

SRIGAYATRI EDUCATIONAL INSTITUTIONS

INDIA

Alkaline earth metals [IIA group elements]

1. The most abundant element among the following is

- 1) Mg 2) Ca 3) Sr 4) Ra

2. Among the following amphoteric Oxide is

- 1) BeO 2) Al_2O_3 3) ZnO 4) Al

3. The correct order of Polarising ability of Cations of alkaline earth metals is

- 1) $Be^{+2} > Ca^{+2} > Mg^{+2} > Ba^{+2}$ 2) $Be^{2+} < Ca^{2+} < Mg^{2+} < Ba^{+2}$
3) $Be^{2+} < Mg^{2+} < Ca^{2+} < Ba^{2+}$ 4) $Be^{2+} < Mg^{2+} > Ca^{2+} = Ba^{2+}$

4. Be differs from other alkaline earth metals because of

- 1) Small size and high EN 2) Large size and low EN
3) Small size low EN 4) Large size High EN

5. Which is soluble in water

- 1) $BeSO_4$ 2) $CaSO_4$ 3) $SrSO_4$ 4) $BaSO_4$

6. Ionic nature of (II group) hydride is

- 1) $BeH_2 > MgH_2 > CaH_2 > SrH_2 > BaH_2$ 2) $BeH_2 < MgH_2 < CaH_2 < SrH_2 < BaH_2$
3) $BeH_2 < MgH_2 < CaH_2 < SrH_2 < BaH_2$ 4) $BeH_2 < MgH_2 > CaH_2 < SrH_2 > BaH_2$

7. Chlorophyll Contain

- 1) Ca^{+2} 2) Mg^{+2} 3) Fe^{+2} 4) Fe^{+3}

8. Magnesite is a mineral of

- 1) Na 2) Zn 3) Cu 4) Mg

9. The decreasing Order of second I . P of K, Ca, Ba is

- 1) $K > Ca > Ba$ 2) $Ca > Ba > K$ 3) $Ba > K > Ca$ 4) $K > Ba > Ca$

10. Setting of plaster of Paris involves

- 1) Oxidation with atmospheric O_2 2) Combining with atm O_2
3) Hydration 4) de Hydration

11. Which of the following salts becomes plaster of Paris on being properly hydrated ?

- 1) $CaCO_3$ 2) $MgSO_4$ 3) $CaSO_4$ 4) $ZnCO_3$

12. What is the formula of gypsum ?

- 1) $CaSO_4 \cdot 3H_2O$ 2) $CaSO_4 \cdot 2H_2O$ 3) $2CaSO_4 \cdot H_2O$ 4) $CaSO_4 \cdot H_2O$

13. In which of the following, the hydration energy is higher than – the lattice energy ?

- 1) $MgSO_4$ 2) $RaSO_4$ 3) $SrSO_4$ 4) $BaSO_4$

14. The Correct sequence of increasing covalent character is represented by

- 1) $BeCl_2 < NaCl > LiCl$ 2) $NaCl < LiCl < BeCl_2$
3) $BeCl_2 < LiCl < NaCl$ 4) $LiCl < NaCl < BeCl_2$

15. Which of the following is different from other three oxides ?

- 1) MgO 2) SnO 3) ZnO 4) PbO

16. A Sodium salt On treatment with $MgCl_2$ gives white precipitate on heating. The anion of the sodium salt is :

- 1) HCO_3^- 2) CO_3^{2-} 3) SO_4^{2-} 4) NO_3^-

17. Which is the wrong statement?

- 1) $Ca_3(PO_4)_2$ is present in bones 2) $3Ca_3(PO_4)_2 \cdot CaF_2$ is part of enamel on teeth
3) Ca^{+2} ions are important in blood clotting 4) Chlorophyll is a compound of calcium

18. Among the alkaline earth metals, the element forming Predominantly Covalent Compound is

- 1) Ba 2) Be 3) Sr 4) Ca

19. Which of the following carbides give allylene on hydrolysis

- 1) CaC_2 2) Be_2C 3) MgC_2 4) Mg_2C_3

20. Be and Al exhibit many properties which are similar But the two elements differ in :

- 1) Forming Covalent bonds 2) forming polymeric hydrides
3) exhibiting maximum covalent in compounds 4) Exhibiting amphoteric nature in their oxides

21. When CaC_2 is heated in atmospheric nitrogen in an electric furnace, the compound formed is

- 1) $Ca(CN)_2$ 2) $CaNCN$ 3) Ca_3N_2 4) $CaNC_2$

22. (A) : Sulphur is estimated as $BaSO_4$ and not as $MgSO_4$

(R) : The ionic radius of Mg^{+2} is smaller than that of Ba^{+2} ion

- 1) If both (A) and (R) are true and (R) is the correct explanation of (A)

- 2) If both (A) and (R) are true and (R) is not the correct explanation of (A)
- 3) If both (A) and (R) are true
- 4) If both (A) and (R) are false

23. (A) : Lithium resembles magnesium

(R) : Li^+ has same size as Mg^{2+}

- 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) Both (A) and (R) are true
- 4) Both (A) and (R) are false

24. (A) : Mg gets Oxidised when heated in CO_2 (or) SO_2 atmosphere

(R) : Mg has a strong affinity for oxygen

- 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) Both (A) and (R) are true
- 4) Both (A) and (R) are false

Integer type questions:

25. Magnesium Oxide when mixed with a saturated solution of magnesium chloride sets to a hard mass like cement known as "Sorel cement" the composition of Sorel cement is $MgCl_2 \cdot nMgO \cdot xH_2O$ what is the value of n ?

26. Calcium carbide reacts with nitrogen and forms an important fertilizer, Calcium cyan amide. How much calcium cyanamide is formed when 3.2 gr of calcium carbide is completely converted into cyanamide.

27. $Be_2C + H_2O \rightarrow BeO + X$

$CaC_2 + H_2O \rightarrow Ca(OH)_2 + Y$

What is the sum of molecules what of X and Y

28. On heating Calcium ammoniate, ammonia and hydrogen are evolved How many moles of ammonia are evolved when 1.5 moles of calcium ammoniate are heated?

KEY

1.	2	2.	4	3.	2	4.	1	5.	1	6.	2	7.	2	8.	4	9.	1	10.	3
11.	3	12.	2	13.	1	14.	2	15.	1	16.	1	17.	4	18.	2	19.	4	20.	3
21.	2	22.	2	23.	1	24.	1	25.	5	26.	4	27.	42	28.	8	29.		30.	

Solutions

2. All elements shows both acidic and basic nature with its oxides.

4. It shows anomalous behaviour

6. Atomic size increases ionic character also increases

9. Atomic size $\propto \frac{1}{I.E}$

13. Mg^{2+} ions are the smallest and hence has hydration energy

14. The polarising power of cation increases with decreases in size of Cation and increases of on the cation

15. MgO is basic while the other three are amphoteric

16. $MgCl_2 + 2NaHCO_3 \rightarrow Mg \underset{\text{Soluble}}{(HCO_3)_2} \xrightarrow{\text{Heat}} Mg \underset{\text{White Ppt}}{CO_3}$

18. Be^{+2} ion has a small size , If has high polarising power

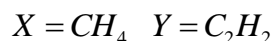
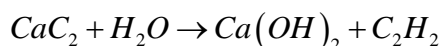
19. $Mg_2C_3 + 4H_2O \rightarrow 2Mg(OH)_2 + CH_3 - C \equiv CH$

25. $MgCl_2 \cdot 5MgO \cdot xH_2O$

26. $CaC_2 + N_2 \rightarrow CaCN_2 + C$
64gr 80gr

$$\frac{80}{64} \times 3.2 = 4$$

27. $Be_2C + H_2O \rightarrow BeO + CH_4$



28. $3Ca(NH_3)_6 \rightarrow Ca_3N_2 + 16NH_3 + 3H_2$

3moles \rightarrow 16moles of NH_3

1.5moles \rightarrow 8moles of NH_3