(c) Explain what happens in the following tests and write balanced chemical equations for each.

(i) small amount of solid sodium nitrite was dissolved in water. A drop of potassium permanganate solution was added and made slightly acidic with dilute sulphuric acid.

(ii) small amount of sodium sulphite was placed in a test tube and few drops of conc. sulphuric acid was added.

(d) Identify the following gases

(i) colourless, white fumes in air, dense white fumes with glass rod wet with ammonia solution.

(ii) red-brown, acid to litmus, turns starch-KI paper bluish black.

(iii) colourless, pungent gas, turns filter paper moistened with acidified $K_2Cr_2O_7$ solution green.

3. (a) With the aid of diagrams briefly describe and explain the methods of

(i) steam distillation

(ii) soxhlet extr...

(b) How would you separate

(i) kerosene mixed with granulated sugar

(ii) mixture of proteins.

(iii) palm oil mixed with powdered charcoal.

(c) A compound X migrates 4.2 cm from point of application on a TLC plate whereas at the same time the solvent front migrates 7.4 cm beyond the point of sample application..

(i) Calculate the R_f value for the compound X.

(ii) On an identical plate, the solvent front moved 10.3 cm beyond the point of sample application. Where should compound X be located on the plate.

4. (a) Is it ever safe to pipet a chemical solution by mouth? What about water?

(b) Why is an error in a lab notebook NEVER erased or obliterated.

(c) When transfering a liquid using a volumetric pipet, should the last drop of liquid remaining inside the tip be blown out into the volume that was drained from the pipet?

(d) Your lab partner incorrectly adds water to a beaker containing concentrated acid. The mixture boils and splatters, splashing some acid onto his face and goggles. He cries for help. His eyes are tightly shut. Describe briefly what actions you will take?