) V (V), O and Cl (two possibilities) (e) N(III), O and Cl |

Answer Key

DPP No. # 5

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| (i) Sodium meta aluminate | (ii) Sodium metaborate |
| (iii) Potassium pyrophosphate | (iv) Sodium zincate |
| (v) Mercurous metaborate | (vi) Potassium dichromate |
| (vii) Sodium dihydrogen phosphate (ortho) | (viii) Sodium monohydrogen phosphate (ortho) |
| (ix) Sodium phosphate (ortho) | (x) Calcium dihydrogen phosphate (ortho) |
| (xi) Calcium monohydrogen phosphate (ortho) | (xii) Calcium phosphate (ortho) |
| (xiii) Magnesium chlorate | (xiv) Sodium hypobromite |
| (xv) Calcium chlorite | (xvi) Cupric plumbite |
| (xvii) Potassium chlorate | (xviii) Ammonium molybdate |
| (xix) Barium chromate | (xx) Sodium stannate |
| (xxi) Ferrous tungstate | (xxii) Potassium manganate |
| (xxiii) Potassium hypophosphite | |
- | | | | | | |
|--|----------------------------------|--|--------------------------------|-----------------------------------|----------------------|
| (i) $\text{Mg}_3(\text{PO}_4)_2$ | (ii) $\text{Ca}(\text{NO}_2)_2$ | (iii) $\text{Ca}(\text{BO}_2)_2$ | (iv) FePO_4 | (v) $\text{Ca}(\text{ClO})_2$ | (vi) PO_3^- |
| (vii) $(\text{NH}_4)_4\text{Sb}_2\text{O}_7$ | (viii) As_2O_3 | (ix) $\text{Na}_2\text{S}_2\text{O}_7$ | (x) KClO_4 | (xi) Ag_2SO_3 | |
| (xii) Ag_3AsO_3 | (xiii) PbCr_2O_7 | (xiv) $\text{Zn}(\text{NO}_3)_2$ | (xv) Ag_2PbO_3 | (xvi) $\text{NaNH}_4\text{HPO}_4$ | |
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|-------------|-------------------------------|---------------|-----------------------------|---------------------|--------------------|
| Carbonate : | CO_3^{2-} ; | Sulphite : | SO_3^{2-} ; | Sulphide : | S^{2-} |
| Nitrite : | NO_2^- ; | Acetate : | CH_3COO^- ; | Chloride : | Cl^- |
| Bromide : | Br^- ; | Iodide : | I^- ; | Nitrate : | NO_3^- |
| Oxalate : | $\text{C}_2\text{O}_4^{2-}$; | Orthoborate : | BO_3^{3-} ; | (ortho) Phosphate : | PO_4^{3-} |
| Sulphate : | SO_4^{2-} | | | | |
- $\text{MgHPO}_4 \longrightarrow \text{Mg}_2\text{P}_2\text{O}_7 + \text{H}_2\text{O}$
- CuBr and Br_2 , Cupric bromide , Cuprous bromide.
- MgCO_3 , Magnesium carbonate.
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|---------------|---|---------------------------------------|-------------------------------------|
| (A) : As/Sb ; | (B) : $\text{Na}_3\text{As}/\text{Na}_3\text{Sb}$; | (C) : $\text{AsCl}_3/\text{SbCl}_3$; | (D) : $\text{AsCl}_5/\text{SbCl}_5$ |
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|---------------------|---|---|---|
| (a) SOCl_2 | (b) $\text{XeO}_2\text{F}_2, \text{XeOF}_4$ | (c) $\text{SO}_2\text{F}_2, \text{SOF}_4$ | (d) $\text{VO}_2\text{Cl}, \text{VOCl}_3$ (e) NOCl |
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Hints & Solutions

DPP No. # 5

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|---|--|
| (i) Sodium meta aluminate | (ii) Sodium metaborate |
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- | | | | |
|--|----------------------------------|--|-----------------------------------|
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| (v) $\text{Ca}(\text{ClO})_2$ | (vi) PO_3^- | (vii) $(\text{NH}_4)_4\text{Sb}_2\text{O}_7$ | (viii) As_2O_3 |
| (ix) $\text{Na}_2\text{S}_2\text{O}_7$ | (x) KClO_4 | (xi) Ag_2SO_3 | (xii) Ag_3AsO_3 |
| (xiii) PbCr_2O_7 | (xiv) $\text{Zn}(\text{NO}_3)_2$ | (xv) Ag_2PbO_3 | (xvi) $\text{NaNH}_4\text{HPO}_4$ |
- | | | | | | |
|-------------|-------------------------------|---------------|-----------------------------|---------------------|--------------------|
| Carbonate : | CO_3^{2-} ; | Sulphite : | SO_3^{2-} ; | Sulphide : | S^{2-} |
| Nitrite : | NO_2^- ; | Acetate : | CH_3COO^- ; | Chloride : | Cl^- |
| Bromide : | Br^- ; | Iodide : | I^- ; | Nitrate : | NO_3^- |
| Oxalate : | $\text{C}_2\text{O}_4^{2-}$; | Orthoborate : | BO_3^{3-} ; | (ortho) Phosphate : | PO_4^{3-} |
| Sulphate : | SO_4^{2-} | | | | |
- $\text{MgHPO}_4 \longrightarrow \text{Mg}_2\text{P}_2\text{O}_7 + \text{H}_2\text{O}$
- CuBr and Br_2 , Cupric bromide , Cuprous bromide.
- MgCO_3 , Magnesium carbonate
- (A) : As/Sb ; (B) : $\text{Na}_3\text{As/Na}_3\text{Sb}$; (C) : $\text{AsCl}_3/\text{SbCl}_3$; (D) : $\text{AsCl}_5/\text{SbCl}_5$
- (a) SOCl_2 (b) $\text{XeO}_2\text{F}_2, \text{XeOF}_4$ (c) $\text{SO}_2\text{F}_2, \text{SOF}_4$ (d) $\text{VO}_2\text{Cl}, \text{VOCl}_3$ (e) NOCl