Valency, Oxidation State and Diagonal Relationship

1. In the first four groups of periodic table, the group number represents the

1) Valency 2) Oxidation State

3) Atomic number 4) Metallic Nature

2. Which among the following has stable +2 oxidation state?

1) Mg 2) Zn 3) Pb 4) All

3. Metal exhibiting highest oxidation state belongs to

1) p-block 2) f-block 3) s-block 4) d-block

4 Among the following outermost configuration of metals, the highest oxidation state achieved by

1) $3d^3\ 4s^2$ 2) $3d^5\ 4s^1$ 3) $3d^5\ 4s^2$ 4) $3d^6\ 4s^2$

5. The common oxidation states of transition and inner transition elements are respectively

1) +2, +2 2) +3, +2 3) +2, +3 4) +3,+3

6. Diagonal relationship is quite pronounced in the elements of

1) 2^{nd} and 3^{rd} periods 2) 1^{st} and 2^{nd} groups

3) II and III groups 4) 1^{st} and 2^{nd} periods

7. The pair of elements that have similar chemical properties are

1) Lithium and Magnesium 2) Beryllium and Boron

3) Aluminium and Magnesium 4) Carbon and Nitrogen

8. Diagonal relationship is shown by

1) B - S 2) Li - Mg 3) Mg - Ca 4) S - Cl

9. Which of the following pairs of elements are not diagonally related?

1) Lithium and Magnesium 2) Oxygen and Sulphur

3) Beryllium and Aluminium 4) Boron and Silicon

10. Diagonal relationship of Boron and Silicon is due to the equal value of their

1) Electron affinity 2) Atomic Volume

3) Ions polarizing power 4) All of these

11. An element with electronic arrangement as 2, 8, 14, 2 will exhibit the following stable oxidation states

1) +2 and +4 2) +2 to +3 3) +1 only 4) +1 and +2

12. Two elements A and B having the electronic configurations $A = 1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^1$ **. The formula of the compound formed between them can be**

1) AB 2) A_2B_3 3) AB_2 4) A_3B_2

13 Fixed oxidation state is not exhibited by

1) Aluminium 2) Fluorine 3) Sodium 4) Copper

14. A metal forms a chloride with the formula MCl_2 **.Formula of Phosphoric acid is** H_3PO_4 **. Formula of the Phosphate of the metal is**

1) M_3PO_4 2) MPO_4 3) $M_3(PO_4)_2$ 4) M_2PO_4

15. Beryllium shows diagonal relationship with aluminium. Which of the following similarity is incorrect?

1) Be_2C like Al_4C_3 yields methane on hydrolysis

2) Be, like Al is renderd passive by HNO_3

3) Be $(OH)_2$ like Al $(OH)_3$ is basic

4) Be forms beryllates and Al forms aluminates

16. Which of the following statements are wrong?

I) Bi^{3+} is more stable than Bi^{5+}.

II) Mn shows + 8 oxidation state.

III) The oxidation state of an element is always less than or equal to its group number.

IV) s-block elements show variable oxidation states.

The answer is

1) II and IV 2) II and III 3) I, II and III 4) II, III and IV

17 An element forms oxide of the type its bromide can be represented by

1) MBr_2 2) MBr_4 3) MBr_3 4) M_5Br_4

18. Beryllium resembles Aluminium in properties. This is mainly due to

1) Equal electro negativity values of elements

2) Equal atomic volumes of the elements

3) Equal number valence electrons

4) Equal nuclear charges in their atoms

19. Match the following two lists given below in view of highest oxidation state

List - 1	**List - 2**
A) Mn	1) +5
B) Os	2) +6
C) P	3) +4
D) Cr	4) +8
	5) +7

The correct match is

	A	**B**	**C**	**D**		**A**	**B**	**C**	**D**
1).	5	4	1	2	2).	5	1	4	2
3).	4	3	2	1	4).	3	1	4	2

20. (A): Be and Al has similar properties.

(R): Cations of Be and Al have same polarizing power.

The correct answer is

1. Both (A) and (R) are true and (R) is the correct explanation of (A).

2. Both (A) and (R) are true and (R) is not the correct explanation of (A).

3. (A) is true but (R) is false.

4. (A) is false but (R) is true.

.21. Match the following in view of diagonal relation

List - 1	**List - 2**
A) Li	1) Al
B) Si	2) C
C) Be	3) B
	4) Mg

The correct match is

	A	**B**	**C**		**A**	**B**	**C**
1.	1	3	4	2.	3	1	4
3.	4	1	3	4.	4	3	1

22. The formula of the compound formed by the pair of elements Al & S is:

1) Al_2S_3 2) Al_3S_2 3) Al_4S_3 4) AlS_3

23. Among the following the number of elements showing only one non-zero oxidation state is O, Cl, F, Na, Al and Mg.

1) 1 2) 3 3) 2 4) 4

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1) 1	2)4	3)3	4) 3	5)3	6)1	7)1	8)2	9) 2	10) 3
11)2	12) 2	13)4	14)3	15) 3	16)4	17) 2	18) 1	19)1	20) 1
21)4	22)1	23)4							