

GPLUS EDUCATION

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CHEMISTRY

THE S-BLOCK ELEMENTS

Single Correct Answer Type

- KO_2 is used in space and submarines because it
 - Absorbs CO_2 and increases O_2 concentration
 - Absorbs moisture
 - Absorbs CO_2
 - Produces ozone
- A metal M readily forms its sulphate MSO_4 which is water soluble. It forms its oxide MO which becomes inert on heating. It forms its insoluble hydroxide $M(OH)_2$ which is soluble in NaOH solution. Then, M is
 - Be
 - Ba
 - Ca
 - Mg
- Which of the following exists in polymeric form?
 - $AlCl_3$
 - $BeCl_2$
 - B_2H_6
 - SiC
- The element which on burning in air gives peroxide is
 - Lithium
 - Sodium
 - Rubidium
 - Caesium
- Electric cookers have a coating ofthat protects them against fire.
 - Heavy lead
 - Magnesium oxide
 - Zinc oxide
 - Sodium sulphate
- Limestone is not used in which of the following manufacturing processes?
 - Phosphorus from phosphorite
 - Ordinary (soda lime) glass
 - Iron from haematite
 - Solvay process of sodium carbonate
- $Na_2S_2O_3$ is reduced by I_2 to
 - Na_2S
 - Na_2SO_4
 - $NaHSO_3$
 - $Na_2S_4O_6$
- If CO_2 is passed in excess into lime water, the milkiness first formed disappears due to:
 - Reversal of original reaction
 - Formation of volatile calcium derivative
 - Formation of soluble calcium bicarbonate
 - Formation of soluble magnesium hydroxide
- Which of the following compounds is a peroxide:
 - KO_2
 - BaO_2
 - MnO_2
 - NO_2
- Milk of lime is:
 - $CaCO_3$
 - $CaHCO_3$
 - $Ca(OH)_2$
 - $CaSO_4 \cdot 2H_2O$
- Initial setting of cement is mainly due to
 - Hydration and gel formation
 - Dehydration and gel formation
 - Hydration and hydrolysis
 - Dehydration and oxidation
- Celestine is an ore of:
 - Ba
 - Ca
 - Sr
 - Mg
- Phosphine, acetylene and ammonia can be formed by treating water with
 - Mg_3P_2, Al_4C_3, Li_3N
 - Ca_3P_2, CaC_2, Mg_3N_2
 - $Ca_3P_2, CaC_2, CaCN_2$
 - Ca_3P_2, Mg_2C, NH_4NO_3
- Magnesia is:
 - MgO
 - $CuSO_4$
 - $FeSO_4$
 - $MgSO_4$
- Which one of the following processes is used for manufacture of calcium?
 - Reduction of CaO with carbon
 - Reduction of CaO with hydrogen
 - Electrolysis of a mixture of anhydrous $CaCl_2$ and KCl
 - Electrolysis of molten $Ca(OH)_2$

16. Which substance gives a different flame colouration from the others?
 a) Nitre b) Caustic potash c) Potassium chloride d) Table salt
17. An alloy of Na + K is:
 a) Liquid at room temperature
 b) Used in specially designed thermometers
 c) Both (a) and (b)
 d) None of the above
18. Carnallite is
 a) $\text{MgCO}_3 \cdot \text{CaCO}_3$ b) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ c) KAlSi_3O_8 d) $\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$
19. Sodium carbonate solution in water is alkaline due to:
 a) Hydrolysis of Na^+
 b) Hydrolysis of CO_3^{2-}
 c) Hydrolysis of both Na^+ and CO_3^{2-} ions
 d) None of the above
20. Which of the following reaction does not liberate gaseous product?
 a) $\text{AlCl}_3 + \text{NaOH} \rightarrow$ b) $\text{NaOH} + \text{P(white)} + \text{H}_2\text{O} \rightarrow$
 c) $\text{Al} + \text{NaOH} \xrightarrow{\Delta}$ d) $\text{Zn} + \text{NaOH} \xrightarrow{\Delta}$
21. When one mole of bleaching powder is completely decomposed in presence of CO_2 then the mass of chlorine gas that is liberated will be:
 a) 35.45 g b) 70.90 g c) 17.72 g d) 88.60 g
22. Which of the following compounds on reaction with NaOH and H_2O_2 gives yellow colour?
 a) Zn(OH)_2 b) Cr(OH)_3 c) Al(OH)_3 d) None of these
23. Which of the following compounds has the lowest melting point?
 a) CaF_2 b) CaCl_2 c) CaBr_2 d) CaI_2
24. The outermost electron is most loosely held in:
 a) Li b) Na c) K d) Cs
25. On heating quick lime with coke in an electric furnace we get:
 a) Ca and CO_2 b) CaCO_3 c) CaO d) CaC_2
26. Which salt will not impart colour to flame?
 a) LiCl b) MgCl_2 c) CaCl_2 d) KI
27. Shine at freshly cut sodium is because of
 a) Due to oscillation of free electrons b) Due to weak metallic bonding
 c) Due to by absorption of light in crystal lattice d) Due to presence of free valency at the surface
28. Ionic compound BaSO_4 is insoluble in water due to
 a) High lattice energy b) Low lattice energy
 c) Low hydration energy d) Both (a) and (c)
29. Gypsum is added to clinker during cement manufacture to to:
 a) Decrease the rate of setting of cement
 b) Make the cement impervious
 c) Bind the particles of calcium silicate
 d) To facilitate the formation of colloidal gel
30. Amongst the following hydroxides, the one which has the lowest value of K_{sp} is:
 a) Mg(OH)_2 b) Ca(OH)_2 c) Ba(OH)_2 d) Be(OH)_2
31. Which is most basic in character?
 a) CsOH b) KOH c) NaOH d) LiOH
32. Which of the following acts as reducing agent as well as oxidising agent?
 a) Na_2O b) Na_2O_2 c) NaNO_3 d) KNO_3
33. Which of the following is correct?
 a) In the Castner's process of sodium extraction, NaCl is used as an electrolyte.

- b) Sodium reduces CO_2 to carbon.
 c) Mg reacts with cold water and liberate hydrogen gas.
 d) Magnalium is an alloy of Mg and Zn.
34. Which is quick lime?
 a) CaCO_3 b) $\text{Ca(OH)}_2 + \text{H}_2\text{O}$ c) Ca(OH)_2 d) CaO
35. Pearl ash and caustic potash are chemically:
 a) K_2CO_3 and KOH b) KOH and K_2CO_3 c) Na_2CO_3 and KOH d) Na_2CO_3 and NaOH
36. When sodium is heated in flame it gives:
 a) Golden yellow colour b) Crimson red colour c) Brick red colour d) Violet colour
37. Among the following, which has minimum solubility in water?
 a) KOH b) CsOH c) LiOH d) RbOH
38. On strong heating $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$, the product obtained is
 a) MgCl_2 b) MgO c) $\text{MgCl}_2 \cdot 2\text{H}_2\text{O}$ d) $\text{MgCl}_2 \cdot 4\text{H}_2\text{O}$
39. Sodium chloride imparts a golden yellow colour to the Bunsen flame. This can be interpreted due to:
 a) Low ionization potential of sodium
 b) Photosensitivity of sodium
 c) Sublimation of metallic sodium to give yellow vapour
 d) Emission of excess of energy absorbed as a radiation in the visible region
40. Which property increases in magnitude as the atomic number of alkali metals increases?
 a) Electronegativity
 b) First ionization energy
 c) Ionic radius
 d) Melting point
41. Bleaching powder is obtained by the interaction of chlorine and
 a) Dry calcium oxide b) Dry slaked lime
 c) conc. solution of Ca(OH)_2 d) dilute solution of Ca(OH)_2
42. Ca, Sr and Ba dissolve in liquid ammonia giving a.....
 a) Highly conducting b) Highly reducing c) Paramagnetic d) All are correct
43. The ionic conductances of following cations in a given concentration are in the order
 a) $\text{Li}^+ < \text{Na}^+ < \text{K}^+ < \text{Rb}^+$ b) $\text{Li}^+ > \text{Na}^+ > \text{K}^+ > \text{Rb}^+$
 c) $\text{Li}^+ < \text{Na}^+ > \text{K}^+ > \text{Rb}^+$ d) $\text{Li}^+ = \text{Na}^+ < \text{K}^+ < \text{Rb}^+$
44. Which can undergo both oxidation and reduction?
 a) Ba^{2+} b) BaCl_2 c) Ba^+ d) BaH_2
45. Which component of cement sets at the slowest rate?
 a) Dicalcium silicate
 b) Tricalcium silicate
 c) Tricalcium aluminate
 d) Tetracalcium alumino ferrite
46. Scarlet flame colour of Bunsen flame is characteristic of:
 a) Sn b) K c) Sb d) Sr
47. Which pair of the following chlorides do not impart colour to the flame?
 a) BeCl_2 and SrCl_2 b) BeCl_2 and MgCl_2 c) CaCl_2 and BaCl_2 d) BaCl_2 and SrCl_2
48. Which one of the following electrolytes is used in Down's process of extracting sodium metal?
 a) $\text{NaCl} + \text{KCl} + \text{KF}$ b) NaCl c) $\text{NaOH} + \text{KCl} + \text{KF}$ d) $\text{NaCl} + \text{NaOH}$
49. When KCl is heated with conc. H_2SO_4 and solid $\text{K}_2\text{Cr}_2\text{O}_7$, we get:
 a) Chromyl chloride b) Chromous chloride c) Chromic chloride d) Chromic oxide
50. In the presence of cobalt chloride, bleaching powder decomposes to form
 a) CaCO_3 and O_3 b) ClO_2 and CaO c) Cl_2O and CaO d) CaCl_2 and O_2
51. The highest oxidation potential stands for:

- a) Li b) Be c) Ba d) Ra
52. The compound X on heating gives a colourless gas. The residue is dissolved in water to obtain Y . Excess CO_2 is bubbled through aqueous solution of Y , Z is formed. Z on gentle heating gives back X . The compound X is:
- a) CaCO_3 b) Na_2CO_3 c) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ d) K_2CO_3
53. KO_2 is used in oxygen cylinder in space air craft and submarines because it:
- a) Absorbs CO_2 and increase O_2 content
 b) Eliminate moisture
 c) Absorbs CO_2
 d) Produces O_2
54. The oxide, which is best soluble in H_2O is
- a) $\text{Ba}(\text{OH})_2$ b) $\text{Sr}(\text{OH})_2$ c) $\text{Ca}(\text{OH})_2$ d) $\text{Mg}(\text{OH})_2$
55. Melting point is highest for:
- a) Be b) Mg c) Sr d) Ca
56. On dissolving moderate amount of sodium metal in liquid NH_3 at low temperature, which one of the following does not occur?
- a) Blue coloured solution is obtained
 b) Na^+ ions are formed in solution
 c) Liquid ammonia becomes good conductor of electricity
 d) Liquid NH_3 remains diamagnetic
57. Which ion forms hydroxide easily soluble in water?
- a) Zn^{2+} b) Ba^{2+} c) Mg^{2+} d) Al^{3+}
58. One of the important use of quicklime is:
- a) As a purgative
 b) In bleaching silk
 c) In drying gases and alcohol
 d) In dyeing cotton
59. Which out of the following statements is not correct for anhydrous calcium chloride?
- a) It is prepared by heating hydrated calcium chloride above 533 K
 b) It is used for drying alcohols and NH_3
 c) It is used as a dehydrating agent to control snow and ice on highway and pavements
 d) When mixed in concrete, it gives quicker initial setting and improves its strength
60. On heating washing soda, we get:
- a) CO b) $\text{CO} + \text{CO}_2$ c) CO_2 d) $\text{H}_2\text{O}(v)$
61. Sodium forms Na^+ and not Na^{2+} because:
- a) Sodium contains only one electron in outermost shell
 b) First ionization potential is small and the difference in first and second ionization potentials is very large
 c) Radius of Na^+ is much smaller than of Na^+
 d) None of the above
62. Na_2CO_3 can be manufactured by Solvay process but K_2CO_3 cannot be prepared because:
- a) K_2CO_3 is more soluble
 b) K_2CO_3 is less soluble
 c) KHCO_3 is more soluble than NaHCO_3
 d) KHCO_3 is less soluble than NaHCO_3
63. Which of the following is incorrect?
- a) Mg burns in air releasing dazzling light rich in UV rays
 b) $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$ when mixed with ice gives, freezing mixture
 c) Mg cannot form complexes

- d) Be can form complexes due to its very small size
64. When sodium chloride solution is electrolysed, the gas that is liberated at the cathode is
 a) Oxygen b) Chlorine c) Hydrogen d) Air
65. Manufacture of NaOH is done by:
 a) Castner- Kellner process
 b) Solvay process
 c) Brine process
 d) Mond's process
66. Which one of the following statements is true for all the alkali metals?
 a) Their nitrates decompose on heating to give NO_2 and O_2 .
 b) Their carbonates decompose on heating to give CO_2 and the metal oxide.
 c) They react with oxygen to give mainly the oxide M_2O .
 d) They react with halogens to give the halides MX .
67. Strongest reducing agent among the following is:
 a) K b) Na c) Al d) Mg
68. The compound which is not soluble in dil. HCl is:
 a) BaSO_4 b) MnS c) ZnS d) BaCO_3
69. Which alkali metal is most metallic in character?
 a) Li b) Na c) K d) Cs
70. KI and CuSO_4 solution when mixed, give
 a) $\text{CuI}_2 + \text{K}_2\text{SO}_4$ b) $\text{Cu}_2\text{I}_2 + \text{K}_2\text{SO}_4$ c) $\text{K}_2\text{SO}_4 + \text{Cu}_2\text{I}_2 + \text{I}_2$ d) $\text{K}_2\text{SO}_4 + \text{CuI}_2 + \text{I}_2$
71. Sodium is manufactured by the electrolysis of a fused mixture of sodium and calcium chlorides in a steel cell using a graphite anode and an iron cathode. Calcium is not liberated since:
 a) It belongs to a higher group in the periodic table
 b) It combines with the liberated chlorine to form calcium chloride again
 c) Its discharge potential under these conditions is higher than that of sodium
 d) It is more readily fusible than sodium chloride
72. One mole of magnesium nitride on the reaction with excess water gives:
 a) Two mole of nitric acid
 b) One mole of nitric acid
 c) Two mole of ammonia
 d) One mole of ammonia
73. Which of the following statements is correct for CsBr_3 ?
 a) It is a covalent compound
 b) It contains Cs^{2+} and Br^- ions
 c) It contains Cs^+ , Br^- and Br_2 lattice molecules
 d) It contains Cs^+ and Br_3^- ions
74. Which of the following is known as dead burnt plaster?
 a) Gypsum b) Plaster of Paris c) Anhydrite d) None of these
75. Which of the compounds of cement sets at the slowest rate?
 a) Dicalcium silicate
 b) Tricalcium silicate
 c) Tricalcium aluminate
 d) Tetracalcium aluminoferrate
76. The alkali metal that reacts with nitrogen directly to form nitride is
 a) Li b) K c) Na d) Rb
77. Alkali metals are powerful reducing agents because:
 a) These are metals
 b) These are monovalent

- c) Basic magnesium carbonate
d) Magnesium carbonate
109. Which pair of elements would form the most ionic bond?
a) H, Cl b) K, Cl c) B, N d) C, O
110. Magnesium wire burns in the atmosphere of CO_2 because:
a) Magnesium acts as an oxidizing agent
b) Magnesium has 2 electrons in the outermost orbit
c) Magnesium acts as a reducing agent and removes oxygen from CO_2
d) None of the above
111. Potassium when heated strongly in oxygen, it forms:
a) K_2O b) KO c) K_2O_2 d) KO
112. Ordinary blackboard chalk is made up of:
a) CaCO_3 b) Gypsum c) Fluorspar d) $\text{Ca}_3(\text{PO}_4)_2$
113. Caustic soda solution is an absorbent for:
a) NH_3 b) CO_2 c) CO d) N_2O
114. Which of the following represents the composition of carnallite mineral?
a) $\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$ b) KNO_3
c) $\text{K}_2\text{SO}_4 \cdot \text{MgSO}_4 \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ d) $\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$
115. The element that forms a solid basic oxide at room temperature is:
a) Mg b) S c) H d) P
116. Which alkali metal is frequently used in solar cells?
a) Na b) Li c) K d) Cs
117. Which gives apple green colour in fireworks?
a) Na b) K c) Ba d) Ca
118. Sodium nitrate decomposes above 800°C and does not give:
a) N_2 b) O_2 c) NO_2 d) Na_2O
119. Which of the following process is used in the extractive metallurgy of magnesium?
a) Fused salt electrolysis
b) Self reduction
c) Aqueous solution electrolysis
d) Thermite reduction
120. In the replacement reaction
 $\text{CI} + \text{MF} \rightarrow \text{CF} + \text{MI}$
The reaction will be most favourable if M happens to be:
a) Na b) K c) Rb d) Li
121. The substance used in Holme's signal of the ship is a mixture of
a) $\text{CaC}_2 + \text{Ca}_3\text{P}_2$ b) $\text{Ca}_3(\text{PO}_4)_2 + \text{Pb}_3\text{O}_4$ c) $\text{H}_3\text{PO}_4 + \text{CaCl}_2$ d) $\text{NH}_3 + \text{HOCl}$
122. Causticisation process is used for the preparation of:
a) Caustic soda b) Caustic potash c) Baryta d) Slaked lime
123. Which of the following alkali metal ion in aqueous solution is the best conductor of electricity?
a) Li^+ b) Na^+ c) Cs^+ d) K^+
124. Indian saltpetre is:
a) KNO_3 b) NaNO_3 c) NaCl d) Na_2CO_3
125. The action of dilute HNO_3 on magnesium gives:
a) NO b) H_2 c) NO_2 d) NH_4NO_3
126. Brine is chemically:
a) Conc. Solution of Na_2CO_3
b) Conc. Solution of Na_2SO_4
c) Conc. Solution of NaCl

- d) Conc. Solution of alum
127. The atomic numbers of four elements are given below. Which is an alkaline earth metal?
 a) 10 b) 20 c) 30 d) 40
128. The plaster of Paris is:
 a) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ b) CaSO_4 c) $2\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ d) $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$
129. The ashes of plants contain alkali metals, 90% of which is:
 a) Li b) K c) Na d) Rb
130. At high temperature nitrogen combines with CaC_2 to give:
 a) Calcium cyanide b) Calcium cyanamide c) Calcium carbonate d) Calcium nitride
131. Superphosphate of lime is a mixture of:
 a) Primary calcium phosphate and Epsom
 b) Primary magnesium phosphate and Epsom
 c) Primary magnesium phosphate and gypsum
 d) Primary calcium phosphate and gypsum
132. A solid is a compound of group 1 element and it gives a bright red colour in the flame test. The solid is
 a) LiBr b) CsCl c) KCl d) NaCl
133. When sodium metal is dissolved in liquid ammonia, a blue solution is formed. The blue colour is due to:
 a) Solvated Na^+ ions b) Solvated electrons c) Solvated NH_2^- ions d) Solvated protons
134. The chemical which is used for plastering the broken bones is
 a) $(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$ b) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ c) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ d) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
135. Magnesium burns in CO_2 to form:
 a) MgO and CO b) MgCO_3 c) MgO and C d) MgO_2
136. Which one is not a correct formula?
 a) H_2S b) NaHSO_4 c) SiO_2 d) NaSiO_3
137. Plaster of Paris on making paste with little water sets to hard mass due to formation of
 a) CaSO_4 b) $\text{CaSO}_4 \cdot 1/2 \text{H}_2\text{O}$ c) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$ d) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
138. The most reactive element among the following is:
 a) Mg b) Ca c) Sr d) Ba
139. Which removes temporary hardness of water and is used in the manufacture of bleaching powder?
 a) Slaked lime $\text{Ca}(\text{OH})_2$ b) Plaster of Paris c) Epsom d) hydrolith
140. A piece of magnesium ribbon was heated to redness in an atmosphere of N_2 and then treated with H_2O , the gas evolved is:
 a) Ammonia b) Hydrogen c) Nitrogen d) Oxygen
141. Gypsum is:
 a) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ b) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$ c) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ d) $\text{CaSO}_4 \cdot 3\text{H}_2\text{O}$
142. Identify the correct statement:
 a) Elemental sodium can be prepared and isolated by electrolysis of an aqueous solution of sodium chloride
 b) Elemental sodium is a strong oxidising agent
 c) Elemental sodium is insoluble in ammonia
 d) Elemental sodium is easily oxidised
143. Water glass is:
 a) Another name for sodium silicate
 b) A special form of glass to store water only
 c) Hydrated form of glass
 d) Hydrated silica
144. LiAlH_4 is obtained by reacting an excess of ...with an ethereal solution of AlCl_3 :
 a) LiCl b) LiH c) Li d) LiOH
145. The correct order regarding the solubility of alkaline earth metal chlorides in water is:
 a) $\text{BeCl}_2 < \text{MgCl}_2 < \text{CaCl}_2 < \text{SrCl}_2 < \text{BaCl}_2$

- b) $\text{MgCl}_2 > \text{CaCl}_2 > \text{BeCl}_2 > \text{BaCl}_2 > \text{SrCl}_2$
 c) $\text{BaCl}_2 > \text{MgCl}_2 > \text{CaCl}_2 > \text{BeCl}_2 > \text{SrCl}_2$
 d) $\text{BeCl}_2 > \text{MgCl}_2 > \text{CaCl}_2 > \text{SrCl}_2 > \text{BaCl}_2$
146. The correct order of solubility of fluorides at alkaline earth metals is:
 a) $\text{MgF}_2 > \text{BaF}_2 > \text{SrF}_2 > \text{CaF}_2 > \text{BeF}_2$
 b) $\text{BeF}_2 > \text{MgF}_2 > \text{CaF}_2 > \text{SrF}_2 > \text{BaF}_2$
 c) $\text{BaF}_2 > \text{SrF}_2 > \text{CaF}_2 > \text{MgF}_2 > \text{BeF}_2$
 d) None of the above
147. The ease of adsorption of the hydrates alkali metal ions on an ion-exchange resins follows the order:
 a) $\text{K}^+ < \text{Na}^+ < \text{Rb}^+ < \text{Li}^+$
 b) $\text{Na}^+ < \text{Li}^+ < \text{K}^+ < \text{Rb}^+$
 c) $\text{Li}^+ < \text{K}^+ < \text{Na}^+ < \text{Rb}^+$
 d) $\text{Rb}^+ < \text{K}^+ < \text{Na}^+ < \text{Li}^+$
148. The hydration energy of Mg^{2+} ions is larger than that of:
 a) Al^{3+} b) Na^+ c) Be^{2+} d) Mg^{3+}
149. Chile saltpetre is the ore of:
 a) Iodine b) Bromine c) Sodium d) Magnesium
150. Thomas slag is
 a) $\text{Ca}_3(\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$ b) $\text{Ca}_3(\text{PO}_4)_2 \cdot \text{CaSiO}_3$ c) MgSiO_3 d) CaSiO_3
151. Sodium carbonate is manufactured by Solvay process. The products those are recycled are:
 a) CO_2 and NH_3 b) CO_2 and NH_4Cl c) NaCl and CaO d) CaCl_2 and CaO
152. Based on lattice energy and other considerations which one of the following alkali metal chlorides is expected to have the highest melting point?
 a) RbCl b) KCl c) NaCl d) LiCl
153. Sodium carbonate on heating gives:
 a) Water vapours
 b) Carbon dioxide
 c) Carbon dioxide + water vapour
 d) None of the above
154. The correct order of hydration energy of alkaline earth metal ions is:
 a) $\text{Be}^{2+} > \text{Mg}^{2+} > \text{Ca}^{2+} > \text{Sr}^{2+} > \text{Ba}^{2+}$
 b) $\text{Ba}^{2+} > \text{Be}^{2+} > \text{Ca}^{2+} > \text{Mg}^{2+} > \text{Sr}^{2+}$
 c) $\text{Mg}^{2+} > \text{Be}^{2+} > \text{Ba}^{2+} > \text{Ca}^{2+} > \text{Sr}^{2+}$
 d) None of the above
155. Which one has highest lattice energy?
 a) NaBr b) NaF c) NaCl d) NaI
156. When CO_2 is bubbled into an aqueous solution of Na_2CO_3 , the following is formed:
 a) H_2O b) OH^- c) NaHCO_3 d) NaOH
157. The decomposition temperature is maximum for
 a) SrCO_3 b) CaCO_3 c) MgCO_3 d) BaCO_3
158. A metal carbonate is sparingly soluble in water and evolves CO_2 on heating. The metal is:
 a) An alkali metal
 b) A noble metal
 c) An alkaline earth metal
 d) None of these
159. Anhydrous mixture of KF and HF contains which type of ions?
 a) $\text{K}^+, \text{H}^+, \text{F}^-$ b) $(\text{KF})^+(\text{HF})^-$ c) KH^+, F^- d) $\text{K}^+(\text{HF}_2)^-$
160. Microcosmic salt is
 a) $\text{Na}_4\text{P}_2\text{O}_7$ b) $\text{Na}(\text{NH}_4)\text{HPO}_4$ c) $\text{Na}(\text{NH}_3)\text{HPO}_4 \cdot 4\text{H}_2\text{O}$ d) MgNH_4PO_4

161. Sodium burns in dry air to give:
 a) Na_2O b) Na_2O_2 c) NaO_2 d) Na_3N
162. The byproduct of Solvay process is:
 a) CO_2 b) CaCl_2 c) NH_3 d) CaCO_3
163. Select the incorrect statement
 a) Be can form complexes due to its very small size
 b) Mg cannot form complexes
 c) Mg burns in air releasing dazzling light rich in UV rays
 d) $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$ when mixed with ice gives freezing mixture
164. Acidified solution of sodium thiosulphate is unstable because in thiosulphate:
 a) The sulphur atoms are at unstable oxidation state of +2
 b) The two sulphur atoms are in different oxidation states of +5 and -1
 c) The S—S bond are unstable bonds
 d) Thio compounds contain sulphur in zero oxidation state
165. From which mineral Ra is obtained?
 a) Limestone b) Rutile c) Pitch blende d) Haematite
166. Metals belonging to the same group in the periodic table are:
 a) Magnesium and sodium
 b) Magnesium and copper
 c) Magnesium and barium
 d) Magnesium and potassium
167. In the extraction of sodium by Down's process, cathode and anode are respectively
 a) Copper and nickel b) Copper and chromium
 c) Nickel and chromium d) Iron and graphite
168. Which of the following statements is false regarding saline hydrides?
 a) In the molten state they conduct electricity
 b) They dissolve in water giving off hydrogen
 c) They are used as reducing agents
 d) They are covalent in nature
169. Among the alkali metals caesium is the most reactive because
 a) Its incomplete shell is nearest to the nucleus.
 b) It has a single electrons in the valence shell.
 c) It is the heaviest alkali metal.
 d) The outermost electron is more loosely bound than the outermost electron of the other alkali metals.
170. Soda ash is chemically:
 a) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$ b) NaOH c) NaHCO_3 d) Na_2CO_3 (anhydrous)
171. Which of the following ions, will have maximum hydration energy?
 a) Sr^{2+} b) Ba^{2+} c) Ca^{2+} d) Mg^{2+}
172. Chlorophyll contains:
 a) Na b) K c) Mg d) Mn
173. Oxygen can be obtained by heating:
 a) Na_2O b) Fe_2O_3 c) Fe_3O_4 d) BaO_2
174. Which of the following pairs of substances would give same gaseous product in reaction with water?
 a) Na and Na_2O_2 b) Ca and CaH_2 c) Ca and CaO d) Ba and BaO_2
175. Which of the following is not correct?
 a) Iodine oxidises sodium thiosulphate to sodium tetrathionate.
 b) Sodium thiosulphate is soluble in water.
 c) Ozone is used to identify the presence of unsaturation in alkenes.
 d) Sodium thiosulphate reacts with iodine to form sodium sulphate.

176. Which of the following is not an ore of magnesium?
 a) Carnallite b) Dolomite c) Calamine d) Sea water
177. The chloride that can be extracted with ether:
 a) NaCl b) LiCl c) BaCl₂ d) CaCl₂
178. Iceland spar is:
 a) CaSiO₄ b) CaCO₃ c) CaF₂ d) NaAlF₆
179. Which will react with acid and alkalis both *i. e.*, (amphoteric)
 a) MgO b) CaO c) BaO d) BeO
180. Fire extinguishers contain H₂SO₄ and:
 a) NaHCO₃ and Na₂CO₃ b) NaHCO₃ solution c) Na₂CO₃ d) CaCO₃
181. The raw materials in Solvay process are:
 a) NaOH, CaO and NH₃
 b) Na₂CO₃, CaCO₃ and NH₃
 c) Na₂SO₄, CaCO₃ and NH₃
 d) NaCl, NH₃, CaCO₃
182. One mole of magnesium nitride on the reaction with an excess of water gives
 a) One mole of NH₃ b) Two moles of NH₃ c) One mole of HNO₃ d) Two moles of HNO₃
183. Slaked lime is:
 a) CaCO₃ b) CaO c) Ca(OH)₂ d) Ca(C₂O₄)
184. Sodium thiosulphate is prepared by
 a) Boiling Na₂SO₃ solution with S in alkaline medium
 b) Reducing Na₂SO₄ solution with H₂S
 c) Boiling Na₂SO₃ solution with S in acidic medium
 d) Neutralising H₂S₂O₃ solution with NaOH
185. H₂O is dipolar whereas BeF₂ is not. It is because:
 a) The electronegativity of F is greater than O
 b) H₂O involves H-bonding whereas BeF₂ is discrete molecule
 c) H₂O is linear and BeF₂ is angular
 d) H₂O is angular and BeF₂ is linear
186. Setting of plaster of Paris involves
 a) Oxidation with atmospheric oxygen b) Combination with atmospheric CO₂
 c) Dehydration d) Hydration to yield another hydrate
187. The following compounds have been arranged in order of their increasing thermal stabilities. Identify the correct order.
 K₂CO₃ (I) MgCO₃ (II)
 CaCO₃ (III) BeCO₃ (IV)
 a) I < II < III < IV b) IV < II < III < I c) IV < II < I < III d) II < IV < III < I
188. The only element which is radioactive among alkali metals is:
 a) Cs b) Fr c) Rb d) Li
189. The pair of compounds which cannot exist together in solution is:
 a) NaHCO₃ and NaOH b) Na₂CO₃ and NaHCO₃ c) Na₂CO₃ and NaOH d) NaHCO₃ and NaCl
190. Potassium is kept in
 a) Alcohol b) Kerosene c) Liquid ammonia d) Water
191. Which one of the alkali metals, forms only, the normal oxide, M₂O on heating in air?
 a) Li b) Na c) Rb d) K
192. Common table salt becomes moist and does not pour easily in rainy season because:
 a) It contains magnesium chloride
 b) It contains magnesium carbonate
 c) It melts slightly in rainy season

- d) Sodium chloride is hygroscopic
193. The calcium salt used as manure is:
 a) CaC_2 b) CaCN_2 c) CaCO_3 d) CaSO_4
194. The product obtained on fusion of BaSO_4 and Na_2CO_3 is
 a) BaCO_3 b) BaO c) Ba(OH)_2 d) BaHSO_4
195. Lithium iodide is:
 a) Ionic b) Covalent c) Partially covalent d) None of these
196. Mg burns in CO to produce
 a) $\text{MgO} + \text{C}$ b) MgO_2 c) $\text{MgO} + \text{C}$ d) MgCO_3
197. A mixture of Al(OH)_3 and Fe(OH)_3 can be separated easily by treating it with:
 a) HCl b) NH_4OH c) HNO_3 d) NaOH
198. Gypsum on heating at $120\text{-}230^\circ\text{C}$ gives:
 a) Hemihydrate b) Monohydrate c) Dehydrates d) Anhydrous salt
199. Sodium metal cannot be stored under:
 a) Benzene b) Kerosene c) Alcohol d) Toluene
200. Which ion has closed shell electronic configuration?
 a) Li b) Li^+ c) Li^{2+} d) Li^-
201. Which out of the following compounds is called photographer's fixer?
 a) Na_2SO_3 b) $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ c) Na_2SO_4 d) Na_2S
202. BeF_2 is soluble in water whereas fluorides of other alkaline earth metals are insoluble because of:
 a) Ionic nature of BeF_2
 b) Covalent nature of BeF_2
 c) Greater hydration energy of Be^{2+} ion as compared to its lattice energy
 d) None of the above
203. Sodium thiosulphate, $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ is used in photography to:
 a) Reduce the silver bromide grains to metallic silver
 b) Convert the metallic silver to silver salt
 c) Remove undecomposed AgBr as soluble silver thiosulphate complex
 d) Remove reduced silver
204. Hypo is used in:
 a) Iodimetric titrations b) Iodometric titrations c) Photography d) All of these
205. Which of the following is an epsom salt?
 a) $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$ b) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
 c) $\text{MgSO}_4 \cdot 2\text{H}_2\text{O}$ d) $\text{BaSO}_4 \cdot 2\text{H}_2\text{O}$
206. Magnesium form Mg^{2+} and not Mg^+ because:
 a) Magnesium (II) carbonate is insoluble in water
 b) Generally higher oxidation states are preferred by metals
 c) Ionic radius of Mg(II) is smaller than of Mg(I)
 d) Hydration energy of divalent magnesium ion is higher
207. Which on mixing with water gives a hissing sound and becomes very hard?
 a) Slaked lime
 b) Quick lime
 c) Limestone
 d) Superphosphate of lime
208. Molecular formula of Glauber's salt is
 a) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ b) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ c) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ d) $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$
209. Dead burnt is:
 a) CaSO_4 b) Na_2CO_3 c) Anhydrous Na_2SO_4 d) Anhydrous CuSO_4
210. Bleaching powder is obtained by interaction of Cl_2 and:

- a) dil. $\text{Ca(OH)}_2(aq)$ b) dry CaO c) conc. $\text{Ca(OH)}_2(aq)$ d) Dry slaked lime
211. Baking soda is:
 a) NaHCO_3 b) $\text{NaHCO}_3 \cdot 6\text{H}_2\text{O}$ c) Na_2CO_3 d) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
212. Which statement is false for alkali metals?
 a) Lithium is the strongest reducing agent
 b) Sodium is amphoteric in nature
 c) Li^+ is exceptionally small
 d) All alkali metals give blue solution in liquid ammonia
213. Most abundant salt of sodium in nature is:
 a) NaNO_3 b) Na_2SO_4 c) NaOH d) NaCl
214. Which alkaline earth metal forms peroxide on burning in air?
 a) Be b) Ca c) Sr d) Ba
215. In the manufacture of sodium hydroxide, byproduct obtained is:
 a) O_2 b) Cl_2 c) Na_2CO_3 d) NaCl
216. Alkaline earth metal oxide having the co-ordination number four is:
 a) BeO b) MgO c) SrO d) CaO
217. What are the products formed when an aqueous solution of magnesium bicarbonate is boiled?
 a) $\text{MgO}, \text{H}_2\text{O}, \text{CO}_2$ b) $\text{Mg(HCO}_3)_2, \text{H}_2\text{O}$ c) $\text{Mg(OH)}_2, \text{H}_2\text{O}$ d) $\text{Mg}, \text{CO}_2, \text{H}_2\text{O}$
218. A metal M forms water soluble MSO_4 and inert MO . MO in aqueous solution forms insoluble M(OH)_2 soluble in NaOH . Metal M is
 a) Be b) Mg c) Ca d) Si
219. Alkali metals are characterised by:
 a) Good conductors of heat and electricity
 b) High melting points
 c) Low oxidation potentials
 d) High ionisation potentials
220. Sodium thiosulphate is used in photography
 a) As AgBr grain is reduced to non-metallic silver b) To convert metallic silver into silver salt
 c) To remove reduced silver d) To remove undecomposed AgBr in the form of $\text{Na}_3[\text{Ag(S}_2\text{O}_3)_2]$ (a complex salt)
221. In which of the following, sodium carbonate is not used?
 a) In soap making b) In paper making c) In tyre making d) In baking of bread
222. Alkaline earth metals are not found free in nature because of their:
 a) Low melting point
 b) High boiling point
 c) Thermal instability
 d) Great chemical activity
223. The principal products obtained on heating iodine with concentrated caustic soda solution are:
 a) $\text{NaOI} + \text{NaI}$ b) $\text{NaIO}_3 + \text{NaI}$ c) $\text{NaOI} + \text{NaIO}_3 + \text{NaI}$ d) $\text{NaIO}_4 + \text{NaI}$
224. NaOCl is used as a bleaching agent and sterilising agent. It can be synthesised by the action of
 a) NaCl with H_2O b) NH_4Cl with NaOH
 c) Cl_2 with cold and dilute NaOH d) Cl_2 with hot and concentrated NaOH
225. The compound insoluble in acetic acid is:
 a) Calcium oxide b) Calcium carbonate c) Calcium hydroxide d) Calcium oxalate
226. Sodium carbonate contains:
 a) 5 molecules of crystalline water
 b) 10 molecules of crystalline water
 c) 3 molecules of crystalline water
 d) No molecule of crystalline water

227. Sodium carbonate reacts with SO_2 in aqueous solution to give:
 a) NaHCO_3 b) NaHSO_3 c) Na_2SO_3 d) NaHSO_4
228. A sudden large jump between the values of second and third ionization energies of an element would be associated with the electronic configuration:
 a) $1s^2, 2s^2 2p^6, 3s^1$ b) $1s^2, 2s^2 2p^6, 3s^2 3p^1$ c) $1s^2, 2s^2 2p^6, 3s^2 3p^2$ d) $1s^2, 2s^2 2p^6, 3s^2$
229. Which of the following reacts with water with high rate?
 a) Li b) Rb c) Na d) K
230. The substance used as pigment in paint is
 a) Borax b) Alumina c) Lithopone d) None of these
231. Acidic solution of $\text{S}_2\text{O}_3^{2-}$ is converted to in presence of I_2
 a) $\text{S}_4\text{O}_6^{2-} + \text{I}^-$ b) $\text{SO}_4^{2-} + \text{I}^-$ c) $\text{SO}_3 + \text{I}^-$ d) $\text{S}_4\text{O}_6^{2-} + \text{I}_3^-$
232. Soda lime is
 a) NaOH b) NaOH and CaO c) CaO d) Na_2CO_3
233. Lithopone is a mixture of:
 a) Barium sulphate and zinc sulphide
 b) Barium sulphide and zinc sulphide
 c) Calcium sulphate and zinc sulphide
 d) Calcium sulphide and zinc sulphide
234. Alkali metal chloride soluble in pyridine is:
 a) LiCl b) CsCl c) NaCl d) KCl
235. The characteristic colours given by calcium, strontium and barium in the flame test are respectively
 a) Brick red, apple green, crimson b) Crimson, apple green, brick red
 c) Crimson, brick red, apple green d) Brick red, crimson, apple green
236. Sodium thiosulphate is formed when:
 a) NaOH is neutralised by H_2SO_4
 b) Na_2S is boiled with S
 c) Na_2SO_3 is boiled with Na_2S and I_2
 d) Na_2SO_4 is boiled with Na_2S
237. In the following reaction,
 $\text{NaOH} + \text{S} \rightarrow \text{A} + \text{Na}_2\text{S} + \text{H}_2\text{O}$; A is
 a) Na_2SO_4 b) Na_2SO_3 c) Na_2S d) $\text{Na}_2\text{S}_2\text{O}_3$
238. Sodium peroxide which is a yellow solid, when exposed to air becomes white due to the formation of
 a) H_2O_2 b) Na_2O c) Na_2O and O_3 d) NaOH and Na_2CO_3
239. Sedimentary rocks laid down under water mainly contain:
 a) CaO b) $\text{Ca}(\text{OH})_2$ c) CaCO_3 d) CaSO_4
240. Potash alum is used in purification of water because:
 a) It kills the micro-organisms
 b) It precipitates the colloidal matter
 c) It removes the hardness of water
 d) It catalyses the removal of impurities
241. The main constituent of bones is:
 a) CaCO_3 b) CaF_2 c) CaSO_4 d) $\text{Ca}_3(\text{PO}_4)_2$
242. Mortar is a mixture of:
 a) CaCO_3 and CaO
 b) Slaked lime and water
 c) Slaked lime, sand and water
 d) None of the above
243. Sodium cannot be extracted by the electrolysis of brine solution because:
 a) Sodium liberated reacts with water to produce NaOH + H_2

- b) Sodium being more electropositive than hydrogen, H_2 is liberated at cathode and not sodium
 c) Electrolysis cannot take place with brine solution
 d) None of the above
244. The function of sand in mortar is:
 a) To decrease the hardness
 b) To make the mass compact
 c) To decrease the plasticity of the mass
 d) To prevent the excess shrinkage because of which cracks may result
245. The most homogeneous family in periodic table is of:
 a) Alkali metals b) Alkaline earth metals c) Volatile metals d) Coinage metals
246. Pick out the statement (s) which is (are) not true about the diagonal relationship of Li and Mg.
 (i) Polarising powers of Li^+ and Mg^{2+} are almost same.
 (ii) Like Li, Mg decomposes water very fast.
 (iii) $LiCl$ and $MgCl_2$ are deliquescent.
 (iv) Like Li, Mg does not form solid bicarbonates.
 a) (i) and (ii) b) (ii) and (iii) c) Only (ii) d) Only (i)
247. Which is most basic in character?
 a) $NaOH$ b) KOH c) $RbOH$ d) $LiOH$
248. On strong heating sodium bicarbonate changes into
 a) Sodium monoxide b) Sodium hydroxide c) Sodium carbonate d) Sodium peroxide
249. Fusion mixture is comprised of:
 a) $K_2CO_3 + Na_2CO_3$ b) $KHSO_4 + NaHSO_4$ c) $K_2CO_3 + NaHSO_4$ d) $KHSO_4 + Na_2SO_3$
250. Which of the following will liberate hydrogen by its reaction with hydrochloric acid?
 a) Copper b) Phosphorus c) Mercury d) Magnesium
251. Baking powder contains
 a) $NaHCO_3$, $Ca(H_2PO_2)_2$ and starch b) $NaHCO_3$, $Ca(H_2PO_2)_2$
 c) $NaHCO_3$, and starch d) $NaHCO_3$
252. In the hardening stage of plaster of Paris, the compound formed is
 a) $CaSO_4$ b) Orthorhombic $CaSO_4 \cdot 2H_2O$
 c) $CaSO_4 \cdot H_2O$ d) Monoclinic $CaSO_4 \cdot 2H_2O$
253. Magnesium has polarising power closer to that of:
 a) Li b) Na c) K d) Cs
254. Calcium does not combine directly with:
 a) O_2 b) N_2 c) H_2 d) Carbon
255. A fire of lithium, sodium and potassium can be extinguished by
 a) H_2O b) Nitrogen c) CO_2 d) Asbestose blanket
256. Halides of alkaline earth metals form hydrates such as $MgCl_2 \cdot 6H_2O$, $CaCl_2 \cdot 6H_2O$, $BaCl_2 \cdot 2H_2O$ and $SrCl_2 \cdot 2H_2O$. This shows that halides of group 2 elements:
 a) Are hygroscopic in nature
 b) Act as dehydrating agent
 c) Can absorb moisture from air
 d) All of the above
257. The process associated with sodium carbonate manufacture is known asprocess.
 a) Chamber b) Haber c) Leblanc d) Castner
258. Thomas slag is
 a) $CaSiO_3$ b) $Ca_3(PO_4)_2$ c) $MnSiO_3$ d) $CaCO_3$
259. The formula of Norwegian saltpetre is:
 a) $NaNO_3$ b) KNO_3 c) $Ca(NO_3)_2 \cdot CaO$ d) $Ba(NO_3)_2$
260. Calcium is extracted by the electrolysis of:

- a) Reversible
 b) Irreversible and endothermic
 c) Exothermic
 d) Endothermic
293. Which one is the highest melting point halide?
 a) NaCl b) NaBr c) NaF d) NaI
294. Beryllium shows diagonal relationship with
 a) Mg b) Na c) B d) Al
295. Which metal dissolves in NaOH with the evolution of H₂?
 a) Be b) Ca c) Mg d) Sr
296. Which one of the following order of stability is correct?
 a) MgCO₃ > CaCO₃ > SrCO₃ > BaCO₃ b) BaCO₃ > SrCO₃ > CaCO₃ > MgCO₃
 c) MgCO₃ > BaCO₃ > SrCO₃ > CaCO₃ d) CaCO₃ > BaCO₃ > MgCO₃ > SrCO₃
297. Baryta water is:
 a) BaO b) Ca(OH)₂ c) Ba(OH)₂ d) BaSO₄
298. Which reagent would enable you to remove SO₄²⁻ ions from solution containing both SO₄²⁻ and Cl⁻ ions?
 a) NaOH b) Pb²⁺ c) Ba(OH)₂ d) BaSO₄
299. In India, at the occasion of marriages, the fireworks used give green flame. Which one of the following radicals may be present?
 a) Na b) K c) Ba d) Ca
300. A substance which gives a brick red flame and breaks down on heating giving oxygen and a brown gas is:
 a) Calcium carbonate
 b) Magnesium nitrate
 c) Magnesium carbonate
 d) Calcium nitrate
301. When chlorine is passed through concentrated solution of KOH, the compound formed is:
 a) KClO b) KClO₂ c) KClO₃ d) KClO₄
302. Which of the following does not illustrate the anomalous properties of lithium?
 a) Li is much softer than the other group first metals
 b) The m.p. and b.p. of Li are comparatively high
 c) Li forms a nitride Li₃N unlike group first metals
 d) The ion of Li and its compounds are more heavily hydrated than those of the rest of the group elements
303. A white solid reacts with dil. HCl to give colourless gas that decolourises aqueous bromine. The solid is most likely to be:
 a) Sodium carbonate b) Sodium chloride c) Sodium acetate d) Sodium thiosulphate
304. Out of the following metals that cannot be obtained by electrolysis of the aqueous solution of its salts is
 a) Ag b) Cr c) Cu d) Mg
305. The correct increasing covalent character is:
 a) NaCl < LiCl < BeCl₂ b) BeCl₂ < NaCl < LiCl c) BeCl₂ < LiCl < NaCl d) LiCl < NaCl < BeCl₂
306. Portland cement has ...in its composition:
 a) Maximum amount of SiO₂
 b) Minimum amount of Al₂O₃
 c) Minimum amount of Fe₂O₃
 d) Maximum amount of CaO
307. The reaction of sodium with water is highly exothermic. The rate of reaction is lowered by:
 a) Lowering the temperature
 b) Mixing with alcohol
 c) Mixing with acetic acid
 d) Making an amalgam

308. Which of the following carbonates decomposes at lowest temperature?
 a) MgCO_3 b) CaCO_3 c) SrCO_3 d) BaCO_3
309. $\text{CaC}_2 + \text{N}_2 \rightarrow A$, product A is
 a) CaCN_2 b) CaCN_2 and C c) $\text{CaCN}_2 + \text{N}_2$ d) None of these
310. The metal present in Grignard reagent is:
 a) Ca b) Mg c) Zn d) Fe
311. The characteristic not related to alkali metal is
 a) High ionisation energy b) Their ions are isoelectronic with noble gases
 c) Low melting point d) Low electronegativity
312. A colourless salt gives violet colour to Bunsen flame and also turns moisture litmus paper blue. It is:
 a) Na_2CO_3 b) KNO_3 c) K_2CO_3 d) Cu(OH)_2
313. Which possesses highest lattice energy?
 a) NaCl b) LiF c) CsI d) KF
314. Which of the following has the largest size in aqueous solution?
 a) Rb^+ b) Na^+ c) K^+ d) Li^+
315. On prolonged exposure to air, sodium finally changes to:
 a) Na_2CO_3 b) Na_2O c) NaOH d) NaHCO_3
316. The compound which is insoluble in hot water and NH_3 is:
 a) PbCl_2 b) AgCl c) BaSO_4 d) None of these
317. Which of the following statements are correct for alkali metal compounds?
 (i) Superoxides are paramagnetic in nature.
 (ii) The basic strength of hydroxides increases down the group.
 (iii) The conductivity of chlorides in their aqueous solutions decreases down the group.
 (iv) The basic nature of carbonates in aqueous solutions is due to cationic hydrolysis.
 a) (i), (ii), and (iii) only
 b) (i), and (ii), only
 c) (ii), (iii) and (iv) only
 d) (iii) and (iv) only
318. Flash bulbs contain wire or foil of Mg packed in an atmosphere of:
 a) SO_3 b) O_2 c) Air d) N_2
319. The main product obtained when a solution of sodium carbonate reacts with mercuric chloride is
 a) Hg(OH)_2 b) $\text{HgCO}_3 \cdot \text{HgO}$ c) HgCO_3 d) $\text{HgCO}_3 \cdot \text{Hg(OH)}_2$
320. Milk of magnesia is:
 a) Mg(OH)_2 b) Ca(OH)_2 c) Ba(OH)_2 d) None of these
321. What would you observe if excess of dilute NaOH solution is added and shaken with an aqueous solution of aluminium chloride?
 a) A permanent white precipitate is formed immediately
 b) No change at first but a white precipitate is formed on standing
 c) A white precipitate is formed which later dissolves
 d) A green precipitate which turns red on standing in air
322. Which property of $\text{Na}_2\text{S}_2\text{O}_3$ makes it useful in photography?
 a) Photochemical property b) Complex formation property
 c) Oxidising agent d) Reducing agent
323. Ca on exposure in moist air forms a layer on surface of:
 a) CaCO_3 b) Ca(OH)_2 c) $\text{CaCO}_3 \cdot \text{Ca(OH)}_2$ d) CaO
324. Which of the following is different from the other three?
 a) MgO b) SnO c) ZnO d) Cr_2O_3
325. Salt used as a purgative is:
 a) NaCl b) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ c) $\text{Ca}_3\text{Al}_2\text{O}_6$ d) $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$

326. Tin dissolves in boiling caustic soda solution because of the formation of soluble:
 a) $\text{Sn}(\text{OH})_2$ b) $\text{Sn}(\text{OH})_4$ c) Na_2SnO_3 d) None of these
327. Alkali metals contain:
 a) 7 valence electrons b) 1 valence electron c) 4 valence electrons d) 2 valence electrons
328. The wire of flash bulbs are made up of:
 a) Mg b) Ba c) Cu d) Ag
329. Addition of excess of sodium hydroxide solution to a solution of nickel sulphate results in the formation of a:
 a) Green precipitate b) Pink colouration c) Blue precipitate d) Violet colouration
330. Several blocks of Mg are fixed to the bottom of a ship to:
 a) Prevent action of water and salt
 b) Prevent puncturing by under sea rocks
 c) Keep away the sharks
 d) Make the ship lighter
331. An inorganic compound first melts then resolidifies and then liberates a gas. It may be:
 a) KClO_3 b) KMnO_4 c) Al_2O_3 d) MnO_2
332. Sodium sulphate is soluble in water whereas barium sulphate is sparingly soluble because:
 a) The hydration energy of sodium sulphate is more than its lattice energy
 b) The lattice energy has no role to play in solubility
 c) The hydration energy of sodium sulphate is less than its lattice energy
 d) None of the above
333. NaCl crystals possesses:
 a) Simple cubic lattice
 b) Face centred cubic lattice
 c) Body centred cubic lattice
 d) Octahedral lattice
334. The carbonate that will not decompose on heating is
 a) Na_2CO_3 b) CaCO_3 c) BaCO_3 d) SrCO_3
335. The Ca^{2+} ion has the same number of electrons as:
 a) Mg^{2+} b) C_2H_6 c) Cu^{2+} d) Ne
336. When washing soda is heated
 a) CO_2 is released b) $\text{CO} + \text{CO}_2$ is released
 c) CO is released d) Water vapour is released
337. Which one of the following substances is used in the laboratory for a fast drying of neutral gases?
 a) Phosphorus pentoxide b) Active charcoal
 c) Anhydrous calcium chloride d) Na_3PO_4
338. The active constituent of bleaching powder is:
 a) $\text{Ca}(\text{OCl})_2$ b) $\text{Ca}(\text{OCl})\text{Cl}$ c) $\text{Ca}(\text{ClO}_2)_2$ d) $\text{Ca}(\text{ClO}_2)\text{Cl}$
339. Sodium metabisulphite is not:
 a) An antichlor b) A bleaching agent c) An oxidizing agent d) A reducing agent
340. Which of the following substances is used in the laboratory for fast drying of neutral gases?
 a) Sodium sulphate b) Phosphorus pentoxide
 c) Sodium phosphate d) Anhydrous calcium chloride
341. Sodium thiosulphate is a
 a) Reducing agent b) Oxidising agent c) Complexing agent d) Bleaching agent
342. Alkaline earth metal salts are:
 a) Paramagnetic b) Diamagnetic c) Ferromagnetic d) All of these
343. Molten NaCl conducts electricity due to the presence of:
 a) Free molecules b) Free electrons c) Free ions d) Atoms

344. The oxide of which metal is most stable to heat?
 a) K b) Ag c) Hg d) All of these
345. A solution of sodium thiosulphate on addition of few drops of ferric chloride gives violet colour due to the formation of
 a) $\text{Na}_2\text{S}_4\text{O}_6$ b) $\text{Fe}_2(\text{SO}_4)_3$ c) $\text{Fe}_2(\text{S}_2\text{O}_3)_3$ d) $\text{Fe}_2(\text{S}_2\text{O}_3)_2$
346. Excess of Na^+ ions in human system causes:
 a) Diabetes b) Anaemia c) Low blood pressure d) High blood pressure
347. Which has lowest thermal stability?
 a) Li_2CO_3 b) Na_2CO_3 c) K_2CO_3 d) Rb_2CO_3
348. When NaCl is dissolved in water, the sodium ions become:
 a) Oxidized b) Reduced c) Hydrolysed d) Hydrated
349. The difference of water molecules in gypsum and plaster of Paris is
 a) $\frac{5}{2}$ b) 2 c) $\frac{1}{2}$ d) $1\frac{1}{2}$
350. A radioactive element X decays giving two inert gases is:
 a) ${}^{238}_{92}\text{U}$ b) ${}^{226}_{88}\text{Ra}$ c) ${}^{239}_{90}\text{Th}$ d) ${}^{227}_{93}\text{Np}$
351. The chloride ion is isoelectronic with potassium. The size of chloride ion is:
 a) Larger than K^+ ion
 b) Smaller than K^+ ion
 c) Same as that of K^+ ion
 d) None of these
352. Which of the alkali metal chloride is expected to have highest m.p.?
 a) LiCl b) NaCl c) KCl d) RbCl
353. On heating sodium metal in a current of dry ammonia gas the compound formed is:
 a) Sodium nitrate b) Sodium hydride c) Sodium amide d) Sodium azide
354. Most powerful reducing agent is
 a) Li b) Na c) Ca d) Mg
355. The ionic conductance is least for
 a) Cs^+ b) Rb^+ c) K^+ d) Na^+
356. When carbon monoxide is passed over solid caustic soda heated to 200°C , it forms:
 a) Na_2CO_3 b) NaHCO_3 c) HCOONa d) None of these
357. MgBr_2 and MgI_2 are soluble in acetone because of:
 a) Their ionic nature
 b) Their covalent nature
 c) Their coordinate nature
 d) None is correct
358. Beryl is:
 a) BaSO_4 b) $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$ c) BeO d) BaCO_3
359. The property of the alkaline earth metals that increases with their atomic number is
 a) Solubility of their sulphates b) Ionisation energy
 c) Solubility of their hydroxides d) Electronegativity
360. Sodium chloride is known as:
 a) Rock salt b) Common salt c) Table salt d) All of these
361. Bleaching powder is a compound having the molecular formula
 a) CaClO b) CaOCl_3 c) CaOCl_2 d) CaClO_3
362. An aqueous solution of salt of sodium (NaX) on boiling with MgCl_2 gives white precipitate, hence anion X is:
 a) HCO_3^- b) NO_3^- c) CO_3^{2-} d) SO_4^{2-}
363. Which of the following is not known?

382. Siedlitz powder contains:
 a) CaCO_3 b) MgCO_3 c) NaHCO_3 d) KNO_3
383. Sodium bicarbonate is manufactured by:
 a) Cyanide process b) Thermite process c) Contact process d) Solvay process
384. Sodium reacts with water more vigorously than lithium because it:
 a) Has higher atomic weight
 b) Is more electronegative
 c) Is more electropositive
 d) Is a metal
385. Which one of the following on hydrolysis, gives the corresponding metallic hydroxide, H_2O_2 and O_2 ?
 a) Li_2O b) Na_2O_2 c) NaO_2 d) Na_2O
386. The alkali metals:
 a) Form salt like hydrides
 b) Form salts which are predominantly covalent
 c) Show decreased chemical reactivity with dry oxygen in going from Li to Cs
 d) Show increasing electronegativity from Li to Cs
387. Alkali metals are soft and have relatively low m.p. and low density. This is because:
 a) Interatomic bonds are weak
 b) Interatomic bonds are strong
 c) Of their ionization potential
 d) Of their position in the periodic table
388. The starting material used in Solvay's process are
 a) Sodium sulphate b) Brine solution c) Carnallite d) All of these
389. In Down's method for the extraction of sodium, the melting point of the electrolyte is lowered by adding
 a) Potassium chloride b) Calcium chloride
 c) Both calcium chloride and potassium fluoride d) Potassium fluoride only
390. In the alkaline earth metals, the element forming predominantly covalent compound is
 a) Ca b) Sr c) Mg d) Be
391. Which is used to remove N_2 from air?
 a) Mg b) P c) H_2SO_4 d) CaCl_2
392. Elements of IIA group having electronic configuration ns^2 are called alkaline earth elements because:
 a) They only occur in earth
 b) Their salts form only alkaline solution
 c) They are form divalent cations only
 d) Their oxides are non-fusible like earth matter
393. The right order of the solubility of sulphates of alkaline earth metals in water is
 a) $\text{Be} > \text{Ca} > \text{Mg} > \text{Ba} > \text{Sr}$ b) $\text{Mg} > \text{Be} > \text{Ba} > \text{Ca} > \text{Sr}$
 c) $\text{Be} > \text{Mg} > \text{Ca} > \text{Sr} > \text{Ba}$ d) $\text{Mg} > \text{Ca} > \text{Ba} > \text{Be} > \text{Sr}$
394. Lithium is the only alkali metal which is not placed in kerosene but is wrapped in paraffin wax, because:
 a) It reacts with kerosene
 b) It floats to the surface of kerosene because of low density
 c) It does not react with air and H_2O
 d) None of the above
395. In which of the following processes, fused sodium hydroxide is electrolysed at 330°C temperature for extraction of sodium?
 a) Castner's process b) Cyanide process c) Down's process d) Both (b) and (c)
396. When sulphur is heated with $\text{NaOH}(aq)$ the compounds formed are:
 a) $\text{Na}_2\text{S} + \text{H}_2\text{O}$
 b) $\text{Na}_2\text{SO}_3 + \text{H}_2\text{O}$

413. Bleaching action of bleaching powder is due to the liberation of
 a) O_2 b) OCl^- c) Cl_2 d) Cl^-
414. Barium burns in air to form
 a) Ba_2O_2 b) BaO_2 c) $Ba(OH)_2$ d) BaO
415. The lightest metal among these is
 a) Li b) Mg c) Ca d) Na
416. A gas reacts with CaO and not with $NaHCO_3$ is:
 a) CO_2 b) Cl_2 c) O_2 d) N_2
417. Which of the following hydroxides is insoluble in water?
 a) $Ba(OH)_2$ b) $Ca(OH)_2$ c) $Be(OH)_2$ d) $Mg(OH)_2$
418. Complex forming tendency is more for
 a) Na^+ b) K^+ c) Li^+ d) Rb^+
419. NO_2 is obtained by heating:
 a) $CsNO_3$ b) KNO_3 c) $LiNO_3$ d) $NaNO_3$
420. Alkali metals act as
 a) Good dehydrating agent b) Good reducing agent
 c) Good oxidising agent d) None of these
421. The mineral of magnesium is:
 a) Bauxite b) Malachite c) Carnallite d) Haematite
422. Mortar is a mixture of
 a) Cement, sand and water b) $MgCl_2$, tar and lime
 c) Lime, Portland cement and water d) None of the above
423. In between the metals *A* and *B*, both form oxide but *B* also forms nitride, when both burn in air. So *A* and *B* are:
 a) Cs, K b) Mg, Ca c) Li, Na d) K, Mg
424. Calcium hydride on hydrolysis gives:
 a) $CaO + H_2$ b) $Ca(OH)_2$ only c) $Ca(OH)_2 + H_2$ d) CaO only
425. $Be(OH)_2$ is insoluble in water, while $Ba(OH)_2$ is highly soluble due to
 a) Lattice energy difference b) Common ion effect
 c) Bond order d) Hard acid
426. The number and types of bonds between two carbon atoms in CaC_2 are:
 a) One sigma, one pi b) One sigma, two pi c) Two sigma, one pi d) Two sigma, two pi
427. Which of the following alkaline earth metal sulphate has hydration enthalpy by higher than its lattice enthalpy:
 a) $CaSO_4$ b) $BeSO_4$ c) $BaSO_4$ d) $SrSO_4$
428. NaOH is not used in:
 a) Soap b) Synthetic petrol c) Paper d) Synthetic fibre
429. Cement does not contain
 a) Calcium b) Aluminium c) Sulphur d) Iron
430. A solution of KOH in water is called:
 a) Potash lye b) Soda lye c) Salt cake d) None of these
431. Sodium has.....as compared to potassium:
 a) Less electronegativity
 b) More ionization enthalpy
 c) Large atomic radius
 d) Lower melting point
432. Sodium peroxide in contact with moist air turns white due to the formation of:
 a) Na_2O b) Na_2CO_3 c) $NaHCO_3$ d) NaOH
433. When $SiCl_4$ vapours are passed over hot Mg, the products formed are:

- a) $\text{SiCl}_2 + \text{MgCl}_2$ b) $\text{Mg}_2\text{Si} + \text{Cl}_2$ c) $\text{Si} + \text{MgCl}_2$ d) MgSiCl_6
434. Which alkaline earth metal nitride is volatile?
a) Be_3N_2 b) Mg_3N_2 c) Ca_3N_2 d) None of these
435. Which alkali metal bicarbonates does not exist as solid?
a) LiHCO_3 b) KHCO_3 c) CsHCO_3 d) NaHCO_3
436. Na_2SO_3 and NaHCO_3 may be distinguished by treating their aqueous solution with:
a) Litmus solution b) Dil. Acid c) MgO d) MgSO_4
437. The cation which forms a yellow precipitate with potassium chromate in acetic acid is:
a) NH_4^+ b) Ba^{2+} c) Ca^{2+} d) Na^+
438. The alkali metal which acts as a nutrient for plants is:
a) Na b) K c) Li d) Rb
439. Glauber's salt is
a) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ b) $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ c) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ d) $\text{CaSO}_4 \cdot 5\text{H}_2\text{O}$
440. Excess of dilute sodium hydroxide solution is gradually added with shaking to an aqueous solution of zinc sulphate. What would you observe?
a) A light blue precipitate is first formed which finally dissolves to give a deep blue solution
b) A white precipitate appears which dissolves to give a colourless solution
c) A white precipitate is formed which does not dissolve
d) No change takes place and the solution remains clear
441. Which of the following metals is most reactive towards water?
a) Na b) K c) Rb d) Cs
442. Some large white transparent crystals are left out in a bowl for several days. They are then observed to have changed their form into white powder. The crystals may have been of:
a) Ammonium chloride b) Sodium chloride c) Sodium carbonate d) Calcium oxide
443. Which of the following is not soluble in NaOH?
a) $\text{Fe}(\text{OH})_3$ b) $\text{Zn}(\text{OH})_2$ c) $\text{Al}(\text{OH})_3$ d) $\text{Sn}(\text{OH})_2$
444. Which of the following metal carbonates is decomposed on heating?
a) Na_2CO_3 b) MgCO_3 c) K_2CO_3 d) Rb_2CO_3
445. The dark red colour of bombs in fireworks is due to the presence of
a) Na b) Sr c) Ba d) K
446. Which metal does not form ionic hydride?
a) Na b) Rb c) Ca d) Be
447. Which compound is used in photography?
a) Na_2SO_5 b) $\text{Na}_2\text{S}_2\text{O}_8$ c) $\text{Na}_2\text{S}_2\text{O}_6$ d) $\text{Na}_2\text{S}_2\text{O}_3$
448. The weakest base among NaOH, $\text{Ca}(\text{OH})_2$, KOH and $\text{Be}(\text{OH})_2$ is:
a) NaOH b) $\text{Ca}(\text{OH})_2$ c) KOH d) $\text{Be}(\text{OH})_2$
449. Which chloride is covalent and soluble in ether?
a) BeCl_2 b) CaCl_2 c) CrCl_3 d) BaCl_2
450. Slaked lime [$\text{Ca}(\text{OH})_2$] is used in the manufacture of
a) Fire bricks b) Cement c) Medicine d) Pigment
451. Which one of the following is the highest melting halide?
a) NaCl b) NaI c) NaBr d) NaF
452. The chemical formula of feldspar is
a) KAlSi_3O_8 b) Na_3AlF_6
c) NaAlO_2 d) $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 4\text{Al}(\text{OH})_3$
453. Which of the following properties of lithium does not show diagonal relationship with magnesium?
a) Formation of Li^+ ion b) Formation of Li_3N
c) Solubility of LiHCO_3 d) Thermal decomposition of Li_2CO_3
454. Lithium is strongest reducing agent among alkali metals due to which of the following factor?

- a) Ionization energy b) Electron affinity c) Hydration energy d) Lattice energy
455. Li, Na among alkali metals show properties of:
 a) Noble gases
 b) Transition metal
 c) Inner transition metals
 d) Representative elements
456. Caesium oxide will be:
 a) Very strongly basic b) Acidic c) Weakly basic d) Amphoteric
457. When ammoniacal solution of common salt is saturated with carbon dioxide, we get:
 a) NH_4HCO_3 b) $(\text{NH}_4)_2\text{CO}_3$ c) NaHCO_3 d) MgCO_3
458. Microcosmic salt has the formula:
 a) $\text{Na}_2\text{HPO}_4 \cdot 2\text{H}_2\text{O}$
 b) $(\text{NH}_4)_2\text{HPO}_4 \cdot 2\text{H}_2\text{O}$
 c) $\text{Na}(\text{NH}_4)\text{HPO}_4 \cdot 4\text{H}_2\text{O}$
 d) None of these
459. The alkali metals form salt-like hydrides by the direct synthesis at elevated temperature. The thermal stability of these hydrides decreases in which of the following orders?
 a) $\text{KH} > \text{NaH} > \text{LiH} > \text{CsH} > \text{RbH}$
 b) $\text{NaH} > \text{LiH} > \text{KH} > \text{RbH} > \text{CsH}$
 c) $\text{LiH} > \text{NaH} > \text{KH} > \text{RbH} > \text{CsH}$
 d) $\text{CsH} > \text{RbH} > \text{KH} > \text{NaH} > \text{LiH}$
460. Which of the following has minimum values of cation-anion size ratio?
 a) NaCl b) KCl c) MgCl_2 d) CaF_2
461. Chemical A is used for water softening to remove temporary hardness. A reacts with sodium carbonate to generate caustic soda. When CO_2 is bubbled through A, it turns cloudy. What is A?
 a) CaCO_3 b) CaO c) $\text{Ca}(\text{OH})_2$ d) $\text{Ca}(\text{HCO}_3)_2$
462. Fusion of AgCl with Na_2CO_3 gives:
 a) Ag_2CO_3 b) Silver carbide c) Ag d) Ag_2
463. Which alkaline earth metal forms complex salts?
 a) Be b) Mg c) Ca d) Ba
464. Which electronic configuration represents the configuration of the most electropositive element?
 a) $[\text{He}]2s^1$ b) $[\text{Xe}]6s^1$ c) $[\text{He}]2s^2$ d) $[\text{Xe}]6s^2$
465. Le-blanc process is employed in the manufacture of
 a) Baking soda b) Washing soda c) Potash d) Plaster of Paris
466. Disodium hydrogen phosphate in presence of NH_4Cl and NH_4OH gives a white ppt. with a solution of Mg^{2+} ion. The precipitate is:
 a) $\text{Mg}(\text{H}_2\text{PO}_4)_2$ b) $\text{Mg}_3(\text{PO}_4)_2$ c) MgNH_4PO_4 d) MgHPO_4
467. Solubility of alkaline earth metal hydroxides increases from $\text{Be}(\text{OH})_2$ to $\text{Ba}(\text{OH})_2$ because:
 a) Hydration energy > lattice energy
 b) Lattice energy > hydration energy
 c) Hydration energy is equal to lattice energy
 d) None of the above
468. When a crystal of caustic soda is exposed to air, a liquid layer is deposited because:
 a) Crystal melts
 b) Crystal loses water
 c) Crystal absorbs moisture and CO_2
 d) Crystal sublimates
469. The most soluble halide in water is:
 a) CaF_2 b) CaCl_2 c) CaBr_2 d) CaI_2

470. Which does not form double salt?
 a) Li_2SO_4 b) Na_2SO_4 c) K_2SO_4 d) Rb_2SO_4
471. The metallic lustre exhibited by sodium is due to:
 a) Diffusion of Na^+ ions
 b) Oscillation of loose electrons
 c) Excitation of free protons
 d) Existence of body centred cubic lattice
472. The activity of alkaline earth metals as reducing agents
 a) Decreases from Be to Ba
 b) Increases from Be to Ba
 c) Increases from Be to Ca and decreases from Ca to Ba
 d) Decreases from Be to Ca and increases from Ca to Ba
473. The reaction of sodium thiosulphate with I_2 gives:
 a) Sodium sulphide b) Sodium sulphite c) Sodium sulphate d) Sodium tetrathionate
474. The main constituent of egg-shells is:
 a) CaCO_3 b) CaSiO_3 c) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ d) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
475. Which of the following is weakest base?
 a) $\text{Zn}(\text{OH})_2$ b) NaOH c) $\text{Ca}(\text{OH})_2$ d) KOH
476. Nitrates of I group (except LiNO_3) on heating give:
 a) O_2 b) N_2 c) NO d) NO_2
477. Which alkali metal emits largest wavelength in the flame test?
 a) Na b) Li c) K d) Cs
478. The solubilities of carbonates decrease down the magnesium group due to decrease in
 a) Lattice energies of solids b) Hydration energies of cations
 c) Interionic attraction d) Entropy of solution formation
479. The bleaching action of bleaching powder is due to the formation of:
 a) CaCl_2 b) CaSO_4 c) HClO d) $\text{Ca}(\text{ClO}_3)_2$
480. Which is industrially prepared by the electrolysis of aqueous NaCl ?
 a) Na_2CO_3 b) NaHCO_3 c) NaOH d) NaOCl
481. Which alkaline earth metal shows some anomalous behaviour and has the same electronegativity as aluminium?
 a) Ba b) Sr c) Ca d) Be
482. Oxone is name given to:
 a) Ozone b) Sodium peroxide c) Sodium oxide d) Sodamide
483. Barium is extracted from its ore:
 a) Dolomite b) Witherite c) Carnallite d) Gypsum
484. A chloride dissolves appreciably in cold water. When placed on a platinum wire in Bunsen flame, no distinctive colour is noticed. Which one is cation?
 a) Mg^{2+} b) Ba^{2+} c) Pb^{2+} d) Ca^{2+}
485. Which of the following sulphates has the highest solubility?
 a) BeSO_4 b) MgSO_4 c) BaSO_4 d) CaSO_4
486. The chemistry of lithium is very much similar to that of magnesium even though they are placed in different groups. The reason is:
 a) Both have nearly the same size
 b) The ratio of their charge to size is nearly the same
 c) Both have similar electronic configuration
 d) Both are found together in nature
487. Solvay process is used for the manufacture of

- a) NaOH b) Na_2CO_3 c) NH_3 d) NaCl
488. Consider the following abbreviations for hydrated alkali ions.
 $X = [\text{Li}(\text{H}_2\text{O})_n]^+$
 $Y = [\text{K}(\text{H}_2\text{O})_n]^+$
 $Z = [\text{Cs}(\text{H}_2\text{O})_n]^+$
 What is the correct order of size of these hydrated alkali ions?
 a) $X > Y > Z$ b) $Z > Y > X$ c) $X = Y = Z$ d) $Z > X > Y$
489. Which hydride is most stable?
 a) CsH b) NaH c) KH d) LiH
490. Least abundant metal in IIA group is:
 a) Sr b) Ca c) Ra d) Be
491. Ra is placed at the bottom of alkaline earth metals. The element should:
 a) Have the highest atomic volume
 b) Possess the minimum density
 c) Be less easily ionizable
 d) Be least electropositive
492. Who discovered radium?
 a) Bohr b) Fermi c) Curie d) Rutherford
493. Which gives least basic oxide?
 a) Mg b) Ba c) Be d) Ra
494. The decomposition temperature is maximum for
 a) MgCO_3 b) CaCO_3 c) BaCO_3 d) SrCO_3
495. Which liberates SO_2 with dilute H_2SO_4 ?
 a) Na_2SO_4 b) NaHSO_4 c) Na_2SO_3 d) Na_2S
496. Gun powder is:
 a) $\text{KNO}_3 + \text{Charcoal} + \text{S}$ b) $\text{NaNO}_3 + \text{KNO}_3 + \text{S}$ c) $\text{NaNO}_3 + \text{S}$ d) None of these
497. Sorrel's cement is
 a) Portland cement + MgO b) $\text{MgCl}_2 \cdot \text{CaSiO}_3 \cdot 2\text{H}_2\text{O}$
 c) $\text{MgCl}_2 \cdot 5\text{MgO} \cdot x\text{H}_2\text{O}$ d) $\text{CaSiO}_3 \cdot \text{MgCO}_3$
498. Zinc carbonate can be obtained from a solution of zinc chloride by adding:
 a) NaHCO_3 b) Na_2CO_3 c) CaCO_3 d) MgCO_3
499. Calcium phosphide is:
 a) Ca_3F_2 b) Ca_2P_3 c) CaP_2 d) Ca_3P
500. Which alkali metal reacts with nitrogen to form nitride?
 a) Li b) Na c) Cs d) None of these
501. The metal ion, that plays an important role in muscle contraction, is
 a) Be^{2+} b) Mg^{2+} c) Ca^{2+} d) Ba^{2+}
502. Which of the following on thermal decomposition yields a basic as well as an acidic oxide?
 a) KClO_3 b) CaCO_3 c) NH_4NO_3 d) NaNO_3
503. Sorel's cement is
 a) Portland cement + MgO b) $\text{MgCl}_2 \cdot \text{CaSiO}_3 \cdot 2\text{H}_2\text{O}$
 c) $\text{CaSiO}_3 \cdot \text{MgCO}_3$ d) $\text{MgCl}_2 \cdot 5\text{MgO} \cdot x\text{H}_2\text{O}$
504. When KI is added to acidified solution of sodium nitrite then
 a) NO gas is liberated and I_2 is set free b) N_2 gas is liberated and HI is produced
 c) N_2O gas is liberated and I_2 is set free d) N_2 gas is liberated and HOI is produced
505. Baryta is:
 a) BaO b) BaSO_4 c) BaCO_3 d) $\text{Ba}(\text{OH})_2$
506. Which pair cannot exist together in solution?
 a) NaHCO_3 and NaOH b) NaHCO_3 and NaCl c) NaHCO_3 and Na_2CO_3 d) NaCl and Na_2CO_3

507. CaCl_2 is used as
 a) Disinfectant b) Desiccating agent c) Medicine d) None of these
508. When carbon monoxide is passed over solid caustic soda heated to 200°C , it forms
 a) Na_2CO_3 b) NaHCO_3 c) HCOONa d) CH_3COONa
509. When HCl gas is passed through saturated solution of BaCl_2 a white ppt. is obtained. This is due to:
 a) Impurities in BaCl_2
 b) Impurities in HCl
 c) Precipitation of BaCl_2
 d) Formation of complex
510. NaOH is prepared by the electrolysis of:
 a) Aqueous solution of sodium chloride with platinum electrode
 b) Molten sodium chloride with graphite anode and iron cathode
 c) Sodium carbonate with platinum electrodes
 d) Sodium carbonate with nickel electrodes
511. Oxygen is obtained from bleaching powder by:
 a) The action of dilute acid
 b) The action of alkali
 c) Heating it with lime
 d) Heating it with cobalt salt
512. Aqueous solution of $\text{Na}_2\text{S}_2\text{O}_3$ on reaction with Cl_2 gives
 a) $\text{Na}_2\text{S}_4\text{O}_6$ b) NaHSO_4 c) NaCl d) NaOH
513. Washing soda is:
 a) Na_2CO_3 b) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$ c) $\text{Na}_2\text{CO}_3 \cdot 7\text{H}_2\text{O}$ d) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
514. Element found in plant systems which forms an important constituent of photosynthesis is:
 a) Fe b) Cu c) Na d) Mg
515. Chlorine reacts with 'X' to form bleaching powder. 'X' is
 a) Dry slaked lime b) Sodium hydroxide c) Acetone d) Chloral
516. Hesse's process is a method for the manufacture of:
 a) NaOH b) HNO_3 c) H_2SO_4 d) Bleaching powder
517. The most dangerous method of preparing hydrogen would be by the action of HCl on:
 a) Zn b) Fe c) K d) Al
518. Which ion forms a hydroxide highly soluble in water?
 a) Ni^{2+} b) K^+ c) Zn^{2+} d) Al^{3+}
519. Which one of the following is formed on dissolving I_2 in aqueous solution of KI?
 a) KIO_4 b) KIO c) KI_3 d) KIO_3
520. Beryllium and aluminium exhibit many properties which are similar. But, the two elements differ in
 a) Exhibiting maximum covalency in compounds b) Forming polymeric hydrides
 c) Forming covalent halides d) Exhibiting amphoteric nature in their oxides
521. Electrolysis of fused $\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ gives:
 a) Potassium only
 b) Magnesium only
 c) Magnesium and chlorine
 d) Potassium, magnesium and chlorine
522. The metal X is prepared by the electrolysis of fused chloride. It reacts with hydrogen to form a colourless solid from which hydrogen is released on treatment with water. The metal is:
 a) Al b) Ca c) Cu d) Zn
523. The molecular formula of potash alum is
 a) $\text{KAl}_2\text{S}_4\text{H}_{48}\text{O}_{40}$ b) $\text{K}_2\text{Al}_2\text{S}_4\text{H}_{48}\text{O}_{39}$ c) $\text{K}_2\text{Al}_2\text{S}_4\text{H}_{48}\text{O}_{40}$ d) $\text{KAl}_2\text{S}_4\text{H}_{48}\text{O}_{40}$
524. Dolomite is a carbonate ore of:

- a) Ca b) Mg c) Both Ca and Mg d) Neither Ca nor Mg
525. Which is known as crystal carbonate?
 a) Na_2CO_3 b) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$ c) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ d) None of these
526. Which is used in preparation of portland cement?
 a) Limestone, clay and sand
 b) Limestone, gypsum and sand
 c) Limestone, gypsum and alumina
 d) Limestone, clay and gypsum
527. The most electropositive element in alkali metals, is
 a) Na b) K c) Rb d) Cs
528. Caustic soda is:
 a) Efflorescent b) Deliquescent c) Hygroscopic d) Oxidant
529. Photoelectric effect is maximum in
 a) Cs b) Na c) K d) Li
530. The solubilities of carbonates of magnesium group decreases down due to decrease in:
 a) Inter ionic attractions
 b) Entropy of solution formation
 c) Lattice energy
 d) Hydration energy of cation
531. Highly pure dilute solution of sodium in liquid ammonia:
 a) Shows blue colour
 b) Do not exhibit electrical conductivity
 c) Produces sodium amide
 d) Produces hydrogen gas
532. Tincal is:
 a) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ b) NaNO_3 c) $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ d) NaCl
533. In the Castner's process for the extraction of sodium, the anode is made of metal
 a) Sodium b) Nickel c) Copper d) Iron
534. Which one of the following is true?
 a) NaOH is used in the concentration of bauxite ore.
 b) NaOH is a primary standard in volumetric analysis.
 c) Manganous hydroxide is soluble in excess of NaOH solution.
 d) NaOH solution does not react with Cl.
535. Anhydrous magnesium chloride can be prepared by heating $\text{MgCl}_2 \cdot 2\text{H}_2\text{O}$:
 a) In a current of dry HCl gas
 b) With carbon
 c) Until it fuses
 d) With lime
536. The yellow light for illumination of lamps is from:
 a) Mercury vapour lamp
 b) Sodium vapour lamp
 c) Neon gas lamp
 d) None of these
537. Thomas slag is referred to as
 a) Calcium silicate b) Calcium phosphate c) Barium phosphate d) Strontium silicate
538. Among the following, which is water insoluble?
 a) Sodium fluoride b) Potassium fluoride c) Beryllium fluoride d) Magnesium fluoride
539. Which of the following oxides is formed when potassium metal is burnt in excess of air?
 a) KO_2 b) K_2O_2 c) KO d) K_2O

540. Calcium cyanamide reacts with steam to form ammonia and.....
 a) $\text{Ca}(\text{OH})_2$ b) CaO c) $\text{Ca}(\text{HCO}_3)_2$ d) CaCO_3
541. Thermal decomposition of which compound yields a basic and acidic oxide simultaneously?
 a) KClO_3 b) NH_4NO_3 c) NaNO_3 d) CaCO_3
542. Which one of the following will dissolve in water most readily?
 a) I_2 b) BaCO_3 c) KF d) PbI_2
543. Which group of elements lose electrons more readily?
 a) Li, Na, K b) $\text{F}_2, \text{Cl}_2, \text{Br}_2$ c) N, P, As d) O, S, Sc
544. The nitride ion in lithium nitride is composed of:
 a) 7 protons +7 electrons
 b) 10 protons +7 electrons
 c) 7 protons +10 electrons
 d) 10 protons +10 electrons
545. A firework gave bright crimson light. It is probably a salt of:
 a) Ca b) Sr c) Ba d) Mg
546. One of the elements present in carnallite shows flame colouration. The colour of the flame is
 a) Orange b) Green c) Yellow d) Lilac
547. Which of the following dissolves in hot conc. NaOH solution?
 a) Fe b) Zn c) Cu d) Ag
548. Alkali metals have high oxidation potential and hence, they behave as
 a) Oxidising agents b) Lewis bases c) Reducing agents d) Electrolytes
549. The electrolyte employed in the extraction of sodium by Down's electrolysis method is:
 a) An aqueous solution of NaCl
 b) Molten NaCl
 c) Molten NaOH
 d) A molten mixture of MgCl_2 and NaCl
550. Which of the following represents calcium chlorite?
 a) $\text{Ca}(\text{ClO}_2)_2$ b) CaClO_2 c) $\text{Ca}(\text{ClO}_3)_2$ d) $\text{Ca}(\text{ClO}_4)_2$
551. Which compound gives acetylene on reaction with water?
 a) Al_4C_3 b) Mg_3N_2 c) CaC_2 d) CaH_2
552. Which represents nitrolime?
 a) $\text{CaCN}_2 + \text{C}$ b) $\text{CaC}_2 + \text{N}_2$ c) $\text{Ca}(\text{CN})_2 + \text{Ca}(\text{NO}_3)_2$ d) None of these
553. The substance not likely to contain CaCO_3 is
 a) A marble statue b) Calcined gypsum c) Sea shells d) Dolomite
554. What are the metal ions present in carnallite?
 a) Mg, K b) Al, Na c) Na, Mg d) Zn, Mg
555. Sodium reacts with water less vigorously than potassium because:
 a) It has higher atomic weight
 b) It is less electropositive
 c) It is more electronegative
 d) It is a metal
556. In which of the following reactions, MgO is not formed?
 a) $\text{Mg} + \text{CO}_2 \rightarrow$ b) $\text{Mg} + \text{dil. HNO}_3 \rightarrow$ c) $\text{Mg} + \text{NO} \xrightarrow{\Delta}$ d) $\text{Mg} + \text{B}_2\text{O}_3 \rightarrow$
557. Which metal is present in chlorophyll?
 a) Ca b) Co c) Zn d) Mg
558. LiAlH_4 is used as:
 a) An oxidizing agent b) A reducing agent c) A mordant d) A water softener
559. Which metal does not form ionic hydride?
 a) Ba b) Mg c) Ca d) Sr

560. Which of the following metal carbonates decomposes on heating?
a) MgCO_3 b) Na_2CO_3 c) K_2CO_3 d) Rb_2CO_3
561. Magnesium has polarizing power closer to that of:
a) Lithium b) Sodium c) Potassium d) Caesium
562. The ionic carbide is:
a) CaC_2 b) ZnC c) SiC d) TiC
563. The correct order of solubility of the sulphates of alkaline earth metals in water is
a) $\text{Be} > \text{Ca} > \text{Mg} > \text{Ba} > \text{Sr}$ b) $\text{Mg} > \text{Be} > \text{Ba} > \text{Ca} > \text{Sr}$
c) $\text{Be} > \text{Mg} > \text{Ca} > \text{Sr} > \text{Ba}$ d) $\text{Mg} > \text{Ca} > \text{Ba} > \text{Be} > \text{Sr}$
564. Compared with the alkaline earth metals, the alkali metals exhibit
a) Greater hardness b) Smaller ionic radii
c) Lower ionisation energies d) Highest boiling points

