Chemistry - FSC Part 1 Chemistry Full Book Short Question Preparation

Q1. Why the equilibrium constant value has its units for some of the reversible reactions but has not units for some other reactions?

Ans 1:

Units of K_c depends upon the number of moles of reactions and products involved in the reaction.

1. If number of moles of reactant and products are same it has no unit.
2. If number of moles of reactants are different from products then K_c has units, related to the concentration or pressure.

Q2. Why do rates of forward reactions slow down the reversible reaction approaches the equilibrium stage?

Ans 1: The rate of forward reaction is directly proportional to molar conc.of reactants.Near the equilibrium stage, the concentration of reactant become small .Therefore the rate of forward reaction slow down due to decrease in concentration .

Q3. What is upper consulate temperature and give one example?

Ans 1: The temperature of 65.9°C at which two conjugate solutions merge into one another is called critical solution temperature or upper consulate temperature .For Example 34% phenol and 66% water solution.

Q4. How the temperature of the system change during exothermic and endothermic reactions?

Ans 1: In an exothermic reaction, heat is evolved which increases the temperature of the system. In an endothermic reaction, heat is absorbed, so the temperature of the system falls down. These statements are true when the system is isolated.

Q5. Give two characteristics of enzyme catalyst?

Ans 1: There are following characteristics of an enzyme.

1. Enzymes catalysis is highly specific.
2. Rate of enzymatic reaction is maximum at optimum temperature and pH.
3. Enzymatic activities are enhanced by the presence of an activator.

Q6. What will be nature of solution when (s) pH is more than 7 (b) pH is smaller than 7?

Ans 1: pH scale generally ranges from 0 to 14. When pH is less than 7 the solution has acidic nature.When pH is greater than 7 then solution is base.

Q7. Explain the function of salt bridge?

Ans 1: Function of salt Bridge: A salt bridge performs following functions:

1. It brings electrical contact between two half cells.
2. It maintains electrical neutrality of two solutions.

Q8. A final divided catalyst may prove more effective why?

Ans 1: When a catalyst is finely divided, it has greater surface areas and possibilities of atoms and molecules of reactants to come in contact with each other increase and rate exchange.
E.g. $CaCO_3$ Reacts much more rapidly in powder form, as compared to its big pieces.

Q9. Why in exothermic reaction, heat is released from the system?

Ans 1: In a chemical change if enthalpy of product is less than the enthalpy of reactant.Heat is released from the system to surrounding . Hence heat is released in an exothermic reaction.

Q10. The total volume of the solution by mixing 100 cm^3 Of water 100 cm^3 Of alcohol may not be equal to 200 cm^3 Justify it?

Ans 1: Alcohol and water are mix in all proportions.However, the properties of such solutions are not strictly additive.Generally, the volume decreases ,mixing but in some cases it increases.Heat may be evolved or absorbed during the formation of such solutions.

Q11. Define consulate solution temperature with example (what is consulate temperature)?

Ans 1: Consulate Temperature: The temperature at which two conjugate solutions merge into each other to form homogeneous mixture is called critical solution temperature or consulate temperature.e.g Water -Aniline has consulate temperature 167°C with 15% H_2O.

Q12. **Differentiate between stationary and mobile phase?**

Ans 1: The solvent or the mixture of solvents used for the separation components in chromatography is called mobile phase. The phase over which mobile phase flows is stationary one. Water, ethyl alcohol etc. are some important Mobile phases while silica gel and filter paper are some important stationary phases.

Q13.

Is it true that the sum of Pk_a and pK_b is always equal to 14 at all temperature for any acid?

Ans 1:

It is not true because pK_a and pK_b values are temperature dependent. The degree of ionization of any acid increases as the temperature increases.Hence the value of Pk_a and pK_b change with change in temperature.

Q14. What are application of buffer in daily life?

Ans 1: Buffers are important in many areas of chemistry and allied science like molecular biology, microbiology, cell biology, soil science, nutrition and the clinical analysis.

Q15. State Le-Chatlier's principle?

Ans 1: Le-Chatlier's principle:If stress is applied to a system at equilibrium, the system will act in such a way so as to nullify as for as possible the effect of that stress.

Q16. **Whichever gas is used in the discharge tube, the nature of the cathode rays remains the same. Why?**

Ans 1: All the gases are consisted of atoms or molecules. They have electrons in outermost orbitals. These electrons are detached by the high voltage and due to collisions, these electrons become free. They are repelled by the cathode and attracted towards the anode. That is why, they are called cathode rays. They are always electrons and nothing else.

Q17. What will be the nature of solution having pH equal to 12?

Ans 1: The value of pH varies between 0-14.A solution having pH value 0-7 are acidic in nature while a solution having pH value 7-14 are basic in nature.
PH=12, This solution is basic

Q18. Define negative catalyst along with an example?

Ans 1: A substance which decreases the rate of reaction is called negative catalyst or inhibitor.
E.g.Tetraethyl is added to petrol because it control pre-ignition of petrol.

Q19. **The bent structure of H_2O show that it should have a dipole moment.**

Ans 1:

Q20. **How did Rutherford's model of an atom first of all proved the existence of nucleus of the atom?**

Ans 1: Rutherford observed that most of the a-particles passed straight through the gold foil without any deflection from the path. Few of them were deflected at some angle more than 90° and a few were deflected back on the original path. He concluded that the atom contains heavy and positively charged part at the center. This heavy part at the center is called nucleus.
