THE S-BLOCK ELEMENTS

DPP SHEET

ONLY ONE OPTION CORRECT TYPE

1. When sodium reacts with excess of oxygen, the oxidation number of oxygen changes from

(a) 0 to -1 (b) 0 to -2 (c) -1 to -2 (d) no change

2. Match the column I with column II and mark the appropriate choice.

	Column I		**Column II**
(A)	Li	(i)	M_2O_2
(B)	Na	(ii)	MO_2
(C)	Rb	(iii)	M_2O

(a) $(A)\rightarrow(i),(B)\rightarrow(ii),(C)\rightarrow(iii)$

(b) $(A)\rightarrow(iii),(B)\rightarrow(ii),(C)\rightarrow(i)$

(c) $(A)\rightarrow(iii),(B)\rightarrow(i),(C)\rightarrow(ii)$

(d) $(A)\rightarrow(ii),(B)\rightarrow(iii),(C)\rightarrow(i)$

3. When sodium is dropped in small amount of water it catches fire. Which one of the following burns in the process?

(a) Na (b) H_2O (c) H_2 (d) NaOH

4. The alkali metals dissolve in ammonia to give a deep blue solution which is conducting in nature.

$$M+(x+y)NH_3\rightarrow\left[M(NH_3)_x\right]^{2+}+2\left[e(NH_3)_y\right]^-$$

Which of the following is not true about the solutions of alkali metals in liquid ammonia?

(a) The blue colour is due to ammoniated electron. (b) The solution is paramagnetic

(c) The blue colour changes to brown on standing

(d) In concentrated solution blue colour changes to bronze and becomes diamagnetic.

5. Lithium is the strongest reducing agent through it has highest ionization energy in its group. Which of the following factors is responsible for making Li the strongest reducing agent?

(a) Larger heat of atomization (b) Smaller size

(c) Large sublimation energy (d) Large amount of hydration enthalpy

6. Complete the following equations:

(i) $Na_2O_2 + 2H_2O \rightarrow \underline{(W)} + H_2O_2$

(ii) $2KO_2 + 2H_2O \rightarrow \underline{(Y)} + O_2$

(iii) $Na_2O + CO_2 \rightarrow \underline{(Z)}$

	W	**X**	**Y**	**Z**
(a)	4Na	K_2O	H_2O	Na_2O_2
(b)	4Na	K_2O	H_2O_2	Na_2CO_3
(c)	4NaOH	2KOH	H_2O	Na_2O_2
(d)	2NaOH	2KOH	H_2O_2	Na_2CO_3

7. Which of the following increasing orders is not correct as per the property indicated against it?

(a) $CsCl < RbCl < KCl < NaCl < LiCl$ (Lattice energy)

(b) $LiOH < NaOH < KOH$ (Solubility in water)

(c) $Li^+ < Na^+ < K^+ < Rb^+ < Cs^+$ (size of hydrated ion)

(d) $NaI < NaBr < NaCl < NaF$ (Lattice energy)

8. Which of the following has lowest thermal stability?

(a) Li_2CO_3 (b) Na_2CO_3 (c) K_2CO_3 (d) Rb_2CO_3

9. Which nitrate will decompose to give NO_2 on heating?

(a) $NaNO_3$ (b) KNO_3 (c) $RbNO_3$ (d) $LiNO_3$

10. In the given chemical reactions,

$2P + H_2O + CO_2 \rightarrow Q \xrightarrow{H_2O+CO_2} 2R \xrightarrow{NaCl} S + NH_4Cl$ Identify S.

(a) Na_2CO_3

(b) NaOH

(c) $NaHCO_3$

(d) NH_3

11. A certain compound X imparts a golden yellow flame. When zinc powder is heated with concentrated solution of X, H_2 gas is evolved. X combines with CO_2 to give a salt Y. Y is a hydrated salt which on reaction with HCl or excess of CO_2 gives another salt Z which is an important part of baking powder. Identify X, Y and Z.

	W	**X**	**Y**
(a)	NaOH	Na_2CO_3	$NaHCO_3$
(b)	HCl	NaOH	$NaHCO_3$
(c)	KOH	K_2CO_3	$KHCO_3$
(d)	NaCl	Na_2CO_3	NaOH

12. A metal X reacts with water to produce a highly combustible gas Y, and a solution Z. Another metal P reacts with Z to give the same gas Y. X, Y, Z and P respectively are

(a) $Zn, H_2, Zn(OH)_2, Al$

(b) $Na, H_2, NaOH, Zn$

(c) K, H_2, KOH, Al

(d) $Li, H_2, LiOH, K$

13. Match the column I with column II and mark the appropriate choice.

	Column I		**Column II**
(A)	Na	(i)	Crimson red
(B)	K	(ii)	Yellow
(C)	Sr	(iii)	Apple green
(D)	Ba	(iv)	Violet

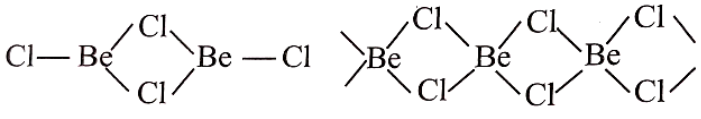
(a) $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iii), (D) \rightarrow (iv)$

(b) $(A) \rightarrow (ii), (B) \rightarrow (iv), (C) \rightarrow (i), (D) \rightarrow (iii)$

(c) $(A) \rightarrow (iv), (B) \rightarrow (iii), (C) \rightarrow (ii), (D) \rightarrow (i)$

(d) $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (i), (D) \rightarrow (ii)$

14. The following two figures represent



(i) (ii)

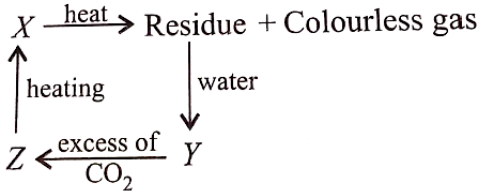
(a) (i) $BeCl_2$ is a dimer in vapour phase ; (ii) $BeCl_2$ is chain structure in solid state

(b) (i) $BeCl_2$ is in solid state ; (ii) $BeCl_2$ is in vapour phase

(c) (i) $BeCl_2$ is monomer in solid state; (ii) $BeCl_2$ is linear polymer in vapour phase

(d) (i) $BeCl_2$ is linear monomer; (ii) $BeCl_2$ is three dimensional dimer.

15.



Identify X, Y and Z.

	X	**Y**	**Z**
(a)	$Ca(HCO_3)_2$	$CaCO_3$	$Ca(OH)_2$
(b)	$CaCO_3$	$Ca(OH)_2$	$Ca(HCO_3)_2$
(c)	$CaCO_3$	CaO	$Ca(OH)_2$
(d)	$CaCO_3$	CaO	$Ca(HCO_3)_2$

16. When plaster of paris comes in contact with water it sets into a hard mass. The composition of the hard mass is

(a) $CaSO_4 \cdot H_2O$

(b) $CaSO_4 \cdot Ca(OH)_2$

(c) $CaSO_4 \cdot 2H_2O$

(d) $CaSO_4 \cdot 2Ca(OH)_2$

17. Match the column I with column II and mark the appropriate choice.

	Column I		**Column II**
(A)	Na^+	(i)	Chlorophyll
(B)	K^+	(ii)	Bones and teeth
(C)	Ca^{2+}	(iii)	Regulating flow of water across cell membrane
(D)	Mg^{2+}	(iv)	Activation of enzyme within cell fluids

(a) $(A)\rightarrow(i),(B)\rightarrow(iii),(C)\rightarrow(ii),(D)\rightarrow(iv)$

(b) $(A)\rightarrow(iv),(B)\rightarrow(iii),(C)\rightarrow(ii),(D)\rightarrow(i)$

(c) $(A)\rightarrow(i),(B)\rightarrow(ii),(C)\rightarrow(iii),(D)\rightarrow(iv)$

(d) $(A)\rightarrow(iii),(B)\rightarrow(iv),(C)\rightarrow(ii),(D)\rightarrow(i)$

18. The alkali metals are low melting. Which of the following alkali metals is expected to melt if the room temperature rise to 30 ^oC?

(a) Na (b) K (c) Rb (d) Cs

19. Metal carbonates decompose on heating to give metal oxide and carbon dioxide. Which of the metal carbonates is most stable thermally?

(a) $MgCO_3$ (b) $CaCO_3$ (c) $SrCO_3$ (d) $BaCO_3$

20. Metals form basic hydroxides. Which of the following metal hydroxide is the least basic?

(a) $Mg(OH)_2$ (b) $Ca(OH)_2$ (c) $Sr(OH)_2$ (d) $Ba(OH)_2$

21. Some of the group 2 metal halides are covalent and soluble in organic solvents. Among the following metal halides, the one which is soluble is ethanol is

(a) $BeCl_2$ (b) $MgCl_2$ (c) $CaCl_2$ (d) $SrCl_2$

22. Amphoteric hydroxides react with both alkalies and acids. Which of the following group 2 metal hydroxides is soluble in sodium hydroxide?

(a) $Be(OH)_2$ (b) $Mg(OH)_2$ (c) $Ca(OH)_2$ (d) $Ba(OH)_2$

23. In the synthesis of sodium carbonate, the recovery of ammonia is done by treating NH_4Cl with $Ca(OH)_2$. The by-product obtained in this process is

(a) $CaCl_2$ (b) $NaCl$ (c) $NaOH$ (d) $NaHCO_3$

24. By adding gypsum to cement

(a) setting time of cement becomes less (b) setting time of cement increases

(c) colour of cement becomes light (d) shining surface is obtained

25. Dead burnt plaster is

(a) $CaSO_4$ (b) $CaSO_4 \cdot \frac{1}{2}H_2O$ (c) $CaSO_4 \cdot H_2O$ (d) $CaSO_4 \cdot 2H_2O$

26. Suspension of slaked lime in water is known as

(a) lime water

(b) quick lime

(c) milk of lime

(d) aqueous solution of slaked lime

27. Which of the following elements does not form hydride by direct heating with dihydrogen?

(a) Be (b) Mg (c) Sr (d) Ba

28. The formula of soda ash is

(a) $Na_2CO_3 \cdot 10H_2O$ (b) $Na_2CO_3 \cdot 2H_2O$ (c) $Na_2CO_3 \cdot H_2O$ (d) Na_2CO_3

29. A substance which gives brick red flame and breaks down on heating to give oxygen and a brown gas is

(a) magnesium nitrate (b) calcium nitrate (c) barium nitrate (d) strontium nitrate

30. Which of the following statements is true about $Ca(OH)_2$?

(a) It is used in the preparation of bleaching powder.

(b) It is a light blue solid

(c) It does not possess disinfectant property

(d) It is used in manufacture of cement

Answer Key

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
A	C	C	C	D	D	C	A	D	C
11.	**12.**	**13.**	**14.**	**15.**	**16.**	**17.**	**18.**	**19.**	**20.**
A	B	B	A	B	C	D	D	D	A
21.	**22.**	**23.**	**24.**	**25.**	**26.**	**27.**	**28.**	**29.**	**30.**
A	A	A	B	A	C	A	D	B	A