Q1 - 24 January - Shift 1

Order of Covalent bond;

A. KF > KI; LiF > KF

B. KF < KI; LiF > KF

C. $SnCl_4 > SnCl_2$; CuCl > NaCl

D. LiF > KF; CuCl < NaCl

E. KF < KI; CuCl > NaCl

(1) C, E only (2) B, C only

(3) B, C, E only (4) A, B only

Space for your notes:

Q2 - 24 January - Shift 1

Match List I with List II.

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

Choose the correct answer from the options given below :

(1) A – III, B – I, C – II, D – IV

(2) A – II, B – I, C – III, D – IV

(3) A – III, B – IV, C – I, D – II

(4) A – II, B – III, C – IV, D – I

Space for your notes:

Q3 - 24 January - Shift 2

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 in colour and paramagnetic.

E. All the alkali metal hydrides are ionic solids.

Choose the correct answer from the options given below

(1) A, B, D only (2) C and E only

(3) A and E only (4) A, B and E only

Space for your notes:

Q4 - 25 January - Shift 1

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.

(1) $CaCl_2$, NH_3, NH_4HCO_3

(2) $CaCl_2$, NH_4^+, $(NH_4)_2CO_3$

(3) $Ca(OH)_2$, NH_3, NH_4HCO_3

(4) $Ca(OH)_2$, NH_4^+, $(NH_4)_2CO_3$

Space for your notes:

Q5 - 25 January - Shift 1

Match List I with List II

List I		List II	
Elements		Colour imparted to the flame	
A	K	I	Brick Red
B	Ca	II	Violet
C	Sr	III	Apple Green
D	Ba	IV	Crimson Red

Choose the correct answer from the options given below:

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

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

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

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

Space for your notes:

Q6 - 25 January - Shift 2

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

(1) K (2) Rb

(3) Na (4) Li

Space for your notes:

Q7 - 25 January - Shift 2

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

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

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

(3) A is not correct but R is correct

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

Space for your notes:

Q8 - 29 January - Shift 1

The correct order of hydration enthalpies is

(A) K^+

(B) Rb^+

(C) Mg^{2+}

(D) Cs^+

(E) Ca^{2+}

Choose the correct answer from the options given below:

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

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

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

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

Space for your notes:

Q9 - 29 January - Shift 1

The magnetic behaviour of Li_2O, Na_2O_2 and KO_2, respectively, are

(1) diamagnetic, paramagnetic and diamagnetic
(2) paramagnetic, paramagnetic and diamagnetic
(3) paramagnetic, diamagnetic and paramagnetic
(4) diamagnetic, diamagnetic and paramagnetic

Space for your notes:

Q10 - 29 January - Shift 2

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

Space for your notes:

Q11 - 30 January - Shift 1

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:

(1) A only (2) B only
(3) A and B (4) B and C

Space for your notes:

Q12 - 30 January - Shift 2

Which of the following reaction is correct ?

(1) $2LiNO_3 \xrightarrow{\Delta} 2LiNO_2 + O_2$

(2) $4LiNO_3 \xrightarrow{\Delta} 2Li_2O + 2N_2O_4 + O_2$

(3) $4LiNO_3 \xrightarrow{\Delta} 2Li_2O + 4NO_2 + O_2$

(4) $2LiNO_3 \xrightarrow{\Delta} 2Li + 2NO_2 + O_2$

Space for your notes:

Q13 - 30 January - Shift 2

Chlorides of which metal are soluble in organic solvents:

(1) Ca (2) Mg

(3) K (4) Be

Space for your notes:

Q14 - 31 January - Shift 2

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

(1) Be (2) Ca (3) Li (4) Mg

Space for your notes:

Q15 - 31 January - Shift 2

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 _____.

Space for your notes:

Q16 - 01 February - Shift 1

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:

(1) A, B and C only

(2) B, C and D only

(3) A and B only

(4) A only

Space for your notes:

Q17 - 01 February - Shift 1

Match List I with 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:

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

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

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

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

Space for your notes:

Q18 - 01 February - Shift 2

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 :

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

(2) **(A)** is correct but **(R)** is not correct.

(3) **(A)** is not correct but **(R)** is correct.

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

Space for your notes:

Answer Key

(As per Official NTA Key released on 2 Feb)

Q1 (3)	**Q2** (1)	**Q3** (3)	**Q4** (3)
Q5 (3)	**Q6** (3)	**Q7** (3)	**Q8** (4)
Q9 (4)	**Q10** (3)	**Q11** (3)	**Q12** (3)
Q13 (4)	**Q14** (2)	**Q15** (2)	**Q16** (2)
Q17 (3)	**Q18** (1)		

Q1 (3)

According to Fajan's Rule,

A. KF > KI – False; LiF > KF – True

B. KF < KI – True; LiF > KF – True

C. $SnCl_4$ > $SnCl_2$ – True; CuCl > NaCl – True

D. LiF > KF – True; CuCl < NaCl – False

E. KF < KI – True; CuCl > NaCl – True

Q2 (1)

Chlorophyll : Mg^{+2} complex

Soda ash : Na_2CO_3

Dentistry, Ornamental work : $CaSO_4$

Used in white washing : $Ca(OH)_2$

Q3 (3)

(1) Na > Cs > Li – true {If considered with sign}

The low solubility of CsI is due to smaller hydration enthalpy of it's two ions

Li_2CO_3 is highly stable to heat - false

In Conc. NH_3, K formed blue solution – true

Q4 (3)

$$\underset{(A)}{Ca(OH)_2} + 2NH_4Cl \xrightarrow{\Delta} \underset{(B)}{2NH_3} + CaCl_2 + 2H_2O$$

$$\underset{(B)}{NH_3} + H_2O + \underset{(exc)}{CO_2} \longrightarrow \underset{(C)}{NH_4HCO_3}$$

$$\underset{(C)}{NH_4HCO_3} + NaCl \longrightarrow NaHCO_3 \downarrow + NH_4Cl$$

Q5 (3)

Element	Colour in flame test
K	Violet
Ca	Brick red
Sr	Crimson red
Ba	Apple green

Q6 (3)

Sodium have lowest oxidation potential in alkali metals. Hence it is weakest reducing agent among alkali metals.

Q7 (3)

The alkali metals and their salts impart characteristic colour to **oxidizing** flame.

Q8 (4)

Hydration enthalpies:

(i) $K^+ > Rb^+ > Cs^+$: (A) > (B) > (D)

(ii) $Mg^{+2} > Ca^{+2}$: (C) > (E)

Option (D)

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

Q9 (4)

$Li_2O \rightarrow O^{2-} \rightarrow$ diamagnetic

$Na_2O_2 \rightarrow O_2^{2-} \rightarrow$ diamagnetic

$KO_2 \rightarrow O_2^{-} \rightarrow$ paramagnetic

Q10 (3)

$$2\,LiNO_3 \xrightarrow{\Delta} Li_2O + 2NO_2 + \frac{1}{2}O_2$$

Hence three products Li_2O, NO_2 and O_2

Q11 (3)

Due to high hydration energy Be^{2+} and Mg^{2+} $BeSO_4$ and $MgSO_4$ are readily soluble in water.

Q12 (3)

$$4LiNO_3 \xrightarrow{\Delta} 2Li_2O + 4NO_2 + O_2$$

Q13 (4)

$BeCl_2$ having covalent nature is soluble in organic solvent.

Q14 (2)

Calcium plays important role in neuromuscular function, interneuronal transmission, cell membrane etc.

Q15 (2)

K, Rb and Cs form stable super oxides but Cs has ionisation enthalpy less than 400 kJ.

Q16 (2)

A. Beryllium oxide is amphoteric in nature.

B. Beryllium carbonate is kept in the atmosphere of CO_2 because it is thermally less stable.

C. Beryllium sulphate is readily soluble in water due to high degree of hydration.

D. Beryllium shows anomalous behaviour due to small size, high ionization energy and high value of ϕ (polarising power).

Q17 (3)

From S-block NCERT

Q18 (1)

(Gypsum is used for making fireproof wall boards