



CHEMISTRY

NCERT - NCERT CHEMISTRY(TELUGU)

THE s-BLOCK ELEMENTS

Problem

1. What is the oxidation state of K in KO_2 ?



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2. The E^\ominus for Cl_2/Cl^- is + 1.36, for I_2/I^- is + 0.53, for Ag^+/Ag is + 0.79, Na^+/Na is -2.71 and for Li^+/Li is - 0.35. Arrange the following ionic species in decreasing order of reducing strength :

I^- , Ag , Cl^- , Li , Na



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3. KO_2 exhibits paramagnetic behaviour. This is due to the paramagnetic nature of





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4. Why does the solubility of alkaline earth metal hydroxide in water increase down the group?



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5. Why does the solubility of alkaline earth metal carbonates and sulphates in water decrease down the group?



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Exercises

1. What are the common physical and chemical features of alkali metals?



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2. Discuss the general characteristics and gradation in properties of alkaline earth metals.



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3. Why are alkali metals not found in the free state in nature?



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4. Find out the oxidation state of sodium in Na_2O_2 .



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5. Explain why is sodium less reactive than potassium.



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6. Compare the alkali metals and alkaline earth metals with respect to (i) ionisation enthalpy (ii) basicity of oxides and (iii) solubility of hydroxides.



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7. In what ways lithium shows similarities to magnesium in its chemical behavior?



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8. Explain why can alkali and alkaline earth metals not be obtained by chemical reduction methods?



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9. What makes caesium and potassium useful as electrodes in photoelectric cells?



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10. When an alkali metal dissolves in liquid ammonia the solution can acquire different colours. Explain the reasons for this type of colour change.



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11. Beryllium and magnesium do not give colour to flame whereas other alkaline earth metals do so. Why ?



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12. Discuss the various reactions that occur in the Solvay process.



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13. Potassium carbonate cannot be prepared by Solvay process. Why?



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14. Why is Li_2CO_3 decomposed at a lower temperature whereas Na_2CO_3 at higher temperature?



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15. Compare the solubility and thermal stability of the following compounds of the alkali metals with those of the alkaline earth metals. (a) Nitrates (b) Carbonates (c) Sulphates.



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16. Starting with sodium chloride how would you proceed to prepare
(1) Sodium metal.





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17. What happens when (i) magnesium is burnt in air (ii) quick lime is heated with silica (iii) chlorine reacts with slaked lime (iv) calcium nitrate is heated ?



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18. Describe two important uses of each of the following : (i) caustic soda (ii) sodium carbonate (iii) quicklime.



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19. Draw the structure of (i) $BeCl_2$ (vapour) and (ii) $BeCl_2$ (solid).



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20. The hydroxides and carbonates of sodium and potassium are easily soluble in water while the corresponding salts of magnesium

and calcium are sparingly soluble in water.

Explain.



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21. Describe the importance of the following :

(i) limestone (ii) cement (iii) plaster of paris.



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22. Lithium salts are mostly hydrated . Why ?



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23. Why is LiF almost insoluble in water whereas LiCl soluble not only in water but also in acetone ?



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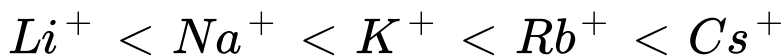
24. Explain the significance of sodium , potassium, magnesium and calcium in biological fluids.



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25. Comment on each of the following observations:

(a) The mobilities of the alkali metal ions in aqueous solution are



(b) Lithium is the only alkali metal to form a nitride directly.

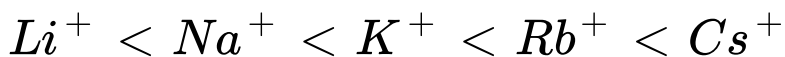
(c) E^\ominus for $M^{2+}(\text{aq}) + 2e \rightarrow \text{m}(\text{s})$ (where M = Ca, Sr or Ba) is nearly constant.



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26. Comment on each of the following observations:

(a) The mobilities of the alkali metal ions in aqueous solution are



(b) Lithium is the only alkali metal to form a nitride directly.

(c) E^\ominus for $M^{2+}(\text{aq}) + 2e \rightarrow \text{m}(\text{s})$ (where M = Ca, Sr or Ba) is nearly constant.



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27. State as to why

(ii) Alkali metals are prepared by the electrolysis of their fused chlorides?



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28. Write balanced equation for the reactions between

(ii) K_2O and water.



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29. How would you explain the following observation?

(i) BeO is almost insoluble but $BeSO_4$



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30. Which of the alkali metal is having least melting point ?

A. Na

B. K

C. Rb

D. Cs

Answer:



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31. Which one of the following alkali metals gives hydrated salts ?

A. Li

B. Na

C. K

D. Cs

Answer:

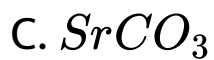


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32. Which of the alkaline earth metal carbonate is thermally the most stable? Why?

A. $MgCO_3$

B. $CaCO_3$



Answer:



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