



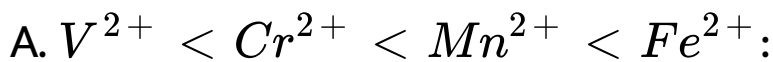
CHEMISTRY

BOOKS - KVPY PREVIOUS YEAR

MOCK TEST 3

Exercise

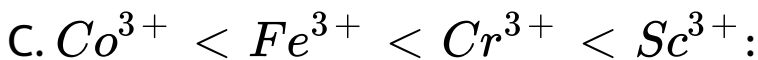
1. Which of the following arrangements does not represent the correct order of the property stated against it?



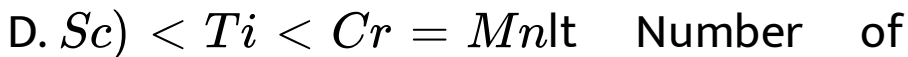
Paramagnetic behaviour



size



Stability in aqueous solution



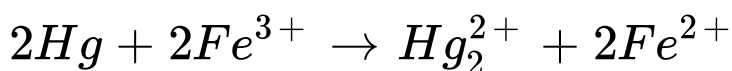
oxidation states

Answer:



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2. An excess of liquid mercury is added to an acidified solution of $1.0 \times 10^{-3} M Fe^{3+}$. It is found that 5% of Fe^{3+} remains at equilibrium at $25^\circ C$. Calculate $E^{c-} \cdot (Hg_2^{2+} | Hg)$ assuming that the only reaction that occurs is



Given : $E^{c-} \cdot (Fe^{3+} | Fe^{2+}) = 0.77V$

A. 0.85 V

B. 0.79 V

C. 0.65 V

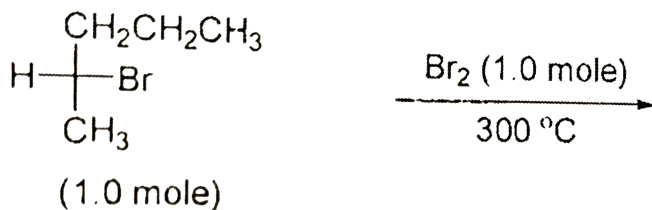
D. 0.35 V

Answer:



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3. In the following monobromination reaction, the number of possible chiral products is



(enantiomerically pure)

A. Two

B. Three

C. Five

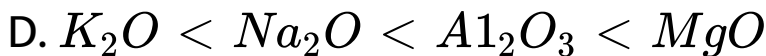
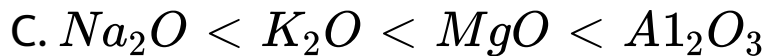
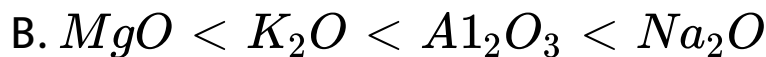
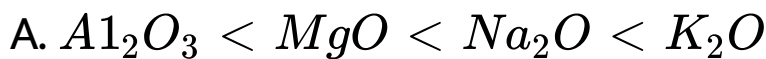
D. Seven

Answer:



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4. Which one of the following orders presents the correct sequence of the increasing basic nature of the given oxides?



Answer:



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5. Vapour pressure of solution containing 6 g of a non-volatile solute in 180 g water is 20.0 Torr. If 1 mole water is further added vapour

pressure increases by 0.02. The ratio of vapour pressure of water and molecular weight of non-volatile solute is

A. 0.2

B. 0.8

C. 0.4

D. 0.5

Answer:



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6. The density of gold is $19\text{g}/\text{cm}^3$. If $1.9 \times 10^{-4}\text{g}$ of gold is dispersed in one litre of water to give a sol having spherical gold particles of radius 10 nm then the number of gold particles per mm^3 of the sol will be:

A. 1.9×10^{12}

B. 6.3×10^{14}

C. 6.3×10^{10}

D. 2.4×10^6

Answer:



7. At $27^{\circ}C$, hydrogen is leaked through a tiny hole into a vessel for 20 min. Another unknown gas at the same temperature and pressure as that of hydrogen is leaked through the same hole for 20 min. After the effusion of the gases, the mixture exerts a pressure of 6 atm . The hydrogen content of the mixture is 0.7 mol . If the volume of the container is $3L$, what is the molecular weight of the unknown gas?

A. 516

B. 2066

C. 5033

D. 1033

Answer:



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8. Calculate ΔG° for the reaction :



Given that $E^\circ \text{Cu}^{2+} / \text{Cu} = 0.34\text{V}$,

$$E^\circ_{\text{Fe}^{+2} / \text{Fe}} = -0.44\text{V}$$

A. 180.55 kJ

B. 140.35 kJ

C. -130.15 kJ

D. -150.51 kJ

Answer:



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9. If enthalpies of methane and ethane are respectively 320 and 560 calories, then the bond energy of C-C bond is :

A. 50 calories

B. 80 calories

C. 40 calories

D. 120 calories

Answer:



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10. A sample of 16 g charcoal was brought into contact with CH_4 gas contained in a vessel of 1 litre at $27^\circ C$. The pressure of gas was found to fall from 760 to 608 torr. The density of charcoal sample is $1.6g/m^3$. What is the volume of the CH_4 gas adsorbed per gram of the adsorbent at 608 torr and $27^\circ C$?

A. 125 mL/g

B. 16.25 mL/g

C. 25 mL/g

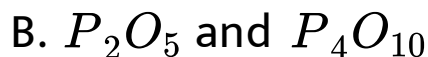
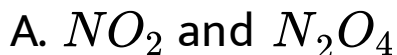
D. None of these

Answer:



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11. In which of the following pairs, there is greatest difference in the oxidation number of the underlined elements ?



C. \underline{N}_2O and \underline{NO}

D. \underline{SO}_2 and \underline{SO}_3

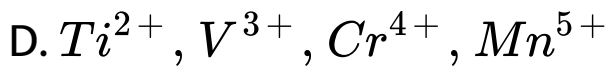
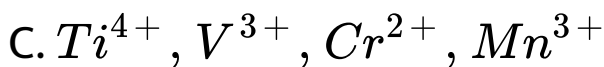
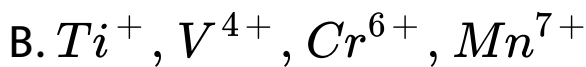
Answer:



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12. Among the following series of transition metal ions, the one where all metal ions have $3d^2$ electronic configuration is:

A. Ti^{3+} , V^{2+} , Cr^{3+} , Mn^{4+}



Answer:



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13. The hydroxyl compound that gives a precipitate immediately when treated with concentrated HCl and anhydrous $ZnCl_2$ is :

A. 3-methyl-2-butanol

B. 3-methyl-1-butanol

C. 1-butanol

D. 2-methyl-2-butanol

Answer:



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14. The radii of Na^+ and Cl^- ions are 95 pm and 181 pm respectively. The edge length of NaCl unit cell is

A. 276 pm

B. 138 pm

C. 552 pm

D. 415 pm

Answer:



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15. A metal oxide has the formula Z_2O_3 . It can be reduced by hydrogen to give free metal and water. 0.1596 g of the metal oxide requires 6

mg of hydrogen for complete reduction . The atomic weight of the metal is

A. 27.9

B. 159.6

C. 79.8

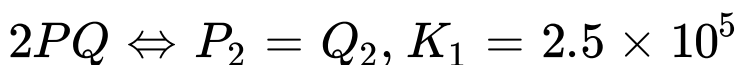
D. 55.8

Answer:

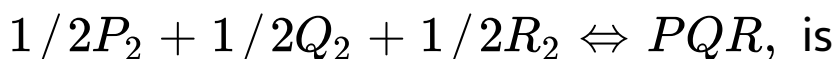


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16. Consider the following reactions in which all the reactants and the products are in gaseous state.



The value of K_2 for the equilibrium



A. 2.5×10^{-3}

B. 2.5×10^3

C. 1.0×10^{-5}

$$D. 5 \times 10^3$$

Answer:



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17. Two beaker A and B present in a closed vessel. Beaker A contains 152.4 g aqueous solution of urea, containing 12 g of urea. beaker B contains 196.2 g glucose solution, containing 15 g of glucose. Both solutions

allowed to attain the equilibrium. The mass % of glucose in its solution at equilibrium is

A. 6.71

B. 14.49

C. 16.94

D. 13.63

Answer:



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18. A certain buffer solution contains equal concentration of X^- and HX. The K_b for X^- is 10^{-10} . The pH of the buffer is:

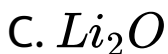
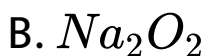
- A. 4
- B. 7
- C. 10
- D. 14

Answer:



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19. Among the following compounds, the one that gets hydrolysed to form metallic hydroxide, hydrogen peroxide and oxygen is

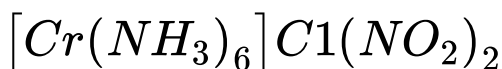
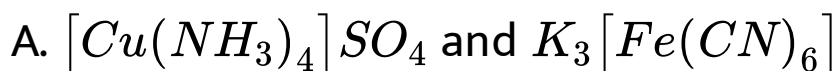


Answer:



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20. Which of the following pair of complexes have the same EAN of the central metal atoms/ions?



D. All of the above

Answer:



21. Three elements X , Y and Z have atomic numbers 19 , 37 and 55 respectively . Then the correct statements (s) is / are

A. Their ionization potential would increase with increasing atomic number

B. Y' would have an ionisation potential between those of 'X' and 'Z'

C. Z' would have the highest ionization potential

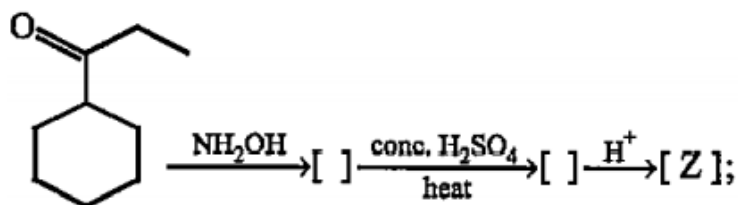
D. Y' would have the highest ionization potential

Answer:



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22.



Z is

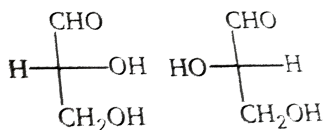
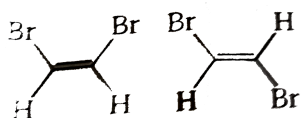
- A. a single compound
- B. a mixture of two compounds
- C. a mixture of three compounds
- D. a mixture of four compounds

Answer:



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23. The relationship among the following pairs of isomers is :



- I* A:Constitutional
II B: Cconfigurational
III C:Conformational
IV D:Optical

A. I-A,II-B,III-B,IV-D

B. I-A,II-A,III-B,IV-D

C. I-B,II-A,III-B,IV-D

D. I-B,II-B,III-B,IV-B

Answer:



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24. On adding ammonium hydroxide solution to $Al_2(SO_4)_3(aq)$

A. a precipitate is formed which does not dissolve in excess of ammonium hydroxide

B. a precipitate is formed which dissolves
in excess of ammonium hydroxide

C. no precipitate is formed

D. None of these

Answer:



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