Separation ofSubstances

(English Medium)

Exercise 19:

Solution 1(a):

S.No.	Name of the substance	Made of
1	Tea	Water, milk, sugar, tea leaves.
2	Lemonade	Sugar, water, lemon juice, salt.
3	Soil	Sand, stones, organic substances.
4	Sea water	Water, common salt, and other salts.

Solution 1(b):

S.No.	Name of the mixture	From which constituents it is made?		
		Solid	Liquid	Gaseous
1.	Mixture of rice and pulses	Rice and pulse	–	–
2.	Lemon juice	–	Lemon juice and water	–
3.	Air	–	–	Mixture of gases such as oxygen, carbon

				dioxide etc.
4.	Sugar solution	Sugar	Water	–
5.	Soda-water	–	Water	Carbon dioxide
6.	Fog	Dust particles	–	Moisture
7.	Fermented dough for Dhokalas	Flour of gram and rice	Buttermilk	Carbon dioxide

Exercise 20:

Solution 1(a):

S.No.	Type of mixture	Example
1.	Mixture of solid substances	Detergent
2.	Mixture of liquid substances	Lemon juice
3.	Mixture of gaseous substances	Air
4.	Mixture of solid and liquid substances	Salt solution
5.	Mixture of gaseous and liquid substances	Soda water
6.	Mixture of gaseous and solid substances	Fog, smoke.
7.	Mixture of solid, liquid and gaseous substances	Smog

Exercise 21:

Solution 1:

Stones are harmful for health and hence, are separated from grains.

Solution 2:

To separate coins of different denominations from a heap.

Exercise 22:

Solution 1(a):

We separate the substances left in the sieve from the flour as they are unwanted

substances.

Solution 1(b):

This method is used to separate broken rice from whole rice.

Solution 2(a):

The husk of salty peanuts is traditionally treated as waste and sold off as animal feed. Hence, we remove the husk of salty peanuts. However, recent study has showed that the husk of peanuts contains an antioxidant which is useful for the body.

Solution 2(b):

The farmer removes impurities from harvested grain by using this method.

Solution 3(a):

We can see that chaff is removed from peanuts on blowing air and peanuts without chaff remain in the hand.

Exercise 23:

Solution 1(a):

The dirt settles down and pure water forms upper layer which can be decanted.

Solution 1:

This method is used to remove excess of water from buttermilk.

Solution 2:

Dust and dirt are unhealthy or unhygenic substances and hence, are separated from water.

Exercise 24:

Solution 1(a):

The two layers get separated; the upper layer is of kerosene and the lower layer is of water.

Exercise 25:

Solution 1(a):

The insoluble solid impurities are unhygienic and unhealthy; hence, they have to be removed from water.

Solution 1(b):

This method is used at home to filter tea.

Solution 2(a):

Small iron components or articles made up of iron can be separated by this method.

Solution 2(b):

This method is used to separate iron articles from waste.

Solution 3(a):

We can see that iron filings get attracted towards the magnet.

Exercise 27:

Solution 1(a):

We can see that common salt remains in the saucer.

Solution 1(b):

This method is used to separate common salt from sea water.

Exercise 28:

Solution 1(a):

The water in the round bottom flask gets boiled. The steam enters the condenser. Water droplets get collected as distilled water in the flask.

Solution 1:

The use of distilled water is as follows: Doctors use distilled water to dissolve medicine which has to be given through injection.

Solution 2:

Distilled water is not proper for drinking as it does not contain essential salts.

Solution 1(b):

This method is used in perfume industries.

Exercise 29:

Solution 1:

1. Mixture of Sulphur and iron filings: Using Magnetic method as iron gets attracted to the magnet and sulphur does not.
2. Mixture of oil and water: Using separating funnel method as oil and water do not get mixed together. Their densities are different; hence, water forms the lower layer and oil forms the upper layer.
3. Mixture of peanuts and grams: Using Sieving because the size of peanut and gram is

different.

4. Mixture of common salt and Naphthalene balls: it can be separated using three methods as naphthalene balls can be separated by picking. Other method is by filtration, in which common salt is soluble in water while naphthalene balls are insoluble. The third method is by sublimation method as naphthalene sublimes while common salt does not.
5. Solution of sugar: Using evaporation as water gets evaporated on heating while sugar remains behind.

Solution 2.1:

Filtering	Decantation
It involves filtering out the insoluble solid using a filter paper or a strainer.	The insoluble solid-liquid mixture is allowed to stand without any disturbance. The insoluble solid particles settle at the bottom, while the liquid floats above it. The liquid can be decanted and separated from solid particles.
It is used to separate both heavy and light particles from liquid.	It is used to separate only heavy particles from liquid.

Solution 2.2:

Sieving	Picking
Sieving method is based on the difference in the size of solid particles.	Hand-picking method is based on the difference in the size, colour and shape of solid particles.
It involves passing the mixture through a sieve which allows the passage of smaller sized particles.	It involves picking up the undesirable particles which differ from the desirable particles.
Example: Separation of large-sized particles from wheat flour.	**Example:** Separation of small stones from grain particles.

Solution 2.3:

Evaporation	Distillation
Evaporation method is based on evaporation of the liquid component in a soluble solid-liquid mixture.	Distillation is based on the distillation property of the liquid component in a solid-liquid mixture.

The mixture is heated such that the liquid component evaporates and the solid remains behind.	It involves evaporation, followed by condensation of the liquid component and the solid remains behind.
Example: Separation of salt from water	**Example:** Distillation of sea water to give pure water in the laboratory

Solution 3:

- Fermented syrup for Jalebi: It is a mixture of solid, liquid and gaseous substances
- Soil: It is a mixture of solid substances
- Air: It is a mixture of gaseous substances
- Lemon juice: It is a mixture of solid and liquid substances
- Solution of glucose: It is a mixture of solid and liquid substances.

Solution 4:

The list of different methods for isolation used in daily life is as follows:

1. Picking: This method is used to remove small pieces of stones from grains.
2. Sieving: This method is used to remove impurities from wheat flour.
3. Winnowing: This method is used to remove chaff and light waste from grains.
4. Decantation: This method is used to settle down dirt in dirty water.
5. Filtration: This method is used to separate tea leaves from tea water.