Experiment –2…………… Date: 

Objective: To prepare:
(a) A true solution of common salt/ sugar
(b) A suspension of soil/chalk powder in water &
(c) A colloidal dispersion of starch/egg albumin/milk in water

Requirements: Test tubes, Test tube rack, Corks, milk, distilled water, common salt, chalk powder, water etc.

Procedure:
1. Take about 5-10 ml of distilled water in a test tube.
2. Add about a drop or 2 of milk to it and mix well.
3. Allow to stand for some time
4. Dissolve common salt in about 5 ml of water taken in a test tube to prepare a sample of true solution
5. Mix chalk powder in about 5 ml of water to prepare a sample of suspension.

<table>
<thead>
<tr>
<th>TEST</th>
<th>TRUE SOLUTION</th>
<th>COLLOID</th>
<th>SUSPENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check transparency</td>
<td>Transparent</td>
<td>Translucent</td>
<td>Turbid, opaque</td>
</tr>
<tr>
<td>Whether the sample can be separated by filtration or not</td>
<td>a. Sample particles are not visible at all</td>
<td>a. Sample particles do not settle</td>
<td>a. Particles settle upon standing</td>
</tr>
<tr>
<td></td>
<td>b. Filtration is not possible</td>
<td>b. Filtration is not possible</td>
<td>b. Filtration is possible</td>
</tr>
<tr>
<td>Stability</td>
<td>Stable</td>
<td>Stable</td>
<td>Unstable</td>
</tr>
</tbody>
</table>

Precautions:
1. Use only dilute solutions
2. Do not add excess of milk
3. Use a very fine powder of chalk

Answer the following:
1. Give four examples of colloidal dispersions.
2. Are colloidal particles neutral of electrically charged?
3. Give the difference between colloidal dispersion and suspension.

<table>
<thead>
<tr>
<th>Property</th>
<th>Colloid</th>
<th>Suspension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particle size:</td>
<td>$10^{-7}$ to $10^{-5}$ cm</td>
<td>$&gt;10^{-5}$ cm</td>
</tr>
<tr>
<td>Visibility:</td>
<td>Invisible</td>
<td>Visible</td>
</tr>
<tr>
<td></td>
<td>Translucent</td>
<td>Opaque</td>
</tr>
<tr>
<td></td>
<td>Shows Tyndall effect</td>
<td>Shows only when stirred</td>
</tr>
<tr>
<td></td>
<td>Shows Brownian movement</td>
<td>Does not show</td>
</tr>
</tbody>
</table>

4. It is not correct to use the term “solution” to represent a colloid. Why?

5. Classify the following as suspension, true solution and colloid:

   a. Sugar syrup     b. chalk powder in water   c. salt solution
   d. soap solution   e. S in CS$_2$           f. human blood

Multiple choice type questions:

1. The mixture which will appear translucent
   a) copper sulphate & water   b) alum & water
   c) sugar & water   d) starch + Water

2. Which among the following is not a mixture
   a) Sugar solution   b) Salt solution   c) Air   d) Sulphur dioxide

3. A student carefully observed the properties of colloid of egg albumin in water and listed them as below that it was:
   I) translucent   ii) stable   iii) homogeneous   iv) filterable
   The property which is not correct is:
   a) (i), (iii)   b) (ii), (iii)   c) (iii), (iv)   d) (i), (iv)

4. Which one of the following is wrong about mixture
   a) It is always heterogeneous
   b) It may contain any number of elements & compounds
   c) The components can be easily separated
   d) The properties of the mixture are same as those of its components

5. Four students took 4 beakers A, B, C & D half filled with water. They dissolved soil, chalk powder, sugar, fine sand in them after observation they found that
   a) A, B & D are suspensions   b) B, C & D are suspensions
   c) C, B & A are suspensions   d) A, C & D are suspensions

6. An example of suspended particles in a mixture
   a) Soap in water   b) Milk in water   c) Alcohol in water   d) Saw dust in water

7. The colloidal solution where both the dispersed phase & dispersion medium are liquids is
   a) Milk churned with water   b) Butter   c) Shaving cream   d) Starch solution in water

8. Tyndall effect is observed in which one of the following
   a) True solution   b) Starch + water   c) Common salt + water   d) Alum + water

9. You have prepared 4 different mixtures in water using charcoal powder, chalk powder, slaked lime & detergent powder. If you filter these mixtures through a filter paper there will be no residue left after filtration in case of
   a) Chalk powder   b) Charcoal powder   c) Slaked lime   d) Detergent powder

10. Choose the correct answer:
    To prepare a colloidal solution of starch in water
    a) add starch powder to boiling water & cool
    b) add starch powder to cold water & boil
    c) heat starch, add it to cold water & then bring to boil
    d) add thin paste of starch to hot water with stirring