

Exercise-1

Marked questions are recommended for Revision.

PART - I : SUBJECTIVE QUESTIONS

Section (A) : Oxidation number

- A-1.** What is the general oxidation states of following elements.
Na Ca Al Zn F O Ne Rb
- A-2.** Write the oxidation state of manganese in the following compounds.
 MnSO_4 , Mn_2O_3 , MnCl_2 , HMnO_4 , H_2MnO_4
- A-3.** Write the oxidation Number of underlined element in following given compound/ions.
(i) $\text{H}_3\text{P}\underline{\text{O}}_4$, (ii) $\text{H}_2\text{C}\underline{\text{O}}_4$, (iii) $\text{H}_2\underline{\text{N}}_2\text{O}_2$, (iv) $\text{H}_2\underline{\text{S}}$
(v) $\text{H}_2\underline{\text{S}}\text{O}_3$, (vi) $\underline{\text{Fe}}_3\text{O}_4$, (vii) $\text{Na}_2\underline{\text{O}}$, (viii) $\underline{\text{O}}\text{F}_2$
(ix) $\text{K}_2\underline{\text{Cr}}_2\text{O}_7$, (x) $\text{H}_2\underline{\text{Xe}}\text{O}_4$, (xi) $\text{H}_4\underline{\text{Xe}}\text{O}_6$, (xii) $\underline{\text{Al}}_2(\text{SO}_4)_3$

Section (B) : Inorganic nomenclature

- B-1.** Write the name of following cations.
 NO^{+2} , NO^+ , H_3O^+ , NH_4^+ , N_2H_5^+ , $\text{C}_6\text{H}_5\text{NH}_3^+$, $\text{C}_5\text{H}_5\text{NH}^+$
- B-2.** Write the name of following anions.
 F^- Cl^- Br^- I^- O^{2-} S^{2-} N^{3-} P^{3-} As^{3-} Cu^- H^- Au^-
 CO_3^{2-} ZnO_2^{2-} SiO_3^{2-} NO_2^- SO_3^{2-} ClO_4^- ClO^- SO_4^{2-} NO_3^- SnO_3^{2-} SnO_2^{2-} PbO_3^{2-}
 PbO_2^{2-}

PART - II : ONLY ONE OPTION CORRECT TYPE

Section (A) : Oxidation number

- A-1.** The oxidation number that iron does not exhibit in its common compounds or in its elemental state is :
(A) 0 (B) +1 (C) +2 (D) +3
- A-2.** The oxidation state of nitrogen varies from:
(A) -3 to +5 (B) 0 to +5 (C) -3 to 1 (D) +3 to +5
- A-3.** When H_2SO_3 is converted into H_2SO_4 the change in the oxidation state of sulphur is from :
(A) 0 to +2 (B) +2 to +4 (C) +4 to +2 (D) +4 to +6
- A-4.** The halogen that shows same oxidation state in all its compounds with other elements is :
(A) I_2 (B) F_2 (C) Cl_2 (D) Br_2
- A-5.** Most stable oxidation state of gold is -
(A) +1 (B) +3 (C) +2 (D) zero
- A-6.** The most stable oxidation state of chromium is -
(A) +5 (B) +3 (C) +2 (D) +4
- A-7.** Which can have both +ve and -ve oxidation states?
(A) F (B) I (C) Na (D) He
- A-8.** Which metal exhibits more than one oxidation states?
(A) Na (B) Mg (C) Al (D) Fe
- A-9.** The most common oxidation state of an element is -2. The number of electrons present in its outer most shell is :
(A) 2 (B) 4 (C) 6 (D) 8
- A-10.** Conversion of PbSO_4 to PbS the oxidation number of sulphur in PbS is-
(A) -2 (B) +6 (C) +4 (D) -1
- A-11.** Oxidation state of oxygen in H_2O_2 is :
(A) -2 (B) -1 (C) +1 (D) +2
- A-12.** The oxidation number of phosphorus in $\text{Mg}_2\text{P}_2\text{O}_7$ is :
(A) +5 (B) -5 (C) +6 (D) -7

- A-13.** In the conversion of Br_2 to BrO_3^- , the oxidation state of bromine changes from-
 (A) 0 to +5 (B) -1 to +5 (C) 0 to -3 (D) +2 to +5
- A-14.** Oxidation number of S in S_2Cl_2 is :
 (A) +1 (B) +6 (C) 0 (D) -1
- A-15.** Which of the following element shows only -1 oxidation number in combined state :
 (A) F (B) Cl (C) Br (D) I
- A-16.** The oxidation number of Fe in FeS_2 is
 (A) +4 (B) +2 (C) +1 (D) zero

Section (B) : Inorganic nomenclature

- B-1.** Correct formula of aluminium perchlorate is :
 (A) $\text{Al}(\text{ClO})_3$ (B) $\text{Al}(\text{ClO}_2)_3$ (C) $\text{Al}_2(\text{ClO}_3)_3$ (D) $\text{Al}(\text{ClO}_4)_3$
- B-2.** Sodium chlorite is :
 (A) NaClO_3 (B) NaClO_2 (C) NaClO (D) NaClO_4
- B-3.** Aluminium phosphide is :
 (A) AlP_3 (B) Al_2P_3 (C) AlP (D) Al_3P_2
- B-4.** Formula of Dioxygen difluoride is :
 (A) OF_2 (B) O_2F (C) O_2F_2 (D) O_2F_3
- B-5.** Barium azide is :
 (A) BaN (B) Ba_2N_3 (C) $\text{Ba}(\text{N}_3)_2$ (D) Ba_3N_2
- B-6.** Silicon fluoride Formula is :
 (A) SiF (B) SiF_3 (C) SiF_4 (D) SiF_6
- B-7.** Aluminium carbide is :
 (A) Al_2C (B) Al_4C_3 (C) AlC_3 (D) AlC
- B-8.** Which of the following oxyacids forms pyroxyacids :
 (A) H_3PO_4 (B) H_3BO_3 (C) H_2SO_4 (D) All of these
- B-9.** Which of the following set of element not forms metaoxy acids:
 (A) Cl, S, N (B) Cl, S, P (C) Si, C, B (D) C, Si, P
- B-10.** Name of oxyanion of boric acid (H_3BO_3) is :
 (A) Borate ion (B) Boraite ion (C) Hypo Borite ion (D) Per borate ion
- B-11.** Correct match is :
 (i) CrO_4^{2-} = chromate (ii) MnO_4^{2-} = Mangnate (iii) BO_3^{3-} = Borate (iv) XeO_4^{2-} = Xenate
 (A) Only (i) (ii) (B) Only (ii) (iii) (C) Only (iii) (iv) (D) All of these
- B-12.** Sodium tri-sulphide Formula is :
 (A) Na_2S_3 (B) Na_3S (C) Na_3S_2 (D) Na_2S
- B-13.** PO_4^{3-} is :
 (A) Phosphate ion (B) Phasphite ion (C) Hypophosphite ion (D) Pyrophosphite ion
- B-14.** Pyrophosphoric acid is :
 (A) H_3PO_4 (B) $\text{H}_4\text{P}_2\text{O}_5$ (C) $\text{H}_4\text{P}_2\text{O}_7$ (D) H_3PO_3
- B-15.** Correctly match codes are :

(1)	H_3PO_4	(p)	Meta phosphoric acid
(2)	HPO_3	(q)	Thio sulphuric acid
(3)	H_2SO_4	(r)	Phosphoric acid
(4)	$\text{H}_2\text{S}_2\text{O}_3$	(s)	sulphuric acid

(A) 1 → s, 2 → q, 3 → r, 4 → s

(B) 1 → q, 2 → r, 3 → p, 4 → q

(C) 1 → r, 2 → p, 3 → s, 4 → q

(D) 1 → s, 2 → r, 3 → q, 4 → p

PART - III : MATCH THE COLUMN

1. Match the column.

	Column-I		Column-II
(A)	Sulphurous acid	(p)	$\text{H}_2\text{S}_2\text{O}_8$
(B)	Per oxo disulphuric acid	(q)	$\text{H}_2\text{S}_2\text{O}_7$
(C)	Pyro sulphuric acid	(r)	H_2SO_3
(D)	Peroxo mono sulphuric acid	(s)	Sulphur O.S + 6

2. Match the column :

	Column-I		Column-II
(A)	HIO_2	(p)	Magnesium hydrogen phosphite
(B)	$\text{Mg}(\text{IO})_2$	(q)	Iodous Acid
(C)	HIO	(r)	Magnesium hypoiodite
(D)	MgHPO_3	(s)	Hypoiodous acid

Exercise-2

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PART - I : ONLY ONE OPTION CORRECT TYPE

- The oxidation number of sulphur in H_2SO_5 .
(A) +3 (B) +5 (C) +6 (D) +8
- Which of the following is a correct statement.
(A) The name of SeO_3^{2-} is selenite
(B) CdF_3 is correct formula
(C) Zn can only show the oxidation state +3
(D) The element having atomic numbers 29 lies in p-block
- In the given formula which one is correct :
(A) SiI_2 (B) Cr_2O_7 (C) Ti_2O_5 (D) $\text{Na}_2\text{C}_8\text{H}_4\text{O}_4$
- Prefix per- is attached to the name.
(A) H_2SnO_3 (B) Sb_2O_5 (C) H_3PO_5 (D) HNO_2
- Match column-I with column II and select correct.

	Column-I		Column-II
(I)	CO_3^{2-}	(P)	Carbonate ion
(II)	N_3^-	(Q)	Azide ion
(III)	O_2^{2-}	(R)	Acetate ion
(IV)	CH_3COO^-	(S)	Peroxide ion

Code :

	I	II	III	IV		I	II	III	IV
(A)	P	Q	R	S	(B)	P	Q	S	R
(C)	R	S	Q	R	(D)	R	P	Q	S
- Dichromate ion is :
(A) CrO_4^{2-} (B) $\text{Cr}_2\text{O}_7^{2-}$ (C) CrO_3 (D) Cr_2O_4
- In following compound dithionic acid is :
(A) $\text{H}_2\text{S}_2\text{O}_6$ (B) $\text{H}_2\text{S}_2\text{O}_4$ (C) H_2SO_5 (D) $\text{H}_2\text{S}_2\text{O}_3$

PART - II : SINGLE AND DOUBLE VALUE INTEGER TYPE

1. How many acid are pyro acid in the following given acids ?

- (i) $\text{H}_4\text{P}_2\text{O}_7$ (ii) $\text{H}_4\text{P}_2\text{O}_5$ (iii) $\text{H}_2\text{S}_2\text{O}_3$ (iv) HNO_2
 (v) H_3PO_4 (vi) HNO_3 (vii) $\text{H}_6\text{Si}_2\text{O}_7$

2. How many of these names are correct.

(i)	N^{3-}	—	Nitride ion
(ii)	O^{2-}	—	Peroxide ion
(iii)	ZnO_2^{2-}	—	Zincate ion
(iv)	SO_4^{2-}	—	Sulphite ion
(v)	NO_2^-	—	Nitrate ion
(vi)	PbO_2^{2-}	—	Plumbite ion
(vii)	Fe^{2+}	—	Ferric ion

3. Count the correct number of statement.

- (i) Possible O.N. for Nitrogen +5, +4, +3, +1, -3, 0.
 (ii) Alkaline earth metal always have oxidation number +1.
 (iii) HClO is hypochlorous acid and HClO_3 is perchloric acid.
 (iv) $(\text{NH}_4)_2\text{SO}_4$ is ammonium sulphate
 (v) Aluminium hydrogen phosphite is $\text{Al}(\text{H}_2\text{PO}_3)_3$
 (vi) Oxidation number of oxygen in OF_2 is +2 and O_2F_2 is +1
 (vii) Cu^+ , Sn^{2+} , Fe^{3+} , Sn^{4+} respectively cuprous, stannous, ferric, stannic, ion.

4. In how many of the compound or ion nitrogen (N) shows positive oxidation state.

- (i) NH_3 (ii) Na_3N (iii) $\text{A}\square\text{N}$ (iv) N_2O (v) NF_3 (vi) HNO_2
 (vii) NH_4^+ (viii) N_2O_3 (ix) $\text{Ca}(\text{N}_3)_2$ (x) Mg_3N_2 (xi) NaNO_3

5. How many of the following formula are correctly match with their name.

(i)	CaF_2	→	Calcium fluoride
(ii)	ICl_2	→	Iodine trichloride
(iii)	O_2F_2	→	dioxygen difluoride
(iv)	$\text{A}\square\text{N}$	→	Aluminium nitride
(v)	Na_3BO_3	→	Sodium borate
(vi)	$\text{Zn}_2\text{P}_2\text{O}_7$	→	Zinc pyrophosphate
(vii)	$\text{Na}_2\text{S}_2\text{O}_3$	→	Sodium thio sulphate
(viii)	XeO_4	→	Xenon tetraoxide
(ix)	$\text{Mg}(\text{ClO}_4)_2$	→	Magnesium perchlorate
(x)	$\text{Mg}(\text{OH})_2$	→	Magnesium hydroxide

PART - III : ONE OR MORE THAN ONE OPTIONS CORRECT TYPE

1. Match Column-I with column-II and the select correct answer with respect to name given below.

	Column-I		Column-II
(I)	Mercurous Chloride	(p)	K_2O_2
(II)	Calcium Phosphide	(q)	SrH_2
(III)	Potassium peroxide	(R)	Hg_2Cl_2
(IV)	Strontium hydride	(S)	Ca_3P_2

Code :

- | | | | | | | | |
|-------|---|---|---|-------|---|---|---|
| (A) R | Q | S | P | (B) R | S | P | Q |
| (C) R | S | Q | P | (D) Q | P | S | R |

2. Which of the following statement(s) is /are correct ?

- (A) The formula of aluminium arsenide is AlAs
 (B) The oxidation state of manganese in KMnO_4 is +7
 (C) Fe can only show one oxidation state
 (D) Oxidation number of F element is always -1 in its compounds

Basic Inorganic Nomenclature

3. Which statement is/are incorrect ?
(A) KO_3 is potassium ozonide (B) NaAu is sodium aurite
(C) NO_2^+ is nitrosonium (D) PbO_3^{2-} is plumbite
4. Which of the following statements is/are true for the acids [H_2CO_3 , $\text{H}_2\text{N}_2\text{O}_2$, HClO_2 , H_2SO_5]
(A) H_2CO_3 is acid of carbon and the correct name is carbonous acid.
(B) The correct name of $\text{H}_2\text{N}_2\text{O}_2$ is hyponitrous acid
(C) HClO_2 is perchloric acid of chlorine
(D) Peroxo mono sulphuric acid is H_2SO_5
5. Which statement (s) about oxidation number are correct.
(A) It is a relative charge in a particular bonded state
(B) Aluminium always has +3 oxidation number in its compounds
(C) The oxidation number of Cl in HClO_4 is +7
(D) It is an imaginary or apparent charge developed over atom of an element when it goes from its elemental free state to combined state.
6. Prefix per is attached to the name :
(A) H_4XeO_6 (B) H_3PO_5 (C) H_2SO_5 (D) HMnO_4
7. Identify the meta-acids.
(A) HMnO_4 (B) H_2SnO_3 (C) HClO_3 (D) HPO_3
8. Which of the following acids are ortho-acids.
(A) H_3PO_4 (B) H_3BO_3 (C) H_4SiO_7 (D) H_3PO_2

PART - IV : COMPREHENSION

Q.1, Q.2 and Q. 3 by appropriately matching the information given in the three columns of the following table.

Oxyacid Formula	Oxidation Number	Name Prefix-Suffix
(P) $\text{H}_4\text{B}_2\text{O}_5$	1. (+3)	(I) Pyro - ic oxyacid
(Q) $\text{H}_2\text{P}_2\text{O}_7$	2. (+5)	(II) Pyro-us oxyacid
(R) $\text{H}_2\text{S}_2\text{O}_5$	3. (+6)	(III) Meta-ic oxyacid
(S) HClO_2	4. (+4)	(IV) N _A - us oxyacid
(T) HPO_3	5. (+1)	(V) N _A - ic oxyacid

1. Which combination is in correct.
(A) (P), (1), (I) (B) (Q), (2), (II) (C) (R), (4), (II) (D) (S), (1), (IV)
2. Which one combination is correct
(A) (P), (1), (I) (B) (Q), (2), (I) (C) (R), (4), (IV) (D) (S), (2), (III)
3. Which of the following combination is correct
(A) (R), (4), (II) (B) (S) (1) (IV) (C) (T) (2) (III) (D) (Q) (2) (III)

Answers

EXERCISE - 1

PART - I

A-1.	Element :	Na	Ca	Al	Zn	F	O	Ne	Rb
	Oxidation state :	+1	+2	+3	+2	-1	-2	0	+1
A-2.		MnSO ₄ ,		Mn ₂ O ₃ ,		MnCl ₂ ,		HMnO ₄ ,	H ₂ MnO ₄
	Oxidation number :	+2		+3		+2		+7	+6
A-3.	Oxidation number :	(i) +5, (ii) +3, (iii) +1, (iv) -2, (v) +4, (vi) +8/3, (vii) -2, (viii) +2, (ix) +6, (x) +6, (xi) +8, (xii) +3.							
B-1.	NO ⁺ ₂ : Nitronium, N ₂ H ₅ ⁺ : hydrazinium	NO ⁺ : nitrosonium, C ₆ H ₅ NH ₃ ⁺ : anilinium	H ₃ O ⁺ : hydronium, C ₅ H ₅ NH ⁺ : pyridinium	NH ₄ ⁺ : ammonium					
B-2.	F ⁻ fluoride O ²⁻ oxide As ³⁻ arsenide CO ₃ ²⁻ carbonate SO ₃ ²⁻ sulphite NO ₃ ⁻ nitrate PbO ₂ ²⁻ plumbite	Cl ⁻ chloride S ²⁻ sulphide Cu ⁻ cupride ZnO ₂ ²⁻ zincate ClO ₄ ⁻ perchlorate SnO ₃ ²⁻ stannate	Br ⁻ bromide N ³⁻ nitride H ⁻ hydride SiO ₃ ²⁻ silicate ClO ⁻ hypochlorite SnO ₂ ²⁻ stannite	I ⁻ iodide P ³⁻ phosphide Au ⁻ auride NO ₂ ⁻ nitrite SO ₄ ²⁻ sulphate PbO ₃ ²⁻ plumbate					

PART - II

A-1.	(B)	A-2.	(A)	A-3.	(D)	A-4.	(B)	A-5.	(D)
A-6.	(B)	A-7.	(B)	A-8.	(D)	A-9.	(C)	A-10.	(A)
A-11.	(B)	A-12.	(A)	A-13.	(A)	A-14.	(A)	A-15.	(A)
A-16.	(B)	B-1.	(D)	B-2.	(B)	B-3.	(C)	B-4.	(C)
B-5.	(C)	B-6.	(C)	B-7.	(B)	B-8.	(D)	B-9.	(A)
B-10.	(A)	B-11.	(D)	B-12.	(A)	B-13.	(A)	B-14.	(C)
B-15.	(C)								

PART - III

1. (A - r) ; (B - p, s) ; (C - q, s) ; (D - s) 2. (A - q) ; (B - r) ; (C - s) ; (D - p)

EXERCISE - 2

PART - I

1.	(C)	2.	(A)	3.	(D)	4.	(C)	5.	(B)
6.	(B)	7.	(A)						

PART - II

1.	3 [(i), (ii), (vii)]	2.	3 [(i), (iii), (vi)]	3.	5 [(i), (iv), (v), (vi), (vii)]
4.	5 [(iv), (v), (vi), (viii), (xi)]	5.	8 [Except (ii), (v)]		

PART - III

1.	(B)	2.	(ABD)	3.	(BCD)	4.	(BD)	5.	(ABCD)
6.	(ABCD)	7.	(BD)	8.	(AB)				

PART - IV

1.	(B)	2.	(A)	3.	(C)
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