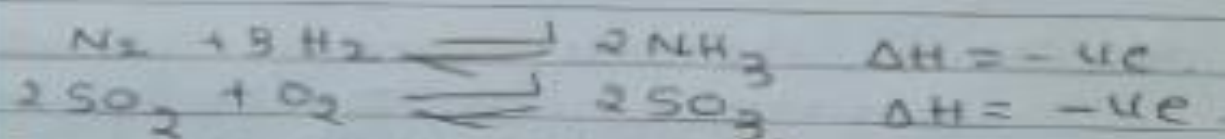


Holiday homework

1. What are isotopes Give Examples
2. Name the intermolecular forces present in the following.
 - a) water
 - b) Noble gases
 - c) Alcohols
 - d) hydrogen chloride
3. What are exothermic & endothermic reactions
4. Mention the conditions for Spontaneous process
5. State Le-Chatelier's principle.
6. With the help of Le-Chatelier's principle discuss the effect of
 - i) Temperature
 - ii) pressure
 - iii) con^2 of reactant for the equilibrium.

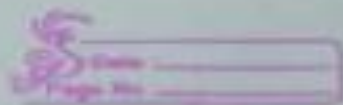


7. Give the conjugate acids of
- NH_3 , H_2O , OH^- , HSO_4^- , HCO_3^- ,
 PO_4^{3-} , SO_4^{2-} , CO_3^{2-} , HCl , NO_3^-

8. Give the conjugate bases of
- H_2O , NH_3 , HSO_4^- , HCO_3^- , HPO_4^{2-}

9. What are Lewis acids & bases.
10. Classify the following to Lewis acids & Lewis bases
- AlCl_3 , Mg^{2+} , H^+ , OH^- , Cl^- , NH_3 , H_2O

11. Define p^H , pK_a , pK_b



12. 2 base have pK_b value 7 & 9
which one of them is a strong base & why.
13. pK_a value of 2 acids is 3 & 14
which one of them is a strong acid & why.
14. Calculate the molar mass of
- 1) Glucose $C_6H_{12}O_6$
 - 2) Ethylene glycol $C_2H_6O_2$
 - 3) Urea $H_2N-C(=O)-NH_2$
 - 4) Ethanoic acid CH_3COOH
 - 5) Carbon tetrachloride CCl_4
 - 6) Vitamin C $C_6H_8O_6$
15. Convert 400 pm to meter.
16. Calculate mole fraction of benzene in a solution containing 30% by mass in CCl_4 .
17. Calculate the mass percentage of benzene & carbon tetrachloride if 22g of benzene is dissolved in 122g of CCl_4 .
18. Calculate the molarity of each of the following solutions
- a) 30g of $Co(NO_3)_2 \cdot 6H_2O$ in 4.3 L of solution.
 - b) 30 mL of 0.5 M H_2SO_4 diluted to 500 mL.
19. Calculate the mass of urea ($CO(NH_2)_2$) required in making 2.5 kg of 0.25 molar aqueous solution.
20. Calculate a) molarity b) molality & c) mole fraction of KI if the density of 20% (mass/mass) aqueous KI is 1.202 g mL^{-1} .