1. Crystallization

2. Distillation, since acetone is more volatile it will separate out first.

3. Particle size in a suspension is larger than those in a colloidal solution. Also molecular interaction in a suspension is not strong enough to keep the particles suspended and hence they settle down.

4. Both fog and smoke have gas as the dispersion medium. The only difference is that the dispersed phase in fog is liquid and in smoke it is a solid

5. (a) Sublimation (f) Sedimentation (b) Diffusion (g) Scattering of light (Tyndall effect) (c) Dissolution/diffusion

(d) Evaporation, diffusion (e) Centrifugation

6. 'C' has made the desired solution

Mass by volume % = Mass of solute/ Volume of solution ×100 = 50×100/100= 50 % mass by volume

7. Pure gold is very soft as compared to gold alloyed with silver or copper. Thus for providing strength to gold, it is alloyed

8. Tyndall effect can be seen when light passes through a heterogeneous mixture. Example, when sunlight passes through the canopy of a dense forest.

9. Let the mass of sodium sulphate required be = x g The mass of solution would be = (x +100) g

x g of solute in (x + 100) g of solution

20% = [x/(X+100)] ×100 So , x = 25 g

10. Passing the mixture through water can separate the mixture of ammonia and hydrogen. Ammonia being highly soluble dissolves in water while H_2 passes out as gas.

11. When blue vitriol is a gradually heated to about 800^{o}C, it undergoes a physical change to form a white powder. On adding a drop of water to the white powder, it changes back to blue. Thus the change is a physical change. On strongly heating, copper sulphate (blue vitriol)

decomposes to give new substances like copper oxide and sulphur dioxide. On cooling these, copper sulphate cannot be re-obtained. Thus it is a chemical change.

12. Heating cannot separate the mixture, as both substances sublime on heating. However, when water is added to the mixture, NH_4Cl dissolves but I_2 does not. The mixture is filtered. The filtrate is a solution of NH_4Cl, while the residue is iodine. The filtrate is heated to obtain NH_4Cl crystals.

13. Gunpowder is a mixture of sulphur, charcoal and potassium nitrate (nitre). When water is added to the mixture potassium nitrate dissolves. The mixture is then filtered. The filtrate is potassium nitrate solution while the residue is a mixture of sulphur and charcoal. The filtrate is evaporated on a sand bath to obtain nitre back. When carbon disulphide is added to the residue, sulphur dissolves. When this mixture is filtered the filtrate is sulphur solution while the residue is charcoal. Leaving it open evaporates the sulphur solution. Carbon disulphide evaporates and sulphur crystals are left behind.

14. a) Iodine dissolved in alcohol is called tincture of iodine. Alcohol is a volatile liquid. So the mixture can be kept open or warmed in a water bath. Alcohol will evaporate leaving behind the iodine crystals.

b) Add hot water to the mixture of lead chloride and silver chloride. Lead chloride ($PbCl_2$) is soluble in hot water and it dissolves. Silver chloride (AgCl) is insoluble in hot water and so the mixture should be filtered immediately. The filtrate is the solution of $PbCl_2$ and the residue is AgCl. The filtrate is heated to obtain crystals of $PbCl_2$.

15. i) Add a solvent to the mixture of sulphur and sand. Sulphur dissolves in carbon disulphide while sand does not. When filtered, the residue is sand. The filtrate is kept open, carbon disulphide evaporates and the sulphur crystals form.

ii) Add a solvent to the mixture of CuO and ZnO that dissolves only one component e.g. sodium hydroxide. When sodium hydroxide is added to the mixture, ZnO dissolves. Filter to obtain the residue of CuO.

16. (a) Heterogeneous, centrifugation (b) physical, chemically (c) water, chloroform (hint– density of water is less than that of chloroform) (d) fractional distillation (e) scattering, Tyndall effect, colloidal