

Preparing for **JEE Exam** ?



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- Alkali earth metals are not found free in nature because of
 - Their thermal instability
 - Their low melting points
 - Their high boiling points
 - Their greater chemical reactivity
- The metals A and B form oxide but B also forms nitride when both burn in air. The A and B are
 - Cs, K
 - Mg, Ca
 - Li, Na
 - K, Mg
- When zeolite, (hydrated sodium aluminium silicate), is treated with hard water, the sodium ions are exchanged with
 - SO_4^{2-} ions
 - H^+ ion
 - OH^- ions
 - Ca^{2+} ions
- Beryllium shows diagonal relationship with aluminium. Which of the following similarity is incorrect?
 - Be forms beryllates and Al forms aluminates
 - $Be(OH)_2$ like $Al(OH)_3$ is basic
 - Be like Al is rendered passive by HNO_3
 - Be_2C like Al_4C_3 yields methane on hydrolysis
- Plaster of paris hardens by
 - Giving off CO_2
 - Changing into $CaCO_3$
 - Uniting with water
 - Giving out water
- Two oxides of a metal contain 50% and 40% metal M respectively. If the formula of the first oxide is MO_2 , the formula of the second oxide will be
 - MO_2
 - MO_3
 - M_2O
 - M_2O_5
- Which one of the following pairs of compounds illustrates the law of multiple proportion
 - H_2O , Na_2O
 - MgO , Na_2O
 - Na_2O , BaO
 - $SnCl_2$, $SnCl_4$
- Given that the abundance of isotopes ^{54}Fe , ^{56}Fe and ^{57}Fe is 5%, 90% and 5% respectively . The atomic mass of Fe is
 - 65.85
 - 55.95
 - 54.75
 - 52.05
- The mole fraction of a given sample of I_2 in C_6H_6 is 0.2. The molality of I_2 in C_6H_6 is
 - 0.32
 - 3.2
 - 0.032
 - 0.48
- Match list – I compounds, with list – II (oxidation states of nitrogen) and select answer using the codes given below

	LIST - 1		LIST - 2
a)	NaN_3	1.	+5
b)	N_2H_2	2.	+2
c)	NO	3.	-1/3
d)	N_2O_5	4.	-1

- a-3, b-4, c-2, d-1
 - a-4, b-3, c-2, d-1
 - a-3, b-4, c-1, d-2
 - a-4, b-3, c-1, d-2
- Which one of the following reactions does not involve either oxidation or reduction?
 - $VO_2^+ \rightarrow V_2O_3$
 - $Na \rightarrow Na^+$
 - $CrO_4^{2-} \rightarrow Cr_2O_7^{2-}$
 - $Zn^{2+} \rightarrow Zn$
 - The ratio of orbital angular momentum and spin angular momentum of an electron in 'p' orbital is
 - 3/2
 - $\sqrt{\frac{3}{2}}$
 - $\frac{2\sqrt{2}}{\sqrt{3}}$
 - $\sqrt{\frac{2}{3}}$
 - If the shortest wavelength in Lyman series of hydrogen atom is x, then the longest wavelength in Paschen series of Li^{+2} is
 - $\frac{36x}{7}$
 - $\frac{16x}{7}$
 - $\frac{7x}{16}$
 - $\frac{144x}{7}$
 - I.E of He^+ is 19.6×10^{-18} J/atom. The energy of the first stationary state of Li^{+2} is
 - -4.41×10^{-17} J/atom
 - $+4.41 \times 10^{-17}$ J/atom
 - -19.6×10^{-18} J/atom
 - $+19.6 \times 10^{-18}$ J/atom
 - The ratio of specific charge of proton and an α -particle is
 - 2 : 1
 - 1 : 2
 - 1 : 4
 - 1 : 1
 - d^6 configuration will result in total spin of
 - 3/2
 - 1/2
 - 2
 - 1
 - Select the correct statement
 - Solubility of alkali hydroxides is order : $CsOH > RbOH > KOH > NaOH > LiOH$
 - Solubility of alkali carbonates is in order : $Li_2CO_3 > Na_2CO_3 > K_2CO_3 > Rb_2CO_3 > Cs_2CO_3$
 - Both 1 & 2 are correct
 - Solubility of alkali hydroxides is in order : $CsOH < RbOH < KOH < NaOH < LiOH$
 - The correct order of stability for the following superoxides is
 - $KO_2 > RbO_2 > CsO_2$
 - $RbO_2 > CsO_2 > KO_2$
 - $CsO_2 > RbO_2 > KO_2$
 - $KO_2 > CsO_2 > RbO_2$

19. The propagation of electronic wave in 'O' shell of hydrogen atom is shown by



20. $A + Na_2CO_3 \rightarrow B + C$ The chemical formulae of A, B and C are



- 1) A-Ca(OH)₂, B-NaOH, C-CaCO₃ 2) A-NaOH, B-Ca(OH)₂, C-CaCO₃
 3) A-NaOH, B-CaO, C-CaCO₃ 4) A-CaO, B-Ca(OH)₂, C-NaOH
21. Which of the following sulphates has highest solubility in water?
 1) BaSO₄ 2) CaSO₄ 3) BeSO₄ 4) MgSO₄
22. The alkali metals form salt-like hydrides by the direct synthesis of elevated temperature. The thermal stability of these hydrides decreases in which of the following orders?
 1) CsH > RbH > NaH > LiH 2) KH > NaH > LiH > CsH > RbH
 3) NaH > LiH > KH > RbH > CsH 4) LiH > NaH > KH > RbH > CsH
23. The adsorption of hydrogen by palladium is called
 1) Hydration 2) Reduction 3) Occlusion 4) Hydrogenation
24. Elements of which of the following group(s) of periodic table do not form hydrides
 1) Groups 7,8,9 2) Group 13 3) Groups 15,16,17 4) Group 14
25. Read the following and identify the correct match

	List - I		List - II
I)	Heavy water	A)	Bicarbonates of Mg and Ca in water
II)	Temporary hard water	B)	No foreign ion in water
III)	Soft water	C)	D ₂ O
IV)	Permanent hard water	D)	Sulphates and chlorides of Mg and Ca in water

- 1) I-C, II-D, III-B, IV-A 2) I-B, II-A, III-C, IV-D 3) I-B, II-D, III-C, IV-A 4) I-C, II-A, III-B, IV-D
26. 1000g of aqueous solution of CaCO₃ contains 10g of calcium carbonate. Then degree hardness of solution is (in ppm)
27. 1.24 g of Na₂CO₃.xH₂O is completely neutralized by 200 ml of 0.05 M H₂SO₄. The value of 'x' is
28. Ionic mass of X³⁻ is 31 g.mol⁻¹. It has 16 neutrons. Thus, number of electrons in X³⁻ is
29. 250 ml of a sodium carbonate solution contains 2.65 grams of Na₂CO₃. If 10 ml of this solution is diluted to one litre, what is the concentration of the resultant solution
30. The oxidation state of sulphur in sodium tetrathionate is
31. Neutrons is not present in the nucleus of
 1) Helium 2) Protium 3) Tritium 4) Lithium
32. Calculate the normality of 10 volume H₂O₂?
 1) 12 2) 1.78 3) 30.3 4) 0.03
33. The process used for the removal of hardness of water is
 1) Calgon 2) Baeyer 3) Serpeck 4) Solvay process
34. What is formed when calcium carbide reacts with heavy water?
 1) C₂D₂ 2) CaD₂ 3) Ca₂D₂O 4) CD₂
35. Which hydride is an ionic hydride
 1) H₂S 2) TiH_{1.73} 3) NH₃ 4) NaH
36. Which of the following alkali metal ions has lowest ionic mobility in aqueous solution?
 1) Rb⁺ 2) Ca⁺ 3) Li⁺ 4) Na⁺
37. The uncertainty in position for an electron is $\lambda/4\pi$, where λ is the de-Broglie wavelength. The uncertainty in velocity will be
 1) V/2 2) V 3) 3V 4) V/4
38. According to Rutherford's calculations, the radius of the nucleus of an atom is
 1) 1×10^{-14} Hz 2) 1×10^{-15} m 3) 1×10^{-10} cm 4) 1×10^{-15} cm
39. The ratio of radii of first orbits of H, He⁺, Li²⁺ is
 1) 1 : 2 : 3 2) 6 : 3 : 2 3) 1 : 4 : 9 4) 9 : 4 : 1
40. The static electric charge on oil drop in Milliken's oil drop method is -6.408×10^{-19} C. The number of electrons present on an oil drop is
 1) 1 2) 3 3) 4 4) 2

THE END