

CHEMISTRY

RESONANCE ENGLISH

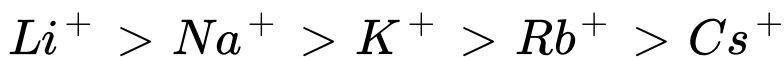
S BLOCK ELEMENTS

Inorganic Chemistry S Block Elements

1. S_2 : Plaster of paris is a hemihydrate of calcium sulphate obtained by heating the gypsum above $393K$.

S_2 : Sodium carbonate is used in water softening.

S_4 : The order of mobilities of the alkali metal ions in aqueous solutions is



A. *TTF*

B. *TTT*

C. *FTF*

D. *FFF*

Answer: 3



2. Which of the following statement is true for all the alkali metals?

A. Their nitrates decomposes on heating to give the corresponding nitrites and oxygen.

B. Their chlorides are deliquescent and crystallise as hydrates.

C. They react with water to form hydroxide and hydrogen.

D. They react with halogen to form ionic

– halides, $M^+ X^-$

Answer: C



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3. Which of the following statements is incorrect ?

A. The superoxide ion (*i. e.* O_2^-) is stable only in presence of larger cations such as K^+ , Rb^+ , Cs^+

B. Alkali metals are normally kept in kerosene oil.

C. All the alkali metal hydrides are ionic solids with high melting points.

D. The concentrated solution of alkali metals in liquid ammonia is paramagnetic in nature.

Answer: 4



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4. Which of the following statements is not true about the dilute solutions of alkali metals in liquid ammonia ?

- A. They are deep blue coloured solutions.
- B. They are highly conducting in nature.
- C. They are diamagnetic in nature.

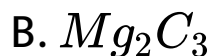
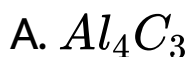
D. Ammoniated cation and solvated electron are formed in the solution.

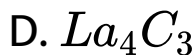
Answer: 3



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5. Which of the following gives propyne on hydrolysis?



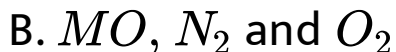
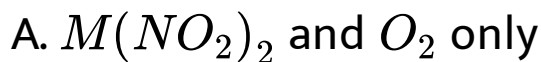


Answer: 2



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6. Alkaline earth metal nitrates on heating decompose to give



C. MO , NO_2 and O_2

D. MO and NO_2 only

Answer: C



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7. Which of the following statement is incorrect ?

A. Mg and Ca both impart characteristic color to the flame.

B. The metallic radius of Na is greater than that of Mg.

C. Metallic bond of Mg is stronger than the metallic bond in Na

D. Melting point of Mg is greater than melting point of Ca.

Answer: 1



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8. KO_2 (potassium super oxide) is used in space and submarines because it :

- A. absorbs CO_2 and increases O_2 contents
- B. eliminates moisture and increases CO contents
- C. absorbs CO_2 only
- D. produces ozone

Answer: 1



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9. Select the incorrect option :

A. Sodium peroxide dissolves in water giving H_2O_2 and $NaOH$

B. Both $LiNO_3$ and $NaNO_3$ on heating separately decompose and each liberates two gases NO_2 and O_2

C. Solvay process can not be used for the manufacture of potassium hydrogen carbonate.

D. Alkali metals are prepared only by the electrolysis of their fused chlorides.

Answer: 2



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10. Sodium and potassium react with water much more vigorously than lithium because:

A. sodium and potassium have high values of hydration energy as compared to that

of lithium.

B. sodium and potassium have higher melting point than that of lithium.

C. sodium and potassium have lower melting point than that of lithium.

D. sodium and potassium have lower hydration energy than that of lithium.

Answer: 3



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11. Identify the correct statement.

A. Gypsum contains a lower percentage of calcium than Plaster of Paris

B. Gypsum is obtained by heating Plaster of Paris

C. Plaster of Paris is obtained by hydration of gypsum

D. Plaster of Paris is obtained by partial oxidation of gypsum

Answer: 1



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12. Which of the following does not participate in the solvay's process for the manufacture of Na_2CO_3 ?

A. NH_3

B. H_2SO_4

C. CO_2

D. $NaCl$

Answer: 2



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13. In the manufacture of metallic sodium by the fused salt electrolysis (Down's process) a small amount of $CaCl_2$ is added to :

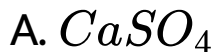
- A. Improve the electrical conduction
- B. Decrease the melting temperature
- C. Stabilising the metallic sodium
- D. Increase the temperature of electrolysis

Answer: 2



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14. Gypsum $CaSO_4 \cdot 2H_2O$ on heating about $120^\circ C$ forms a compound which has the chemical composition is



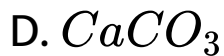
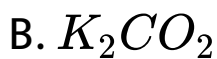
Answer: 2



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15. A solid compound X on heating gives CO_2 gas and a residue. The residue mixed with water forms Y. On passing an excess of CO_2 through Y in water, a clear solution Z is obtained. On boiling Z, compound X is reformed, The compound X is

A. Na_2CO_3



Answer: 4



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16. The main process for the manufacture of sodium carbonate is

A. Le - blanc process

B. Castner process

C. Harber's process

D. Chamber process

Answer: 1



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17. The substance x belonging to IA group gives a pale violet colour in flame test , x is

A. $LiCl$

B. $MgCl$

C. $BaCl_2$

D. KCl

Answer: 4



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18. On combustion in excess of air sodium mainly forms :

A. Na_2O

B. Na_2O_2

C. NaO_3

D. none

Answer: 2



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19. Following information are known about a metal M :

I. A salt of metal M is used in the manufacture of gunpowder.

II. The superoxide of metal M is used as an air purifier in submarines.

III. The hydroxide of metal M is used for the absorption of gases like CO_2 , SO_2 , etc. in eudiometry.

Identify the metal M :

A. Sodium

B. Calcium

C. Magnesium

D. Potassium

Answer: 4



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20. What is the trend of solubility, thermal stability and basic character of hydroxides for alkaline earth metals ?

- A. (1) and (2) only
- B. (1) and (3) only
- C. (1), (2) and (3)
- D. None

Answer: 4



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21. Which of the following statement is correct ?

A. Shine of freshly cut sodium is due to strong metallic bonding

B. Rb_2CO_3 decomposes readily on heating to RbO and CO_2 .

C. Among hydroxides of alkali metals, $LiOH$ is least soluble whereas $CsOH$ is

highly soluble in water.

D. White metal is an alloy of lithium with zinc.

Answer: 3



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22. Sodium hydroxide is manufacture by the electrolysis of brine solution. The reaction by – products are :

A. Cl_2 and H_2

B. Cl_2 and $Na - Hg$

C. Cl_2 and $NaCl$

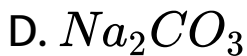
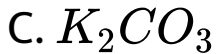
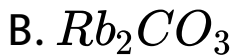
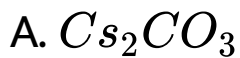
D. Cl_2 and O_2

Answer: 1



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23. Among the carbonates of alkali metals which one has highest thermal stability ?

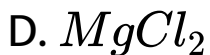
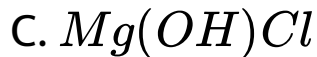
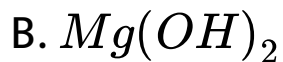


Answer: 1



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24. When $MgCl_2 \cdot 6H_2O$ is strongly heated, then it forms :

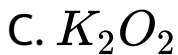
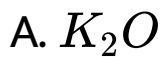


Answer: 1



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25. Potassium when heated strongly in oxygen,
it forms :



Answer: 2



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26. At high temperature, nitrogen combines with CaC_2 to give :

- A. calcium cyanide
- B. calcium cyanamide
- C. calcium carbonate
- D. calcium nitride

Answer: 2



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27. Which of the following statement about the sulphate of alkali metal is correct ?

- A. Except Li_2SO_4 all sulphate of other alkali metals are soluble in water
- B. All sulphate salts of alkali metals except lithium sulphate forms alum
- C. All sulphate salts of alkali metal except lithium sulphate do not decompose at high temperature.
- D. All of these.

Answer: 4



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28. Which of the following statement is false :

A. The milk of magnesia used as antacid is

chemically $MgO + MgCl_2$

B. Stability of alkali metal peroxides

increases with increase in atomic

number

C. Hydration energy of AgF is higher than

its lattice energy

D. Anhydrous $MgCl_2$ cannot be prepared

by direct heating of $MgCl_2 \cdot 6H_2O$

Answer: 1



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29. Which of the following is correct —

A. Solubility



B. Reducing

character



C. Thermal

stability



Answer: 1



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30. Which of the following statement is correct ?

A. Hydration energy of alkali metal ions increases down the group

B. Solubility of sulphates of II A group decreases down the group

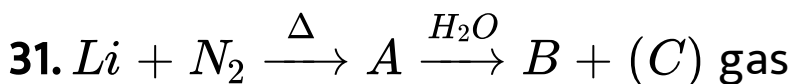
C. Li does not form nitride on burning in air

D. except Li_2CO_3 all the carbonates of alkali metals decompose on heating

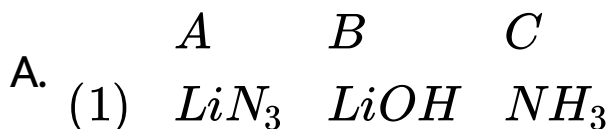
Answer: 2



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Then the correctly matched pair for A, B, C are :



- B.
$$\begin{array}{ccc} A & B & C \\ (2) & LiN_3 & LiH & NO_3 \end{array}$$
- C.
$$\begin{array}{ccc} A & B & C \\ (3) & LiN & LiOH & NO_2 \end{array}$$
- D.
$$\begin{array}{ccc} A & B & C \\ (4) & Li_3N & LiOH & NH_2 \end{array}$$

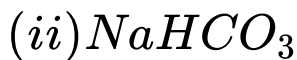
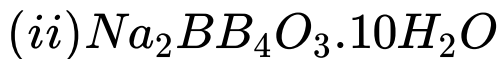
Answer: 4



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32. Match list I with list II and choose the correct answer from the codes given below –

List I



List II

(a) Baking soda

(b) Chile salt peter

(c) Borax

(d) Washing soda

Code :

A. (1) i ii iii iv
 a b c d

B. (2) i ii iii iv
 b c a d

C. (3) i ii iii iv
 c a b d

D. (4) i ii iii iv
 d a b c

Answer: B



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33. What is hydrolysis product of the following:

(i) Na_2O (ii) Na_2O_2



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34. Which of the following properties of elements of alkaline earth metal does not increase with increasing atomic number ?

A. Solubility of hydroxide

B. Reactivity with water

C. I^{st} Ionisation enthalpy

D. Stability of carbonate

Answer: 3



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35. Which of the following statement is true for all the alkali metals?

- A. Their nitrates decomposes on heating to give the corresponding nitrites and oxygen.
- B. Their chlorides crystallise as hydrates
- C. They react with water to form hydroxide and hydrogen
- D. They readily react with halogens to form ionic halides, $M^+ X^-$.

Answer: 3



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36. Which of the following statements is INCORRECT regarding caustic potash, KOH :

A. It is prepared by the electrolysis of an aqueous solution of KCl .

B. It is used for the absorption of gases like CO_2 , SO_2 etc. in eudiometry.

C. White phosphorus undergoes disproportionation reaction with its aqueous solution, when boiled.

D. Commercially, it can be prepared by Le

– Blanc process, but not by Solvay's

process.

Answer: D



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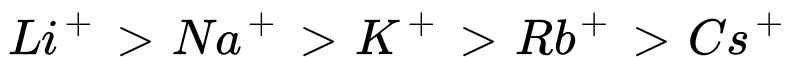
Organic Chemistry Biomolecules Polymer

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S_2 : Sodium carbonate is used in water softening.

S_4 : The order of mobilities of the alkali metal ions in aqueous solutions is



A. 1&4

B. 1&3

C. 2&3

D. 3&4

Answer: 4



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2. Which of the following statement is true for all the alkali metals?

A. Glucose and Fructose give the same osazone on reaction with excess of phenyl hydrazine

B. Hydrolysis of sucrose brings a change in sign of rotation towards plane polarised light.

C. Pentacetate of glucose fromm oxime on

treatment with $H_2N - OH$

D. Glucose on reaction with acetic

anhydride forms pentacetate under

suitable condition.

Answer: 3



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3. Which of the following statements is incorrect ?

A. 6.62×9.74

B. 2.77×5.6

C. 2.77×9.74

D. 9.74×6.62

Answer: 3



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4. Which of the following statements is not true about the dilute solutions of alkali metals in liquid ammonia ?

A. Polyisoprene \rightarrow Natural rubber & homo-polymer

B. Dacron \rightarrow Polyester & co - polymer

C. Nylon - 66 \rightarrow Polyamide & condensation polymer

D. Buna - N \rightarrow Homopolymer & step growth polymer

Answer: N/A



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