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CHEMISTRY · JEE MAIN

s-Block Elements

Previous Year Questions with answers

130 questions · **111** papers · **2002–2023** · newest paper first

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What is in this PDF: every s-Block Elements question we hold from past JEE Main and AIEEE papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

Step-by-step solutions for every question are free in the EdLoop JEE app (Google Play) and on app.edloop.in. More chapters: pyq.edloop.in/free-pdfs/

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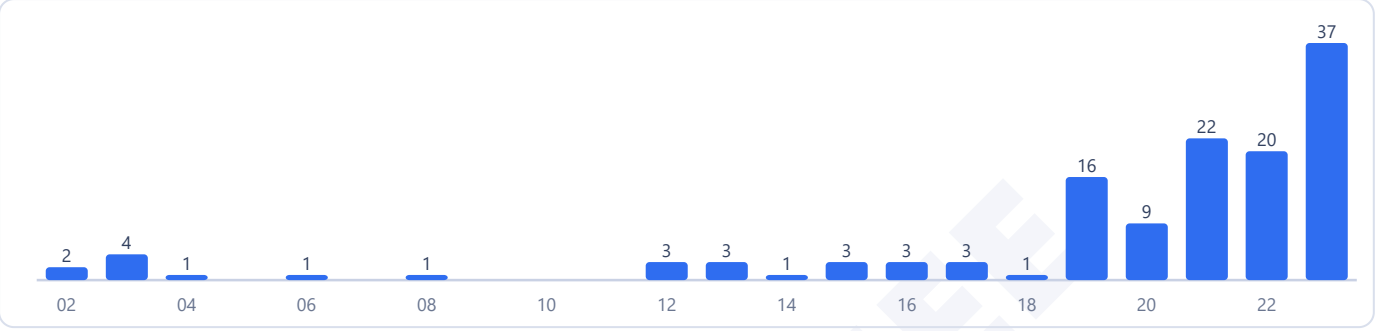
Chapter at a glance

2.3%	130	89 of 162	125 / 5
of Chemistry questions, 2019–2026	questions, 2002–2023	papers asked it, 2019–2026	MCQ / numerical, 2002–2023

Trend. Rising: 1.1 questions per paper in 2021–2023 against 0.8 in 2019–2020.

Questions per year



Counts are the questions we hold: 130 in 111 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2002–2023)

Alkaline Earth Metals	68
Alkali Metals	62

How often it comes up

The s-block elements covers alkali and alkaline earth metals and was formerly in the Class 11 curriculum before being removed in 2024, ranking 20 of 31 chapters with a 2.3% share of the chemistry section. During the 2019 to 2026 exam window, s-Block Elements accounted for 104 questions across 162 test papers, taking a 2.3% share of the chemistry section and ranking 20 of 31 chapters. Prior to 2019, from 2002 to 2018, it registered 26 questions across 38 papers with a 1.9% share. In the recent 2024 to 2026 seasons, the chapter saw 0 questions across 58 papers, delivering a 0.0% share. The overall trajectory has trended down following curriculum reduction.

Because the topic was formally deleted, it was not asked in 2024, 2025, or 2026. Prior to removal, the chapter averaged 0.6 questions per paper between 2019 and 2026, including 5 numerical answer questions.

Most-asked topics

Historical questions were split nearly evenly between two groups:

- Alkaline Earth Metals: Composed 68 total questions (52 during 2019 to 2026), last tested in 2023. Key topics involved hydration enthalpies, sulfate and carbonate thermal stabilities, solubility trends of hydroxides versus sulfates, anomalous covalent chemistry of beryllium, and industrial manufacturing of cement and quicklime.
- Alkali Metals: Accounted for 62 total questions (52 during 2019 to 2026), last examined in 2023. Primary themes centered on standard reduction potentials, liquid ammonia solutions producing deep blue solvated electrons, oxide and superoxide formation (such as KO_2 paramagnetism), the Solvay ammonia-soda process, and thermal decomposition of nitrates.

What the questions look like

Exam items were heavily factual, checking specific chemical reactions and comparative physical trends. Standard patterns included ordering hydration enthalpies across monovalent and divalent cations, explaining why lithium

carbonate decomposes on heating while other alkali metal carbonates remain stable, and identifying magnetic behaviors of normal oxides, peroxides, and superoxides.

Questions on industrial compounds evaluated raw materials and intermediate species formed during the Solvay process or reactions involved in setting plaster of Paris.

How to practise it

Because this unit has been dropped from the active syllabus, streamline your focus appropriately:

1. Prioritize active chapters: Direct inorganic chemistry study hours into Coordination Compounds and p-Block Elements rather than obsolete units. 2. Maintain awareness of flame test colors: Characteristic flame emissions for sodium, potassium, and calcium occasionally intersect with qualitative salt analysis. 3. Review solubility rules: Grasping why alkaline earth metal sulfate solubility decreases down the group provides helpful chemical intuition.

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Q1 JEE Main 2023 · 15 Apr · Shift 1 MCQ

Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R:
Assertion (A) : $\mathrm{BeCl_2}$ and $\mathrm{MgCl_2}$ produce characteristic flame
Reason (R) : The excitation energy is high in $\mathrm{BeCl_2}$ and $\mathrm{MgCl_2}$
In the light of the above statements, choose the correct answer from the options given below:

(A) (A) is true but (R) is false
(B) Both (A) and (R) are true but (R) is NOT the correct explanation of (A)
(C) Both ((A) and (R) are true and (R) is the correct explanation of (A)
(D) (A) is false but (R) is true

Answer: (D) (A) is false but (R) is true · Key from source paper

Q2 JEE Main 2023 · 15 Apr · Shift 1 MCQ

For a good quality cement, the ratio of silica to alumina is found to be

(A) 1.5
(B) 4.5
(C) 2
(D) 3

Answer: (D) 3 · Key from source paper

Q3 JEE Main 2023 · 13 Apr · Shift 1 MCQ

$\mathrm{Be(OH)_2}$ reacts with $\mathrm{Sr(OH)_2}$ to yield an ionic salt. Choose the incorrect option related to this reaction from the following

(A) Both Sr and Be elements are present in the ionic salt
(B) Beis tetrahedrally coordinated in the ionic salt
(C) The element Be is present in the cationic part of the ionic salt
(D) The reaction is an example of acid-base neutralization reaction

Answer: (C) The element Be is present in the cationic part of the ionic salt · Key from source paper

Q4 JEE Main 2023 · 13 Apr · Shift 2 MCQ

Better method for preparation of $\mathrm{BeF_2}$, among the following is

(A) $\mathrm{BeO + C + F_2 \xrightarrow{\Delta} BeF_2}$
(B) $\mathrm{(NH_4)_2BeF_4 \xrightarrow{\Delta} BeF_2}$
(C) $\mathrm{Be + F_2 \xrightarrow{\Delta} BeF_2}$
(D) $\mathrm{BeH_2 + F_2 \xrightarrow{\Delta} BeF_2}$

Answer: (B) $\mathrm{(NH_4)_2BeF_4 \xrightarrow{\Delta} BeF_2}$ · Key from source paper

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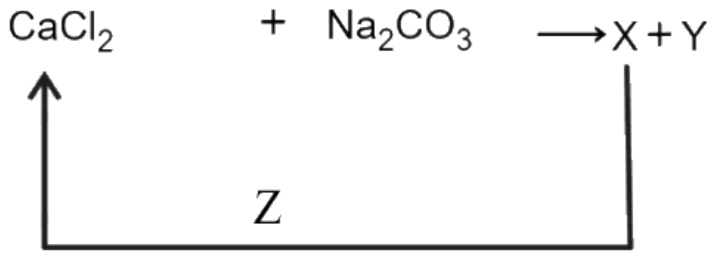
Q5 JEE Main 2023 · 12 Apr · Shift 1 MCQ

In the given reaction cycle
(see the figure above)
X, Y and Z respectively are

Q40. In the given reaction cycle



X, Y and Z respectively are

(1) $X - CaCO_3,\ Y - NaCl,\ Z - KCl$
(2) $X - CaCO_3,\ Y - NaCl,\ Z - HCl$
(3) $X - CaO,\ Y - NaCl + CO_2,\ Z - NaCl$
(4) $X - CaO,\ Y - NaCl + CO_2,\ Z - KCl$

(A) $X - CaCO_3$, $Y - NaCl$, $Z - KCl$
(B) $X - CaCO_3$, $Y - NaCl$, $Z - HCl$
(C) $X - CaO$, $Y - NaCl + CO_2$, $Z - NaCl$
(D) $X - CaO$, $Y - NaCl + CO_2$, $Z - KCl$

Answer: (B) $X - CaCO_3$, $Y - NaCl$, $Z - HCl$ · Key from source paper

Q6 JEE Main 2023 · 12 Apr · Shift 1 MCQ

The density of alkali metals is in the order

(A) K < Cs < Na < Rb
(B) Na < Rb < K < Cs
(C) Na < K < Cs < Rb
(D) K < Na < Rb < Cs

Answer: (D) K < Na < Rb < Cs · Key from source paper

Q7 JEE Main 2023 · 11 Apr · Shift 1 MCQ

Match List-I with List-II:
List-I
A. K
B. KCl
C. KOH
D. Li
List-II
I. Thermonuclear reactions

II. Fertilizer
III. Sodium potassium pump
IV. Absorbent of CO_2

(A) A(III), B(II), C(IV), D(I)
(B) A(III), B(IV), C(II), D(I)
(C) A(IV), B(I), C(III), D(II)
(D) A(IV), B(III), C(I), D(II)

Answer: (A) A(III), B(II), C(IV), D(I) · Key from source paper

Q8 JEE Main 2023 · 11 Apr · Shift 2 MCQ

Alkali metal from the following with least melting point is

(A) Cs
(B) Rb
(C) Na
(D) K

Answer: (A) Cs · Key from source paper

Q9 JEE Main 2023 · 11 Apr · Shift 2 Numerical

$Mg(NO_3)_2 \cdot XH_2O$ and $Ba(NO_3)_2 \cdot YH_2O$, represent formula of the crystalline forms of nitrate salts. Sum of X and Y is _____

Numerical value type: the answer is a number.

Answer: 6. · Key from source paper

Q10 JEE Main 2023 · 10 Apr · Shift 1 MCQ

The compound which does not exist is

(A) NaO_2
(B) BeH_2
(C) $PbEt_4$
(D) $NH_{42}BeF_4$

Answer: (A) NaO_2 · Key from source paper

Q11 JEE Main 2023 · 10 Apr · Shift 1 MCQ

Lime reacts exothermically with water to give 'A' which has low solubility in water. Aqueous solution of 'A' is often used for the test of CO_2, a test in which insoluble B is formed. If B is further reacted with CO_2 then soluble compound is formed. 'A' is

(A) Quick lime
(B) Slaked lime
(C) White lime
(D) Lime water

Answer: (B) Slaked lime · Key from source paper

Q12 JEE Main 2023 · 10 Apr · Shift 2 MCQ

Number of water molecules in washing soda and soda ash respectively are :

(A) 1 and 10
(B) 10 and 1
(C) 10 and 0
(D) 1 and 0

Answer: (C) 10 and 0 · Key from source paper

Q13 JEE Main 2023 · 8 Apr · Shift 1 MCQ

Given below are two statements :
Statement I : Lithium and Magnesium do not form superoxide
Statement II : The ionic radius of Li^+ is larger than ionic radius of Mg^{2+} In the light of the above statements, choose the most appropriate answer from the questions given below :
In the light of the above statements, choose the most appropriate answer from the questions given below :

(A) Statement I is incorrect but Statement II is correct
(B) Statement I is correct but Statement II is incorrect
(C) Both statement I and Statement II are incorrect
(D) Both Statement I and Statement II are correct

Answer: (D) Both Statement I and Statement II are correct · Key from source paper

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Q14 JEE Main 2023 · 8 Apr · Shift 1 MCQ

What is the purpose of adding gypsum to cement?

(A) To facilitate the hydration of cement
(B) To slow down the process of setting
(C) To give a hard mass
(D) To speed up the process of setting

Answer: (B) To slow down the process of setting · Key from source paper

Q15 JEE Main 2023 · 8 Apr · Shift 2 MCQ

For a good quality cement, the ratio of lime to the total of the oxides of Si, Al and Fe should be as close as to

(A) 4
(B) 1
(C) 2
(D) 3

Answer: (C) 2 · Key from source paper

Q16 JEE Main 2023 · 8 Apr · Shift 2 MCQ

Given below are two statements: One is labelled as Assertion **A** and the other is labelled as Reason **R**

Assertion **A**: Sodium is about 30 times as abundant as potassium in the oceans.

Reason **R**: Potassium is bigger in size than sodium.

In the light of the above statements, choose the correct answer from the options given below

(A) Both **A** and **R** are true and **R** is the correct explanation of **A**
(B) **A** is true but **R** is false
(C) Both **A** and **R** are true but **R** is NOT the correct explanation of **A**
(D) Both **A** and **R** are false

Answer: (C) Both A and R are true but R is NOT the correct explanation of A · Key from source paper

Q17 JEE Main 2023 · 6 Apr · Shift 1 MCQ

The setting time of Cement is increased by adding

(A) Clay
(B) Silica
(C) Gypsum
(D) Limestone

Answer: (C) Gypsum · Key from source paper

Q18 JEE Main 2023 · 6 Apr · Shift 2 MCQ

Ion having highest hydration enthalpy among the given alkaline earth metal ions is:

(A) Be^{2+}
(B) Sr^{2+}
(C) Ba^{2+}
(D) Ca^{2+}

Answer: (A) Be^{2+} · Key from source paper

Q19 JEE Main 2023 · 6 Apr · Shift 2 MCQ

Structures of $BeCl_2$ in solid state, vapour phase and at very high temperature respectively are:

(A) Monomeric, Dimeric, Polymeric
(B) Dimeric, Polymeric, Monomeric
(C) Polymeric, Monomeric, Dimeric
(D) Polymeric, Dimeric, Monomeric

Answer: (D) Polymeric, Dimeric, Monomeric · Key from source paper

Q20 JEE Main 2023 · 1 Feb · Shift 1 MCQ

Match List I with List II

List I	List II
(A) Slaked lime	(I) NaOH
(B) Dead burnt plaster	(II) $Ca(OH)_2$
(C) Caustic soda	(III) $Na_2CO_3 \cdot 10H_2O$
(D) Washing soda	(IV) $CaSO_4$

Choose the correct answer form the options given below:

(A) (A) - I, (B) - IV, (C) - II, (D) - III
(B) (A) - III, (B) - IV, (C) - II, (D) - I
(C) (A) - II, (B) - IV, (C) - I, (D) - III
(D) (A) - III, (B) - II, (C) -IV, (D) -I

Answer: (C) (A) - II, (B) - IV, (C) - I, (D) - III · Key from source paper

Q21 JEE Main 2023 · 1 Feb · Shift 1 MCQ

Choose the correct statement(s):
A. Beryllium oxide is purely acidic in nature.
B. Beryllium carbonate is kept in the atmosphere of CO_2.
C. Beryllium sulphate is readily soluble in water.
D. Beryllium shows anomalous behavior.
Choose the correct answer from the options given below:

(A) A, B and C only
(B) B,C and D only
(C) A and B only
(D) A only

Answer: (B) B,C and D only · Key from source paper

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Q22 JEE Main 2023 · 1 Feb · Shift 2 MCQ

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Gypsum is used for making fireproof wall boards.

Reason (R): Gypsum is unstable at high temperatures.

In the light of the above statements, choose the correct answer from the options given below:

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

(B) (A) is correct but (R) is not correct.

(C) (A) is not correct but (R) is correct.

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

Answer: (A) Both (A) and (R) are correct but (R) is not the correct explanation of (A). · Key from source paper

Q23 JEE Main 2023 · 31 Jan · Shift 2 MCQ

The element playing significant role in neuromuscular function and interneuronal transmission is :

(A) Be

(B) Mg

(C) Ca

(D) Li

Answer: (C) Ca · Key from source paper

Q24 JEE Main 2023 · 31 Jan · Shift 2 Numerical

The number of alkali metal(s), from Li, K, Cs, Rb having ionization enthalpy greater than 400 kJ mol^{-1} and forming stable super oxide is

Numerical value type: the answer is a number.

Answer: 2. · Key from source paper

Q25 JEE Main 2023 · 30 Jan · Shift 1 MCQ

The alkaline earth metal sulphate(s) which are readily soluble in water is/are:

(A) $BeSO_4$

(B) $MgSO_4$

(C) $CaSO_4$

(D) $SrSO_4$

(E) $BaSO_4$

Choose the correct answer from the options given below:

(A) A only
(B) B only
(C) A and B
(D) B and C

Answer: (C) A and B · Key from source paper

Q26 JEE Main 2023 · 30 Jan · Shift 2 MCQ

Chlorides of which metal are soluble in organic solvents:

(A) Ca
(B) Mg
(C) K
(D) Be

Answer: (D) Be · Key from source paper

Q27 JEE Main 2023 · 30 Jan · Shift 2 MCQ

Which of the following reaction is correct?

(A) $2\,\mathrm{LiNO_3} \xrightarrow{\Delta} 2\,\mathrm{LiNO_2} + \mathrm{O_2}$
(B) $4\,\mathrm{LiNO_3} \xrightarrow{\Delta} 2\,\mathrm{Li_2O} + 2\mathrm{N_2O_4} + \mathrm{O_2}$
(C) $4\,\mathrm{LiNO_3} \xrightarrow{\Delta} 2\,\mathrm{Li_2O} + 4\,\mathrm{NO_2} + \mathrm{O_2}$
(D) $2\,\mathrm{LiNO_3} \xrightarrow{\Delta} 2\mathrm{Li} + 2\,\mathrm{NO_2} + \mathrm{O_2}$

Answer: (C) $4\,\mathrm{LiNO_3} \xrightarrow{\Delta} 2\,\mathrm{Li_2O} + 4\,\mathrm{NO_2} + \mathrm{O_2}$ · Key from source paper

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Q28 JEE Main 2023 · 29 Jan · Shift 1 MCQ

The magnetic behaviour of $\mathrm{Li_2\,O}$, $\mathrm{Na_2\,O_2}$ and $\mathrm{KO_2}$, respectively, are

(A) diamagnetic, paramagnetic and diamagnetic
(B) paramagnetic, paramagnetic and diamagnetic
(C) paramagnetic, diamagnetic and paramagnetic
(D) diamagnetic, diamagnetic and paramagnetic

Answer: (D) diamagnetic, diamagnetic and paramagnetic · Key from source paper

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Q29 JEE Main 2023 · 29 Jan · Shift 1 MCQ

The correct order of hydration enthalpies is

(A) $\mathrm{K^+}$
(B) $\mathrm{Rb^+}$
(C) $\mathrm{Mg^{2+}}$

(D) Cs^+
(E) Ca^{2+}

Choose the correct answer from the options given below:

(A) C > A > E > B > D
(B) E > C > A > B > D
(C) C > E > A > D > B
(D) C > E > A > B > D

Answer: (D) C > E > A > B > D · Key from source paper

Q30 JEE Main 2023 · 29 Jan · Shift 2 Numerical

On heating, $LiNO_3$ gives how many compounds among the following?
Li_2O, N_2, O_2, $LiNO_2$, NO_2

Numerical value type: the answer is a number.

Answer: 3. · Key from source paper

Q31 JEE Main 2023 · 25 Jan · Shift 1 MCQ

Compound A reacts with NH_4Cl and forms a compound B. Compound B reacts with H_2O and excess of CO_2 to form compound C which on passing through or reaction with saturated NaCl solution forms sodium hydrogen carbonate. Compound A. B and C, are respectively.

(A) $CaCl_2, NH_3, NH_4HCO_3$
(B) $CaCl_2, NH_4^+, (NH_4)_2CO_3$
(C) $Ca(OH)_2, NH_3, NH_4HCO_3$
(D) $Ca(OH)_2, NH_4^+, (NH_4)_2CO_3$

Answer: (C) $Ca(OH)_2, NH_3, NH_4HCO_3$ · Key from source paper

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Q32 JEE Main 2023 · 25 Jan · Shift 2 MCQ

Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A:- The alkali metals and their salts impart characteristic colour to reducing flame.

Reason R:- Alkali metals can be detected using flame tests.

In the light of the above statements, choose the most appropriate answer form the options given below

(A) Both A and R are correct but R is NOT the correct explanation of A.
(B) A is correct but R is not correct.
(C) A is not correct but R is correct
(D) Both A and R are correct and R is the correct explanation of A.

Answer: (C) A is not correct but R is correct · Key from source paper

Q33 JEE Main 2023 · 25 Jan · Shift 2 MCQ

Which one among the following metals is the weakest reducing agent?

(A) K
(B) Rb
(C) Na
(D) Li

Answer: (C) Na · Key from source paper

Q34 JEE Main 2023 · 24 Jan · Shift 1 MCQ

Match Column I with Column II

Column I	Column II
A. Chlorophyll	I. Na_2CO_3
B. Soda ash	II. $CaSO_4$
C. Dentistry, Ornamental work	III. Mg^{2+} ions
D. Used in white washing	IV. $Ca(OH)_2$

(A) A - III, B - I, C - II, D - IV
(B) A - II, B - III, C - IV, D - I
(C) A - II, B - I, C - III, D - IV
(D) A - III, B - IV, C - I, D - II

Answer: (A) A - III, B - I, C - II, D - IV · Key from source paper

Q35 JEE Main 2023 · 24 Jan · Shift 1 MCQ

Reaction of BeO with ammonia and hydrogen fluoride gives 'A' which on thermal decomposition gives BeF_2 and NH_4F. What is 'A' ?

(A) H_3NBeF_3
(B) $(NH_4)_2BeF_4$
(C) NH_4BeF_3
(D) $(NH_4)_2Be_2F_6$

Answer: (B) $(NH_4)_2BeF_4$ · Key from source paper

Q36 JEE Main 2023 · 24 Jan · Shift 2 MCQ

Identify the correct statements about alkali metals.

A. The order of standard reduction potential $(M^+|M)$ for alkali metal ions is Na > Rb > Li.

B. CsI is highly soluble in water.

C. Lithium carbonate is highly stable to heat.

D. Potassium dissolved in concentrated liquid ammonia is blue and paramagnetic.

E. All alkali metal hydrides are ionic solids.

Choose the correct answer from the options given below

(A) A, B, D only
(B) C and E only
(C) A and E only
(D) A, B and E only

Answer: (C) A and E only · Key from source paper

Q37 JEE Main 2023 · 24 Jan · Shift 2 MCQ

Given below are two statements, one is labelled as **Assertion A** and the other is labelled as **Reason R**.

Assertion A : Beryllium has less negative value of reduction potential compared to the other alkaline earth metals

Reason R : Beryllium has large hydration energy due to small size of Be^{2+} but relatively large value of atomisation enthalpy.

In the light of the above statements, choose the most appropriate answer from the options given below.

(A) A is correct but R is not correct
(B) Both A and R are correct and R is the correct explanation of A
(C) A is not correct but R is correct
(D) Both A and R are correct and R is NOT the correct explanation of A

Answer: (B) Both A and R are correct and R is the correct explanation of A · Key from source paper

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Q38 JEE Main 2022 · 29 Jul · Shift 1 MCQ

Lithium nitrate and sodium nitrate, when heated separately, respectively, give

(A) $LiNO_2$ and $NaNO_2$
(B) Li_2O and Na_2O
(C) Li_2O and $NaNO_2$
(D) $LiNO_2$ and Na_2O

Answer: (C) Li_2O and $NaNO_2$ · Key from source paper

Q39 JEE Main 2022 · 29 Jul · Shift 2 MCQ

Portland cement contains 'X' to enhance the setting time. What is 'X'?

(A) $CaSO_4 \cdot \frac{1}{2}H_2O$
(B) $CaSO_4 \cdot 2H_2O$
(C) $CaSO_4$
(D) $CaCO_3$

Answer: (B) $CaSO_4 \cdot 2H_2O$ · Key from source paper

Q40 JEE Main 2022 · 28 Jul · Shift 1 MCQ

Which of the following statement is incorrect?

(A) Low solubility of LiF in water is due to its small hydration enthalpy.
(B) KO_2 is paramagnetic.
(C) Solution of sodium in liquid ammonia is conducting in nature.
(D) Sodium metal has higher density than potassium metal

Answer: (A) Low solubility of LiF in water is due to its small hydration enthalpy. · Key from source paper

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Q41 JEE Main 2022 · 28 Jul · Shift 2 MCQ

Statement I: An alloy of lithium and magnesium is used to make aircraft plates.
Statement II : The magnesium ions are important for cell-membrane integrity.
In the light of the above statements, choose the correct answer from the options given below

(A) Both Statement I and Statement II are true
(B) Both Statement I and Statement II are false
(C) Statement I is true but Statement II is false
(D) Statement I is false but Statement II is true

Answer: (B) Both Statement I and Statement II are false · Key from source paper

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Q42 JEE Main 2022 · 27 Jul · Shift 1 MCQ

Given below are two statements:
Statement I : The chlorides of Be and Al have Cl-bridged structure. Both are soluble in organic solvents and act as Lewis bases.
Statement II: Hydroxides of Be and Al dissolve in excess alkali to give beryllate and aluminate ions. In the light of the above statements. Choose the correct answer from the options given below.

(A) Both statement I and Statement II are true
(B) Both statement I and Statement II are false
(C) Statement I is true but Statement II is false
(D) Statement I is false but Statement II is true

Answer: (D) Statement I is false but Statement II is true · Key from source paper

Q43 JEE Main 2022 · 27 Jul · Shift 2 MCQ

An element A of group 1 shows similarity to an element B belonging to group 2. If A has maximum hydration enthalpy in group 1 then B is

(A) Mg
(B) Be
(C) Ca
(D) Sr

Answer: (A) Mg · Key from source paper

Q44 JEE Main 2022 · 26 Jul · Shift 1 MCQ

Reaction of $BeCl_2$ with $LiAlH_4$ gives :
(A) $AlCl_3$
(B) BeH_2
(C) LiH
(D) $LiCl$
(E) $BeAlH_4$
Choose the correct answer from options given below

(A) (A), (D) & (E)
(B) (A), (B) & (D)
(C) (D) & (E)
(D) (B), (C) & (D)

Answer: (B) (A), (B) & (D) · Key from source paper

Q45 JEE Main 2022 · 26 Jul · Shift 2 MCQ

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.
Assertion A : LiF is sparingly soluble in water. Reason R : The ionic radius of Li^+ ion is smallest among its group members, hence has least hydration enthalpy.
In the light of the above statements, choose the most appropriate answer from the options given below.

(A) Both A and R are true and R is the correct explanation of A
(B) Both A and R are true but R is NOT the correct explanation of A
(C) A is true but R is false
(D) A is false but R is true

Answer: (C) A is true but R is false · Key from source paper

Q46 JEE Main 2022 · 25 Jul · Shift 1 MCQ

Choose the correct order of density of the alkali metals

(A) $\mathrm{Li} < \mathrm{K} < \mathrm{Na} < \mathrm{Rb} < \mathrm{Cs}$
(B) $\mathrm{Li} < \mathrm{Na} < \mathrm{K} < \mathrm{Rb} < \mathrm{Cs}$
(C) $\mathrm{Li} < \mathrm{Na} < \mathrm{K} < \mathrm{Cs} < \mathrm{Rb}$
(D) $\mathrm{Cs} < \mathrm{Rb} < \mathrm{K} < \mathrm{Na} < \mathrm{Li}$

Answer: (A) $\mathrm{Li} < \mathrm{K} < \mathrm{Na} < \mathrm{Rb} < \mathrm{Cs}$ · Key from source paper

Q47 JEE Main 2022 · 25 Jul · Shift 2 MCQ

The correct order of density is

(A) $\mathrm{Be} > \mathrm{Mg} > \mathrm{Ca} > \mathrm{Sr}$
(B) $\mathrm{Sr} > \mathrm{Ca} > \mathrm{Mg} > \mathrm{Be}$
(C) $\mathrm{Sr} > \mathrm{Be} > \mathrm{Mg} > \mathrm{Ca}$
(D) $\mathrm{Be} > \mathrm{Sr} > \mathrm{Mg} > \mathrm{Ca}$

Answer: (C) $\mathrm{Sr} > \mathrm{Be} > \mathrm{Mg} > \mathrm{Ca}$ · Key from source paper

Q48 JEE Main 2022 · 29 Jun · Shift 1 MCQ

Match List-I with Match List-II
List-I (Metal)
List-II (Emitted light wavelength (nm))
(A) Li
(B) Na
(C) Rb
(D) Cs
(I) 670.8
(II) 589.2
(III) 780.0
(IV) 455.5
Choose the most appropriate answer from the options given below

(A) (A) – (I), (B) – (II), (C) – (III), (D) – (IV)
(B) (A) – (III), (B) – (II), (C) – (I), (D) – (IV)
(C) (A) – (III), (B) – (I), (C) – (II), (D) – (IV)
(D) (A) – (IV), (B) – (II), (C) – (I), (D) – (III)

Answer: (A) (A) – (I), (B) – (II), (C) – (III), (D) – (IV) · Key from source paper

Q49 JEE Main 2022 · 29 Jun · Shift 2 MCQ

Amongst baking soda, caustic soda and washing soda carbonate anion is present in :

(A) Washing Soda only
(B) washing soda and caustic soda only.
(C) washing soda and baking soda only.
(D) baking soda, caustic soda and washing soda.

Answer: (A) Washing Soda only · Key from source paper

Q50 JEE Main 2022 · 27 Jun · Shift 1 MCQ

$BeCl_2$ reacts with $LiAlH_4$ to give

(A) $Be + Li[AlCl_4] + H_2$
(B) $Be + AlH_3 + LiCl + HCl$
(C) $BeH_2 + LiCl + AlCl_3$
(D) $BeH_2 + Li[AlCl_4]$

Answer: (C) $BeH_2 + LiCl + AlCl_3$ · Key from source paper

Q51 JEE Main 2022 · 27 Jun · Shift 2 Numerical

BeO reacts with HF in presence of ammonia to give [A] which on thermal decomposition produces [B] and ammonium fluoride. Oxidation state of Be in [A] is

Numerical value type: the answer is a number.

Answer: 2. · Key from source paper

Q52 JEE Main 2022 · 26 Jun · Shift 1 MCQ

The correct order of melting point is

(A) $Sr > Ca > Mg > Be$
(B) $Be > Mg > Ca > Sr$
(C) $Be > Ca > Sr > Mg$
(D) $Be > Ca > Mg > Sr$

Answer: (C) $Be > Ca > Sr > Mg$ · Key from source paper

Q53 JEE Main 2022 · 26 Jun · Shift 2 MCQ

s-block element which cannot be qualitatively confirmed by the flame test is

(A) Li
(B) Na
(C) Rb
(D) Be

Answer: (D) Be · Key from source paper

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Q54 JEE Main 2022 · 25 Jun · Shift 1 MCQ

Which one of the following alkaline earth metal ions has the highest ionic mobility in its aqueous solution?

(A) Sr^{2+}
(B) Mg^{2+}
(C) Ca^{2+}
(D) Be^{2+}

Answer: (A) Sr^{2+} · Key from source paper

Q55 JEE Main 2022 · 24 Jun · Shift 1 MCQ

Which of the following statements are correct ?
(A) Both LiCl and $MgCl_2$ are soluble in ethanol.
(B) The oxides Li_2O and MgO combine with excess of oxygen to give superoxide.
(C) LiF is less soluble in water than other alkali metal fluorides.
(D) Li_2O is more soluble in water than other alkali metal oxides.
Choose the most appropriate answer from the options given below

(A) (A) and (C) only
(B) (A), (C) and (D) only
(C) (B) and (C) only
(D) (A) and (D) only

Answer: (A) (A) and (C) only · Key from source paper

Q56 JEE Main 2022 · 24 Jun · Shift 2 MCQ

Which one of the following compounds is used as a chemical in certain type of fire extinguishers

(A) Washing soda
(B) Baking soda
(C) Caustic soda
(D) Soda ash

Answer: (B) Baking soda · Key from source paper

Q57 JEE Main 2022 · 24 Jun · Shift 2 MCQ

In the industrial production of which of the following, molecular hydrogen is obtained as a bye product.

(A) Na_2CO_3
(B) NaOH
(C) Na metal
(D) $NaHCO_3$

Answer: (B) NaOH · Key from source paper

Q58 JEE Main 2021 · 1 Sep · Shift 2 MCQ

Number of paramagnetic oxides among the following given oxides is _____.
Li_2O, CaO, Na_2O_2, KO_2, MgO and K_2O

(A) 1
(B) 3
(C) 0
(D) 2

Answer: (A) 1 · Key from source paper

Q59 JEE Main 2021 · 31 Aug · Shift 1 MCQ

The major component/ingredient of Portland Cement is :

(A) dicalcium silicate
(B) tricalcium aluminate
(C) dicalcium aluminate
(D) tricalcium silicate

Answer: (D) tricalcium silicate · Key from source paper

Q60 JEE Main 2021 · 31 Aug · Shift 2 MCQ

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A): Lithium salts are hydrated.
Reason (R) : Lithium has higher polarising power than other alkali metal group members.
In the light of the above statements, choose the most appropriate answer from the options given below :

(A) (A) is not correct but (R) is correct.
(B) (A) is correct but (R) is not correct.
(C) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).
(D) Both (A) and (R) are correct and (R) is the correct explanation of (A).

Options (3) or (4) were accepted. More than one answer was accepted. · Key from source paper

Q61 JEE Main 2021 · 27 Aug · Shift 1 MCQ

The number of water molecules in gypsum, dead burnt plaster and plaster of Paris, respectively, are:

(A) 2, 0 and 0.5
(B) 0.5, 0 and 2
(C) 2, 0 and 1
(D) 5, 0 and 0.5

Answer: (A) 2, 0 and 0.5 · Key from source paper

Q62 JEE Main 2021 · 27 Aug · Shift 2 MCQ

Choose the correct statement from the following :

(A) LiF has least negative standard enthalpy of formation among alkali metal fluorides.
(B) The standard enthalpy of formation for alkali metal bromides becomes less negative on descending the group.
(C) The low solubility of CsI in water is due to its high lattice enthalpy.
(D) Among the alkali metal halides, LiF is least soluble in water.

Answer: (D) Among the alkali metal halides, LiF is least soluble in water. · Key from source paper

Q63 JEE Main 2021 · 26 Aug · Shift 1 MCQ

What are the products formed in sequence when excess of CO_2 is passed in slaked lime?

(A) $CaO, CaCO_3$
(B) $Ca(HCO_3)_2, CaCO_3$
(C) $CaCO_3, Ca(HCO_3)_2$
(D) $CaO, Ca(HCO_3)_2$

Answer: (C) $CaCO_3, Ca(HCO_3)_2$ · Key from source paper

Q64 JEE Main 2021 · 26 Aug · Shift 2 MCQ

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion (A): Barium carbonate is insoluble in water and is highly stable.
Reason (R): The thermal stability of the carbonates increases with increasing cationic size.
Choose the most appropriate answer from the options given below :

(A) (A) is true but (R) is false.
(B) Both (A) and (R) are true.
(C) (A) is false but (R) is true.
(D) Both (A) and (R) are false.

Answer: (B) Both (A) and (R) are true. · Key from source paper

Q65 JEE Main 2021 · 27 Jul · Shift 1 MCQ

Given below are two statements: One is labelled as Assertion A and the other labelled as Reason R.
Assertion A : Lithium halides are some what covalent in nature.
Reason R : Lithium possess high polarisation capability.
In the light of the above statements, choose the most appropriate answer from the options given below:

(A) A is true but R is false
(B) A is false but R is true
(C) Both A and R are true but R is NOT the correct explanation of A
(D) Both A and R are true and R is the correct explanation of A

Answer: (D) Both A and R are true and R is the correct explanation of A · Key from source paper

Q66 JEE Main 2021 · 27 Jul · Shift 2 MCQ

Match List - I with List II :
List-I: a Li; b Na; c K; d Cs
List-II: i photoelectric cell; ii absorbent of CO_2; iii coolant in fast breeder nuclear reactor; iv treatment of cancer; v bearings for motor engines
Choose the correct answer from the options given below:

(A) (a) - (v), (b) - (i), (c) - (ii), (d) - (iv)
(B) (a) - (v), (b) - (ii), (c) - (iv), (d) - (i)
(C) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
(D) (a) - (v), (b) - (iii), (c) - (ii), (d) - (i)

Answer: (D) (a) - (v), (b) - (iii), (c) - (ii), (d) - (i) · Key from source paper

Q67 JEE Main 2021 · 25 Jul · Shift 1 MCQ

Given below are two statements:
Statement I : None of the alkaline earth metal hydroxides dissolve in alkali.
Srtatement II : Solubility of alkaline earth metal hydroxides in water increases down the group.
In the light of the above statements, choose the most appropriate answer from the options given below:

(A) Statement I is correct but Statement II is incorrect.
(B) Statement I is incorrect but Statement II is correct.
(C) Statement I and Statement II both are incorrect.
(D) Statement I and Statement II both are correct.

Answer: (B) Statement I is incorrect but Statement II is correct. · Key from source paper

Q68 JEE Main 2021 · 25 Jul · Shift 2 MCQ

Match List I with List II :
List-I Elements | List-II Properties
(a) Li | (i) Poor water solubility of I^- salt
(b) Na | (ii) Most abundant element in cell fluid
(c) K | (iii) Bicarbonate salt used in fire extinguisher
(d) Cs | (iv) Carbonate salt decomposes easily on heating
Choose the correct answer from the options given below.

(A) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)
(B) (a) – (i), (b) – (iii), (c) – (ii), (d) – (iv)
(C) (a) – (iv), (b) – (ii), (c) – (iii), (d) – (i)
(D) (a) – (i), (b) – (ii), (c) – (iii), (d) – (iv)

Answer: (A) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i) · Key from source paper

Q69 JEE Main 2021 · 22 Jul · Shift 1 MCQ

Match List-I with List-II
List - I (Elements) | List - II (Properties)
(a) Ba | (i) Organic solvent soluble compounds
(b) Ca | (ii) Outer electronic configuration $6\ s^2$
(c) Li | (iii) Oxalate insoluble in water
(d) Na | (iv) Formation of very strong monoacidic base
Choose the correct answer from the options given below:

(A) (a)-(ii), (b)-(iii), (c)-(i) and (d)-(iv)
(B) (a)-(iv), (b)-(i), (c)-(ii) and (d)-(iii)
(C) (a)-(iii), (b)-(ii), (c)-(iv) and (d)-(i)
(D) (a)-(i), (b)-(iv), (c)-(ii) and (d)-(iii)

Answer: (A) (a)-(ii), (b)-(iii), (c)-(i) and (d)-(iv) · Key from source paper

Q70 JEE Main 2021 · 20 Jul · Shift 1 MCQ

A s-block element (M) reacts with oxygen to form an oxide of the formula MO_2. The oxide is pale yellow in colour and paramagnetic. The element (M) is:

(A) Mg
(B) Na
(C) Ca
(D) K

Answer: (D) K · Key from source paper

Q71 JEE Main 2021 · 18 Mar · Shift 1 MCQ

Match List–I with List– II

List–I

List– II

(a) $Ca(OCl)_2$ (i) Antacid

(b) $CaSO_4 \cdot \frac{1}{2}H_2O$ (ii) Cement

(c) CaO (iii) Bleach

(d) $CaCO_3$ (iv) Plaster of paris

Choose the most appropriate answer from the

(A) a – i, b – iv, c – iii, d – ii

(B) a – iii, b – ii, c – iv, d – i

(C) a – iii, b – iv, c – ii, d – i

(D) a – iii, b – ii, c – i, d – iv

Answer: (C) a – iii, b – iv, c – ii, d – i · Key from source paper

Q72 JEE Main 2021 · 18 Mar · Shift 2 MCQ

Match list-I with list-II :

(a) Be (i) Treatment of cancer

(b) Mg (ii) Extraction of metals

(c) Ca (iii) Incendiary bombs and signals

(d) Ra (iv) Windows of X-ray tubes

(v) Bearings for motor engines.

Choose the most appropriate answer, the option given below :

(A) a – iv, b – iii, c – i, d – ii

(B) a – iv, b – iii, c – ii, d – i

(C) a – iii, b – iv, c – v, d – ii

(D) a – iii, b – iv, c – ii, d – v

Answer: (B) a – iv, b – iii, c – ii, d – i · Key from source paper

Q73 JEE Main 2021 · 17 Mar · Shift 1 MCQ

The correct order of conductivity of ions in water is:

(A) $Na^+ > K^+ > Rb^+ > Cs^+$

(B) $Cs^+ > Rb^+ > K^+ > Na^+$

(C) $K^+ > Na^+ > Cs^+ > Rb^+$

(D) $Rb^+ > Na^+ > K^+ > Li^+$

Answer: (B) $Cs^+ > Rb^+ > K^+ > Na^+$ · Key from source paper

Q74 JEE Main 2021 · 17 Mar · Shift 2 MCQ

One of the by-products formed during the recovery of NH_3 from Solvay process is:

(A) $Ca(OH)_2$
(B) $NaHCO_3$
(C) $CaCl_2$
(D) NH_4Cl

Answer: (C) $CaCl_2$ · Key from source paper

Q75 JEE Main 2021 · 16 Mar · Shift 1 MCQ

Given below are two statements:
Statement I : Both $CaCl_2 \cdot 6H_2O$ and $MgCl_2 \cdot 8H_2O$ undergo dehydration on heating.
Statement II : BeO is amphoteric, whereas the oxides of other elements in the same group are acidic.
In the light of the above statements, choose the correct answer from the options given below:

(A) Statement I is false but statement II is true
(B) Both statement I and statement II are false
(C) Both statement I and statement II are true
(D) Statement I is true but statement II is false

Answer: (B) Both statement I and statement II are false · Key from source paper

Q76 JEE Main 2021 · 26 Feb · Shift 1 MCQ

Find A, B and C in the following reactions:
$NH_3 + A + CO_2 \rightarrow (NH_4)_2CO_3$
$(NH_4)_2CO_3 + H_2O + B \rightarrow NH_4HCO_3$
$NH_4HCO_3 + NaCl \rightarrow NH_4Cl + C$

(A) A $-$ H_2O; B $-$ CO_2; C $-$ $NaHCO_3$
(B) A $-$ H_2O; B $-$ O_2; C $-$ Na_2CO_3
(C) A $-$ H_2O; B $-$ O_2; C $-$ $NaHCO_3$
(D) A $-$ O_2; B $-$ CO_2; C $-$ Na_2CO_3

Answer: (A) A $-$ H_2O; B $-$ CO_2; C $-$ $NaHCO_3$ · Key from source paper

Q77 JEE Main 2021 · 26 Feb · Shift 2 MCQ

Match List-I with List-II

List-I	List-II
(a) Sodium Carbonate	(i) Deacon
(b) Titanium	(ii) Castner-Kellner
(c) Chlorine	(iii) van-Arkel

(d) Sodium hydroxide (iv) Solvay

Choose the correct answer from the options given below:

(A) (a) → (i), (b) → (iii), (c) → (iv), (d) → (ii)

(B) (a) → (iii), (b) → (ii), (c) → (i), (d) → (iv)

(C) (a) → (iv), (b) → (i), (c) → (ii), (d) → (iii)

(D) (a) → (iv), (b) → (iii), (c) → (i), (d) → (ii)

Answer: (D) (a) → (iv), (b) → (iii), (c) → (i), (d) → (ii) · Key from source paper

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Q78 JEE Main 2021 · 25 Feb · Shift 2 Numerical

Among the following, number of metal/s which can be used as electrodes in the photoelectric cell is _____. (Integer answer)

(A) Li

(B) Na

(C) Rb

(D) Cs

Numerical value type: the answer is a number.

Answer: 1. · Key from source paper

Q79 JEE Main 2021 · 24 Feb · Shift 2 MCQ

Match List - I with List - II.

List-I (Salt)

(a) LiCl

(b) NaCl

(c) RbCl

(d) CsCl

List-II (Flame colour wavelength)

(i) $455.5\ \mathrm{nm}$

(ii) $670.8\ \mathrm{nm}$

(iii) $780.0\ \mathrm{nm}$

(iv) $589.2\ \mathrm{nm}$

Choose the correct answer from the options given below:

(A) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)

(B) (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)

(C) (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

(D) (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

Answer: (D) (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i) · Key from source paper

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Q80 JEE Main 2020 · 6 Sep · Shift 1 MCQ

Among the sulphates of alkaline earth metals, the solubilities of $BeSO_4$ and $MgSO_4$ in water, respectively, are :

(A) poor and poor
(B) high and poor
(C) high and high
(D) poor and high

Answer: (C) high and high · Key from source paper

Q81 JEE Main 2020 · 6 Sep · Shift 2 MCQ

Match the following compounds (Column-I) with their uses (Column-II)
S. No. Column-I S.No. Column-II
(I) $Ca(OH)_2$ (A) casts of statues
(II) $NaCl$ (B) white wash
(III) $CaSO_4 \cdot \frac{1}{2}H_2O$ (C) antacid
(IV) $CaCO_3$ (D) washing soda preparation

(A) (I)-(D), (II)-(A), (III)-(C), (IV)-(B)
(B) (I)-(B), (II)-(D), (III)-(A), (IV)-(C)
(C) (I)-(B), (II)-(C), (III)-(D), (IV)-(A)
(D) (I)-(D), (II)-(C), (III)-(B), (IV)-(A)

Answer: (B) (I)-(B), (II)-(D), (III)-(A), (IV)-(C) · Key from source paper

Q82 JEE Main 2020 · 4 Sep · Shift 1 MCQ

On combustion of Li, Na and K in excess of air, the major oxides formed, respectively, are:

(A) Li_2O_2, Na_2O and K_2O_2
(B) Li_2O, Na_2O_2 and KO_2
(C) Li_2O, Na_2O and K_2O_2
(D) Li_2O, Na_2O_2 and K_2O

Answer: (B) Li_2O, Na_2O_2 and KO_2 · Key from source paper

Q83 JEE Main 2020 · 4 Sep · Shift 2 MCQ

An alkaline earth metal 'M' readily forms water soluble sulphate and water insoluble hydroxide. Its oxide MO is very stable to heat and does not have rock-salt structure. M is

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(A) Sr
(B) Ca
(C) Mg
(D) Be

Answer: (D) Be · Key from source paper

Q84 JEE Main 2020 · 2 Sep · Shift 1 MCQ

The metal mainly used in devising photoelectric cells is :

(A) Na
(B) Li
(C) Rb
(D) Cs

Answer: (D) Cs · Key from source paper

Q85 JEE Main 2020 · 2 Sep · Shift 2 MCQ

Two elements A and B have similar chemical properties. They don't form solid hydrogencarbonates, but react with nitrogen to form nitrides. A and B, respectively, are :

(A) Na and Rb
(B) Na and Ca
(C) Cs and Ba
(D) Li and Mg

Answer: (D) Li and Mg · Key from source paper

Q86 JEE Main 2020 · 9 Jan · Shift 2 MCQ

Among the statements (a) – (d), the correct ones are:
(a) Lithium has the highest hydration enthalpy among the alkali metals.
(b) Lithium chloride is insoluble in pyridine.
(c) Lithium cannot form ethynide upon its reaction with ethyne.
(d) Both lithium and magnesium react slowly with H_2O .

(A) (a), (b) and (d) only
(B) (a), (c) and (d) only
(C) (b) and (c) only
(D) (a) and (d) only

Answer: (B) (a), (c) and (d) only · Key from source paper

Q87 JEE Main 2020 · 8 Jan · Shift 1 MCQ

When gypsum is heated to 393K, it forms:

(A) Anhydrous $CaSO_4$
(B) $CaSO_4 \cdot 5H_2O$
(C) $CaSO_4 \cdot 0.5H_2O$
(D) Dead burnt plaster

Answer: (C) $CaSO_4 \cdot 0.5H_2O$ · Key from source paper

Q88 JEE Main 2020 · 8 Jan · Shift 2 MCQ

A metal (A) on heating in nitrogen gas gives compound B. B on treatment with H_2O gives a colourless gas which when passed through $CuSO_4$ solution gives a dark blue-violet coloured solution. A and B respectively, are:

(A) Na and $NaNO_3$
(B) Na and Mg_3N_2
(C) Mg and Mg_3N_2
(D) Mg and $Mg(NO_3)_2$

Answer: (C) Mg and Mg_3N_2 · Key from source paper

Q89 JEE Main 2019 · 12 Apr · Shift 1 MCQ

The correct sequence of thermal stability of the following carbonates is:

(A) $BaCO_3 < CaCO_3 < SrCO_3 < MgCO_3$
(B) $MgCO_3 < CaCO_3 < SrCO_3 < BaCO_3$
(C) $BaCO_3 < SrCO_3 < CaCO_3 < MgCO_3$
(D) $MgCO_3 < SrCO_3 < CaCO_3 < BaCO_3$

Answer: (B) $MgCO_3 < CaCO_3 < SrCO_3 < BaCO_3$ · Key from source paper

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Q90 JEE Main 2019 · 12 Apr · Shift 2 MCQ

The incorrect statement is:

(A) $LiNO_3$ decomposes on heating to give $LiNO_2$ and O_2.
(B) $LiCl$ crystallises from aqueous solution as $LiCl - 2H_2O$.
(C) Lithium is the strongest reducing agent among the alkali metals.
(D) Lithium is least reactive with water among the alkali metals.

Answer: (A) $LiNO_3$ **decomposes on heating to give** $LiNO_2$ **and** O_2**.** · Key from source paper

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Q91 JEE Main 2019 · 10 Apr · Shift 1 MCQ

The alloy used in the construction of aircrafts is:

(A) $\mathrm{Mg} - \mathrm{Al}$
(B) $\mathrm{Mg} - \mathrm{Mn}$
(C) $\mathrm{Mg} - \mathrm{Sn}$
(D) $\mathrm{Mg} - \mathrm{Zn}$

Answer: (A) $\mathrm{Mg} - \mathrm{Al}$ · Key from source paper

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Q92 JEE Main 2019 · 10 Apr · Shift 2 MCQ

A hydrated solid X on heating initially gives a monohydrated compound Y. Y upon heating above 373 K leads to an anhydrous white powder Z. X and Z, respectively, are;

(A) washing soda and soda ash.
(B) baking soda and soda ash.
(C) washing soda and dead burnt plaster.
(D) baking soda and dead burnt plaster.

Answer: (A) washing soda and soda ash. · Key from source paper

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Q93 JEE Main 2019 · 9 Apr · Shift 1 MCQ

Magnesium powder burns in air to give

(A) MgO and $\mathrm{Mg_3N_2}$.
(B) MgO only.
(C) $\mathrm{Mg(NO_3)_2}$ and $\mathrm{Mg_3N_2}$.
(D) MgO and $\mathrm{Mg(NO_3)_2}$.

Answer: (A) MgO and $\mathrm{Mg_3N_2}$. · Key from source paper

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Q94 JEE Main 2019 · 9 Apr · Shift 2 MCQ

The structures of beryllium chloride in the solid state and vapour phase, respectively, are:

(A) chain and chain
(B) dimeric and chain
(C) chain and dimeric
(D) dimeric and dimeric

Answer: (C) chain and dimeric · Key from source paper

Q95 JEE Main 2019 · 8 Apr · Shift 1 MCQ

The correct order of hydration enthalpies of alkali metal ions is:

(A) $Na^+ > Li^+ > K^+ > Rb^+ > Cs^+$
(B) $Na^+ > Li^+ > K^+ > Cs^+ > Rb^+$
(C) $Li^+ > Na^+ > K^+ > Rb^+ > Cs^+$
(D) $Li^+ > Na^+ > K^+ > Cs^+ > Rb^+$

Answer: (C) $Li^+ > Na^+ > K^+ > Rb^+ > Cs^+$ · Key from source paper

Q96 JEE Main 2019 · 8 Apr · Shift 2 MCQ

The covalent alkaline earth metal halide X = Cl, Br, I is:

(A) CaX_2
(B) MgX_2
(C) SrX_2
(D) BeX_2

Answer: (D) BeX_2 · Key from source paper

Q97 JEE Main 2019 · 12 Jan · Shift 1 MCQ

A metal on combustion in excess air forms X . X upon hydrolysis with water yields H_2O_2 and O_2 along with another product. The metal is:

(A) Na
(B) Mg
(C) Li
(D) Rb

Answer: (D) Rb · Key from source paper

Q98 JEE Main 2019 · 12 Jan · Shift 2 MCQ

The correct statement(s) among I to III with respect to potassium ions that are abundant within the cell fluids, is/are
I. They activate many enzymes.
II. They participate in the oxidation of glucose to produce ATP.
III. Along with sodium ions, they are responsible for the transmission of nerve signals.

(A) I , II and III
(B) III only
(C) I and II only
(D) I and III only

Answer: (A) I , II and III · Key from source paper

Q99 JEE Main 2019 · 11 Jan · Shift 1 MCQ

The amphoteric hydroxide is:

(A) $Be(OH)_2$
(B) $Ca(OH)_2$
(C) $Mg(OH)_2$
(D) Sr(OH)

Answer: (A) $Be(OH)_2$ · Key from source paper

Q100 JEE Main 2019 · 11 Jan · Shift 2 MCQ

Match the following items in column I with the corresponding items in column II.
Column-I
(i) $Na_2CO_3.10H_2O$
(ii) $Mg(HCO_3)_2$
(iii) NaOH
(iv) $Ca_3Al_2O_6$
Column-II
(A) Portland cement ingredient
(B) Castner-Kellner process
(C) Solvay process
(D) Temporary hardness

(A) (i) → (B); (ii) → (C); (iii) → (A); (iv) → (D)
(B) (i) → (C); (ii) → (B); (iii) → (D); (iv) → (A)
(C) (i) → (D); (ii) → (A); (iii) → (B); (iv) → (C)
(D) (i) → (C); (ii) → (D); (iii) → (B); (iv) → (A)

Answer: (D) (i) → (C); (ii) → (D); (iii) → (B); (iv) → (A) · Key from source paper

Q101 JEE Main 2019 · 10 Jan · Shift 1 MCQ

The metal used for making X-ray tube window is:

(A) Mg
(B) Na
(C) Be
(D) Ca

Answer: (C) Be · Key from source paper

Q102 JEE Main 2019 · 10 Jan · Shift 2 MCQ

Sodium metal on dissolution in liquid ammonia gives a deep blue solution due to the formation of:

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(A) Sodamide
(B) Sodium-ammonia complex
(C) Sodium ion-ammonia complex
(D) Ammoniated electrons

Answer: (D) Ammoniated electrons · Key from source paper

Q103 JEE Main 2019 · 9 Jan · Shift 1 MCQ

The alkaline earth metal nitrate that does not crystallise with molecules is:

(A) $BaNO_{32}$
(B) $SrNO_{32}$
(C) $MgNO_{32}$
(D) $CaNO_{32}$

Answer: (A) $BaNO_{32}$ · Key from source paper

Q104 JEE Main 2019 · 9 Jan · Shift 2 MCQ

The metal that forms nitride by reacting directly with N_2 of air is:

(A) Li
(B) Rb
(C) Cs
(D) K

Answer: (A) Li · Key from source paper

Q105 JEE Main 2018 · 15 Apr · Shift 2 MCQ

In KO_2, the nature of oxygen species and the oxidation state of oxygen atom are, respectively:

(A) Superoxide and -1
(B) Superoxide and $-1/2$
(C) Peroxide and $-1/2$
(D) Oxide and -2

Answer: (B) Superoxide and $-1/2$ · Key from source paper

Q106 JEE Main 2017 · 9 Apr · Online MCQ

Which one of the following is an oxide?

(A) SiO_2
(B) KO_2
(C) BaO_2
(D) CsO_2

Answer: (A) SiO_2 · Key from source paper

Q107 JEE Main 2017 · 8 Apr · Online MCQ

A metal M reacts with nitrogen gas to afford M_3N, M_3N on heating at high temperature gives back M and on reaction with water produces a gas B. Gas B reacts with an aqueous solution of $CuSO_4$ to form a deep blue compound. M and B respectively are

(A) Li and NH_3
(B) Ba and NH_3
(C) Na and N_2
(D) Al and N_2

Answer: (A) Li and NH_3 · Key from source paper

Q108 JEE Main 2017 · 2 Apr · Offline MCQ

Both lithium and magnesium display several similar properties due to the diagonal relationship; however, the one which is incorrect is:

(A) Both form soluble bicarbonates
(B) Both form nitrides
(C) Nitrates of both Li and Mg yield NO_2 and O_2 on heating
(D) Both form basic carbonate

Answer: (D) Both form basic carbonate · Key from source paper

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Q109 JEE Main 2016 · 10 Apr · Online MCQ

What is the commercial name for calcium oxide?

(A) Quick lime
(B) Milk of lime
(C) Slaked lime
(D) Limestone

Answer: (A) Quick lime · Key from source paper

Q110 JEE Main 2016 · 9 Apr · Online MCQ

The correct order of the solubility of alkaline-earth metal sulphates in water is:

(A) Mg > Ca > Sr > Ba
(B) Mg > Sr > Ca > Ba
(C) Mg < Ca < Sr < Ba
(D) Mg < Sr < Ca < Ba

Answer: (A) Mg > Ca > Sr > Ba · Key from source paper

Q111 JEE Main 2016 · 3 Apr · Offline MCQ

The main oxides formed on combustion of Li, Na and K in excess of air are respectively:

(A) Li_2O_2, Na_2O_2 and KO_2
(B) Li_2O, Na_2O_2 and KO_2
(C) Li_2O, Na_2O and KO_2
(D) LiO_2, Na_2O_2 and K_2O

Answer: (B) Li_2O, Na_2O_2 **and** KO_2 · Key from source paper

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Q112 JEE Main 2015 · 11 Apr · Online MCQ

Which of the alkaline earth metal halides given below is essentially covalent in nature?

(A) $BeCl_2$
(B) $MgCl_2$
(C) $SrCl_2$
(D) $CaCl_2$

Answer: (A) $BeCl_2$ · Key from source paper

Q113 JEE Main 2015 · 10 Apr · Online MCQ

The correct order of thermal stability of hydroxides is

(A) $Mg(OH)_2 < Sr(OH)_2 < Ca(OH)_2 < Ba(OH)_2$
(B) $Mg(OH)_2 < Ca(OH)_2 < Sr(OH)_2 < Ba(OH)_2$
(C) $Ba(OH)_2 < Sr(OH)_2 < Ca(OH)_2 < Mg(OH)_2$
(D) $Ba(OH)_2 < Ca(OH)_2 < Sr(OH)_2 < Mg(OH)_2$

Answer: (B) $Mg(OH)_2 < Ca(OH)_2 < Sr(OH)_2 < Ba(OH)_2$ · Key from source paper

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Q114 JEE Main 2015 · 4 Apr · Offline MCQ

Which one of the following alkaline earth metal sulphates has its hydration enthalpy greater than its lattice enthalpy?

(A) $SrSO_4$
(B) $CaSO_4$
(C) $BeSO_4$
(D) $BaSO_4$

Answer: (C) $BeSO_4$ · Key from source paper

Q115 JEE Main 2014 · 11 Apr · Online MCQ

Which of the following statements about Na_2O_2 is not correct?

(A) It is diamagnetic in nature
(B) It is derivative of H_2O_2
(C) Na_2O_2 oxidises Cr^{3+} to CrO_4^{2-} in acid medium.
(D) It is the super oxide of sodium

Answer: (D) It is the super oxide of sodium · Key from source paper

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Q116 JEE Main 2013 · 25 Apr · Online MCQ

In which of the following exothermic reactions, the heat liberated per mole is the highest ?

(A) $CaO + H_2O \rightarrow Ca(OH)_2$
(B) $SrO + H_2O \rightarrow Sr(OH)_2$
(C) $BaO + H_2O \rightarrow Ba(OH)_2$
(D) $MgO + H_2O \rightarrow Mg(OH)_2$

Answer: (C) $BaO + H_2O \rightarrow Ba(OH)_2$ · Checked by our team

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Q117 JEE Main 2013 · 23 Apr · Online MCQ

Equimolar solutions of the following compounds are prepared separately in water. Which will have the lowest pH value ?

(A) $BeCl_2$
(B) $SrCl_2$
(C) $CaCl_2$
(D) $MgCl_2$

Answer: (A) $BeCl_2$ · Key from source paper

Q118 JEE Main 2013 · 22 Apr · Online MCQ

The solubility order for alkali metal fluoride in water is :

(A) LiF < RbF < KF < NaF
(B) RbF < KF < NaF < LiF
(C) LiF > NaF > KF > RbF
(D) LiF < NaF < KF < RbF

Answer: (D) LiF < NaF < KF < RbF · Key from source paper

Q119 AIEEE 2012 · 19 May · Online MCQ

Which one of the following will react most vigorously with water?

(A) Li
(B) K
(C) Rb
(D) Na

Answer: (C) Rb · Key from source paper

Q120 AIEEE 2012 · 12 May · Online MCQ

A metal M on heating in nitrogen gas gives Y. Y on treatment with H_2O gives a colourless gas which when passed through $CuSO_4$ solution gives a blue colour. Y is

(A) NH_3
(B) $Mg(NO_3)_2$
(C) Mg_3N_2
(D) MgO

Answer: (C) Mg_3N_2 · Key from source paper

Q121 AIEEE 2012 · Offline MCQ

Which of the following on thermal decomposition yields a basic as well as an acidic oxide ?

(A) $NaNO_3$
(B) $KClO_3$
(C) $CaCO_3$
(D) NH_4NO_3

Answer: (C) $CaCO_3$ · Key from source paper

Q122 AIEEE 2008 MCQ

Which one of the following is the correct statement?

(A) Boric acid is a protonic acid
(B) Beryllium exhibits coordination number of six
(C) Chlorides of both beryllium and aluminium have bridged chloride structures in solid phase
(D) $B_2H_6.2NH_3$ is known as 'inorganic benzene'

Answer: (C) Chlorides of both beryllium and aluminium have bridged chloride structures in solid phase · Key from source paper

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Q123 AIEEE 2006 MCQ

The ionic mobility of alkali metal ions in aqueous solution is maximum for

(A) K^+
(B) Rb^+
(C) Li^+
(D) Na^+

Answer: (B) Rb^+ · Key from source paper

Q124 AIEEE 2004 MCQ

Beryllium and aluminium exhibit many properties which are similar. But the two elements differ in

(A) exhibiting maximum covalency in compound
(B) exhibiting amphoteric nature in their oxides
(C) forming covalent halides
(D) forming polymeric hydrides

Answer: (A) exhibiting maximum covalency in compound · Key from source paper

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Q125 AIEEE 2003 MCQ

The substance not likely to contain $CaCO_3$ is

(A) calcined gypsum
(B) sea shells
(C) dolomite
(D) a marble statue

Answer: (A) calcined gypsum · Key from source paper

Q126 AIEEE 2003 MCQ

The solubilities of carbonates decrease down the magnesium group due to a decrease in

(A) hydration energies of cations
(B) inter-ionic attraction
(C) entropy of solution formation
(D) lattice energies of solids

Answer: (A) hydration energies of cations · Key from source paper

Q127 AIEEE 2003 MCQ

In curing cement plasters water is sprinkled from time to time. This helps in

(A) developing interlocking needle-like crystals of hydrated silicates
(B) hydrating sand and gravel mixed with cement
(C) converting sand into silicic acid
(D) keeping it cool

Answer: (A) developing interlocking needle-like crystals of hydrated silicates · Key from source paper

Q128 AIEEE 2003 MCQ

Which one of the following nitrates will leave behind a metal on strong heating?

(A) Copper nitrate
(B) Manganese nitrate
(C) Silver nitrate
(D) Ferric nitrate

Answer: (C) Silver nitrate · Key from source paper

Q129 AIEEE 2002 MCQ

KO_2 (potassium super oxide) is used in oxygen cylinders in space and submarines because it

(A) absorbs CO_2 and increases O_2 content
(B) eliminates moisture
(C) absorbs CO_2
(D) produces ozone.

Answer: (A) absorbs CO_2 and increases O_2 content · Key from source paper

Q130 AIEEE 2002 MCQ

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 an insoluble hydroxide $M(OH)_2$ which is soluble in NaOH solution. Then M is

(A) Mg
(B) Ba
(C) Ca
(D) Be

Answer: (D) Be · Key from source paper

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