**TOT. MARKS: 60**

**TIME: 1.30Hr MIN**

**DATE: 29.4.20**

**EQUILIBRIUM -PRACTICE SHEET-01**

**SUBJECT: CHEMISTRY**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. | For the reaction equilibrium,  if at equilibrium and is total pressure. The ratio is equal to: | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 2. | of is monovalent metal ion at The maximum concentration of ions that could be attained in a saturated solution of this solid at is: | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 3. | Which of the following describes correct sequence for decreasing Lewis acid nature? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 4. | What should be the pH of solution to dissolve the ?  [Given, | | | | | | | |
|  | a) | 2.0 | b) | 3.0 | c) |  | d) | 4.0 |
| 5. | Which one of the following salts on being dissolved in water gives pH>7 at ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 6. | Aqueous solution of which salt has the lowest | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 7. | In a gaseous reversible reaction,  If pressure is increased then the equilibrium constant would be | | | | | | | |
|  | a) | Unchanged | | | | | | |
|  | b) | Increased | | | | | | |
|  | c) | Decreased | | | | | | |
|  | d) | Sometimes increased, sometimes decreased | | | | | | |
| 8. | Glycine is: | | | | | | | |
|  | a) | Arrhenius acid | b) | Lewis base | c) | Simplest amino acid | d) | All of these |
| 9. | On a given condition, the equilibrium concentration of are 0.80, 0.10 and 0.10 mol/L. The equilibrium constant for the reaction, , will be | | | | | | | |
|  | a) | 8 | b) | 16 | c) | 32 | d) | 64 |
| 10. | If of the solution is one, what weight of present in one litre of solution? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 11. | The concentration of hydroxyl ion in a solution left after mixing of and of is: | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 12. | For a reaction and equilibrium which of the following is correct? | | | | | | | |
|  | a) | Concentration of reactant=concentration of product | | | | | | |
|  | b) | Concentration of reactant is always greater than product | | | | | | |
|  | c) | Rate of forward reaction=rate of backward reaction | | | | | | |
|  | d) |  | | | | | | |
| 13. | The correct order of increasing basic nature of the given conjugate bases is: | | | | | | | |
|  | a) |  | | | | | | |
|  | b) |  | | | | | | |
|  | c) |  | | | | | | |
|  | d) |  | | | | | | |
| 14. | What is the equilibrium expression for the reaction  ? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 15. | A characteristic feature of reversible reaction is that : | | | | | | | |
|  | a) | They never proceed to completion | | | | | | |
|  | b) | They proceed to completion | | | | | | |
|  | c) | They are not complete unless the reactants are removed from the sphere of reaction mixture | | | | | | |
|  | d) | None of the above | | | | | | |
| 16. | The concentration of be in equilibrium with for the reaction : | | | | | | | |
|  | a) | 5 *M* | b) | 1.25 *M* | c) | 12.5 *M* | d) | 0.125 *M* |
| 17. | In the reaction,  In a 2 I flask 0.4 moles of each are taken. At equilibrium 0.5 moles of are formed. What will be the value of equilibrium constant? | | | | | | | |
|  | a) | 20.2 | b) | 25.4 | c) | 0.284 | d) | 11.1 |
| 18. | 0.005 M acid solution has 5 pH. The percentage ionisation of acid is | | | | | | | |
|  | a) | 0.8% | b) | 0.6 % | c) | 0.4 % | d) | 0.2 % |
| 19. | A solution of is … basic than a solution of . | | | | | | | |
|  | a) | Less | b) | More | c) | Equally | d) | None of these |
| 20. | Which statement is/are correct? | | | | | | | |
|  | a) | All Arrhenius acids are Bronsted acids | | | | | | |
|  | b) | All Arrhenius bases are not Bronsted base | | | | | | |
|  | c) | ion in solution exists as | | | | | | |
|  | d) | All of the above | | | | | | |
| 21. | The concentration of fluroacetic acid ( of acid ) which is required to get is: | | | | | | | |
|  | a) |  | | | | | | |
|  | b) |  | | | | | | |
|  | c) |  | | | | | | |
|  | d) |  | | | | | | |
| 22. | Which among the following is the strongest acid? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 23. | Which one of the following is not an amphoteric substance? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 24. | For the chemical reaction , that amount of at equilibrium is affected by | | | | | | | |
|  | a) | Temperature and pressure | | | b) | Temperature only | | |
|  | c) | Pressure only | | | d) | Temperature, pressure and catalyst | | |
| 25. | for the reaction, | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 26. | Densities of diamond and graphite are and respectively. Increase of pressure on the equilibrium : | | | | | | | |
|  | a) | Favours backward reaction | | | | | | |
|  | b) | Favours forward reaction | | | | | | |
|  | c) | Have no effect | | | | | | |
|  | d) | Increases the reaction rate | | | | | | |
| 27. | The solubility product of . Its solubility in mol/L is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 28. | Addition of sodium acetate to 0.1 M acetic acid will cause | | | | | | | |
|  | a) | Increase in pH | | | b) | Decrease in pH | | |
|  | c) | No change in pH | | | d) | Change in pH that cannot be predicted | | |
| 29. | The solubility in water of a sparingly soluble salt is . Its solubility product will be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 30. | and can not co-exist in a solution because of: | | | | | | | |
|  | a) | Common ion effect | | | | | | |
|  | b) | Acid-base | | | | | | |
|  | c) | principle | | | | | | |
|  | d) | Redox change | | | | | | |
| 31. | Formation of is favoured by | | | | | | | |
|  | a) | Increase in pressure | | | b) | Decrease in pressure | | |
|  | c) | Increase in temperature | | | d) | Decrease in temperature | | |
| 32. | A definite amount of solid is placed in a flask already containing gas at certain temperature and 0.50 atm pressures. Decomposes to give and and total equilibrium pressure in flask is 0.84 atm. The equilibrium constant for the reaction is : | | | | | | | |
|  | a) | 0.30 | b) | 0.18 | c) | 0.17 | d) | 0.11 |
| 33. | Hydroxyl ion concentration of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 34. | For a reaction in equilibrium : | | | | | | | |
|  | a) | There is no volume change | | | | | | |
|  | b) | The reaction has stopped completely | | | | | | |
|  | c) | The rate of forward reaction is equal to the rate of backward reaction | | | | | | |
|  | d) | The forward reaction is faster than reverse reaction | | | | | | |
| 35. | A solution of in water will: | | | | | | | |
|  | a) | Turn red litmus blue | | | | | | |
|  | b) | Turn blue litmus red | | | | | | |
|  | c) | Show no effect on litmus | | | | | | |
|  | d) | litmus | | | | | | |
| 36. | At constant temperature, the equilibrium constant for the decomposition reaction is expressed by  Where, = pressure, extent of decomposition. Which one of the following statements is true? | | | | | | | |
|  | a) | increases with increase of | | | b) | remains constant with change in and | | |
|  | c) | increases with increase of | | | d) | None of the above | | |
| 37. | The of a solution is. To this solution sufficient acid is added to decrease the to . The increase in hydrogen ion concentration is: | | | | | | | |
|  | a) | 1000 times | b) | times | c) | 100 times | d) | 5 times |
| 38. | Which of the following is a Lewis acid? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 39. | The solubility of. Its solubility in 0.1 molar sodium chloride solution is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 40. | In which of the following reaction? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 41. | for sodium chloride is . The solubility of sodium chloride is: | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 42. | Degree of dissociation of in water is , then hydrolysis constant of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 43. | What volume of sodium formate solution should be added to of formic acid to produce a buffer solution of of formic acid? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 44. | An acid H*A* ionises as  The pH of 1.0 M solution is 5. Its dissociation constant would be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 45. | Phosphorus pentachloride dissociates as follows, in a closed reaction vessel,  If total pressure at equilibrium of the reaction mixture is and degree of dissociation of , the partial pressure of will be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 46. | For the gaseous phase reaction, 2NO ⇌ N2 + O2, ∆°= - 43.5 kcal mol-1 , which statement is correct for, N2(g) + O2(g) ⇌ 2NO(g)? | | | | | | | |
|  | a) | is independent of temperature | | | | | | |
|  | b) | increases as temperature decreases | | | | | | |
|  | c) | decreases as temperature decreases | | | | | | |
|  | d) | varies with addition of NO | | | | | | |
| 47. | Which would decreases the of of a solution of hydrochloric acid? | | | | | | | |
|  | a) | The addition of magnesium metal | | | | | | |
|  | b) | The addition of hydrochloric acid | | | | | | |
|  | c) | The addition of hydrochloric acid | | | | | | |
|  | d) | None of the above | | | | | | |
| 48. | Which is not a Lewis acid? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 49. | Which is Lewis base? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 50. | Ammonia under a pressure of 15 atm at is heated to in a closed vessel in the presence of catalyst. Under the conditions, is partially decomposed according to the equation, . The vessel is such that the volume remains effectively constant whereas pressure increases to 50 atm. Calculate the percentage of actually decomposed | | | | | | | |
|  | a) | 61.3% | b) | 63.5% | c) | 65.3% | d) | 66.6% |
| 51. | For the system; the expression for equilibrium constant is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 52. | A monoprotic acid in a 0.1 M solution ionises to. Its ionisation constant is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 53. | For the reaction, the principle pressure of and CO are 2.0 and 4.0 atm respectively at equilibrium. The for the reaction is | | | | | | | |
|  | a) | 2.0 | b) | 4.0 | c) | 8.0 | d) | 1.6 |
| 54. | The vapour density of completely dissociated would be: | | | | | | | |
|  | a) | Slightly less than half of that of ammonium chloride | | | | | | |
|  | b) | Half of that of ammonium chloride | | | | | | |
|  | c) | Double that of ammonium chloride | | | | | | |
|  | d) | Determined by the amount of solid ammonium chloride used in the experiment | | | | | | |
| 55. | is … than . | | | | | | | |
|  | a) | Strong Lewis acid | b) | Strong Lewis base | c) | Weak Lewis acid | d) | Weak Lewis base |
| 56. | The equilibrium constant for the reaction, is at 2000K. In presence of a catalyst the equilibrium is attained ten times faster. Therefore, the equilibrium constant, in present of the catalyst, at 2000 K is: | | | | | | | |
|  | a) |  | | | | | | |
|  | b) |  | | | | | | |
|  | c) |  | | | | | | |
|  | d) | Difficult to compute without more data | | | | | | |
| 57. | The activation energies of forward and backward reaction: are 180kJ and 200 kJ respectively. The presence of a catalyst lowers the activation energy of both (forward and backward) reactions by 100 kJ . The enthalpy change of the reaction in the presence of catalyst will be (in kJ | | | | | | | |
|  | a) |  | | | | | | |
|  | b) |  | | | | | | |
|  | c) |  | | | | | | |
|  | d) |  | | | | | | |
| 58. | How will increase of pressure affect the equation? | | | | | | | |
|  | a) | Shift in the forward direction | | | b) | Shift in the reverse direction | | |
|  | c) | Increase in the yield of hydrogen | | | d) | No effect | | |
| 59. | If the pressure of mixture in a closed apparatus is 100 atm and 20% of the mixture then reacts, the pressure at the same temperature would be : | | | | | | | |
|  | a) | 100 | b) | 90 | c) | 85 | d) | 80 |
| 60. | Acts as ............ in. | | | | | | | |
|  | a) | Strong acid | b) | Weak acid | c) | Strong base | d) | Weak base |