Emulsion Chemistry Questions with Solutions

Q1. Which of the following is/are examples of emulsion?
(a) Milk
(b) Butter
(c) Mayonnaise
(d) All of the above
Answer: (d) All of the above

Q2. Mayonnaise is an example of _____ emulsion.
(a) Oil in water
(b) Water in oil
(c) Natural
(d) None of the above
Answer: (a) Oil in water emulsion.

Q3. Milk is an example of _____ emulsion.
(a) Oil in water
(b) Water in oil
(c) Natural
(d) None of the above
Answer: (a) Oil in water emulsion.

Q4. The colloidal system in which the disperse phase and dispersion medium is both liquids is known as _____.
(a) Suspension
(b) Emulsion
(c) Both (a) and (b)
(d) None of the above
Answer: (b) Emulsion

Q5. Which of the following is/are examples of emulsifiers?
(a) Soap
(b) Oil
(c) Both (a) and (b)
(d) None of the above
Answer: (a) Soap

Q6. What is an emulsion?
Answer: An emulsion is a mixture of more than one liquid that is generally immiscible due to liquid-liquid phase separation. It consists of two phases, i.e. dispersed phase and the dispersion medium.

Q7. What is an emulsifier?
Answer: An emulsifier is a substance that increases the emulsion's kinetic energy, thereby stabilising it.

Q8. What are the types of emulsions?
Answer: An emulsion is an immiscible mixture of two or more liquids. We can classify it into two types.
1. Oil in Water emulsion
2. Water in Oil emulsion

Q9. How do emulsifier agents stabilise the emulsion?
Answer: An emulsifier increases the kinetic energy and decreases the interfacial tension between the liquids, forming an emulsion, thereby stabilising it.

Q10. Give some examples of emulsions.
Answer: Paint, egg yolk, butter, mayonnaise, and cream are some examples of emulsions.

Q11. Name any three techniques used to separate emulsion.
Answer: The three techniques used to separate emulsions are mentioned below.
1. Centrifugation
2. Freezing
3. Heating

Q12. What are the properties of emulsion?
Answer: Emulsion is a mixture of liquids typically immiscible in water due to liquid-liquid phase separation. A few properties of emulsion are mentioned below.

- It comprises the dispersed phase and the dispersion medium.
- An interface separates the dispersed phase and the dispersion medium.
- It has a cloud peek.
- It demonstrates Tyndal Effect.
- The particle size distribution of the dispersed phase is not uniform.
- They are unstable.
- We can separate the dispersed phase from the dispersion medium by keeping it undisturbed for a while.

Q13. What is water in oil emulsion?

Answer: Emulsion having water as a dispersed phase and oil as the dispersion medium is known as water in oil emulsion. Water acts as an internal phase, whereas oil acts as an external phase in this emulsion.
Example: Butter, cold cream.

Q14. What is oil in water emulsion?
Answer: Emulsion having oil as a dispersed phase and water as the dispersion medium is known as oil in water emulsion. The oil acts as an internal phase, whereas water acts as an external phase in this emulsion.
Example: Milk, egg yolk.

Q15. Differentiate between emulsion and suspension.
Answer:

S. No.	Emulsion	Suspension
1.	An emulsion is a heterogeneous mixture of two immiscible liquids. It is a type of colloid, and dispersed particles do not settle on standing.	Suspension is a heterogeneous mixture where the dispersed particles are large and settle on. standing
2.	The size of the particle is between 1 to 1000 nm.	The size of particles is more than 1000 nm.
3.	It can not be separated by filtration.	It can be separated by filtration.
4.	Example: Butter, milk, egg yolk, cold cream.	Example: Sand water, Flour water.

Practise Questions on Emulsion

Q1. Explain the mechanism of emulsion.
Answer: Some mechanisms involved in emulsification are mentioned below.
1. According to surface tension theory, emulsification reduces the interfacial tension between the two phases.
2. According to the repulsion theory, a film is created over one phase by the emulsifying agent. The film forms globules that repel each other. It is their cause for suspension in the dispersion medium.
3. Viscosity modification – Some emulgents, like acacia, glycerine, and carboxymethyl cellulose, increase the viscosity of the medium. It helps in maintaining and creating the suspension of globules of the dispersed phase.

Q2. What are the applications of emulsion?
Answer: Emulsion is a mixture of more than one liquid that is generally immiscible due to liquid-liquid phase separation. It has multiple applications. A few of them are mentioned below.

- It is used in cosmetics, pharmaceuticals, and personal hygiene.
- Microemulsions are used to deliver vaccines to kill various microbes.
- It is used in chemical synthesis, mainly in the manufacture of polymer dispersions.
- It is used in firefighting.
- Nanoemulsions such as soybean oil is used to kill microbes.
- Mayonnaise is an oil in water emulsion with egg yolk or sodium stearoyl lactylate.

Q3. What is a complex emulsion?
Answer: Complex emulsions are also called multiple emulsions. In these emulsions, a complex system exists in which both oils in water and water in oil emulsion exist together and are stabilised by surfactants.

Q4. What is Emulsification?
Answer: The process of formation of emulsions is called emulsification. In this process, one immiscible liquid is dispersed in another immiscible liquid. Thus, we can say that emulsifying two immiscible liquids are called emulsification. For example, in oil-water cutting, a fluid emulsion used for metalworking is formed by emulsifying oil in the water medium.

Q5. What is flocculation?
Answer: Flocculation is a process by which a chemical coagulant added to the water facilitates bonding between particles, creating larger aggregates that are easier to separate. The method is widely used in water treatment plants and can also be applied to sample processing for monitoring applications.