Time allowed: **Three** hours

1. "You are provided with the following solutions"

   i.   1.0 M KI (**P**)
   ii.   0.5 M $K_2S_2O_8$ (**Q**)
   iii.   0.05 M $Na_2S_2O_3$ (**R**)

Perform the following experiment and answer the questions below.

• Pipette 10.0 ml of Solution Q into a boiling tube.

• Add 5 ml of distilled water and 10 drops of starch solution tó it.

• Maintain this solution at the desired temperature (starting with 45°C).

• In another boiling tube, mix 5.0 ml of Solution R and 5.0 ml of Solution P, and maintain it at the same temperature (45°C) for 20 minutes.

• Mix both solutions and start the stopwatch when half of the solutions are combined.

• Measure the time taken for the solution to turn blue.

• Repeat this entire procedure at temperatures of 35°C, 25°C, and 15°C, following the same steps for each temperature.

   i.   Tabulate your results.

   ii.   Write balanced equations for all the reactions involved.

   iii.   Write the linear form of the Arrhenius equation and explain the terms in it.

   iv.   Determine the activation energy of the reaction by plotting a suitable graph

*****End*****