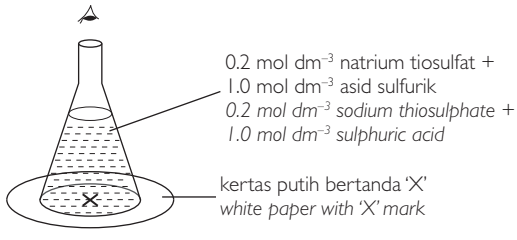
EKSPERIMEN KENDIRI

7 FAKTOR MEMPENGARUHI KADAR TINDAK BALAS

Buku Teks: BAB 1 m.s. 22 – 25

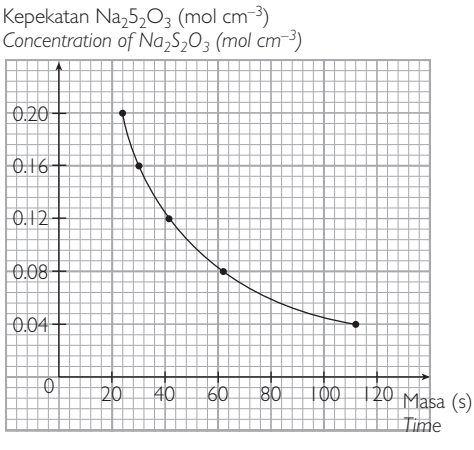
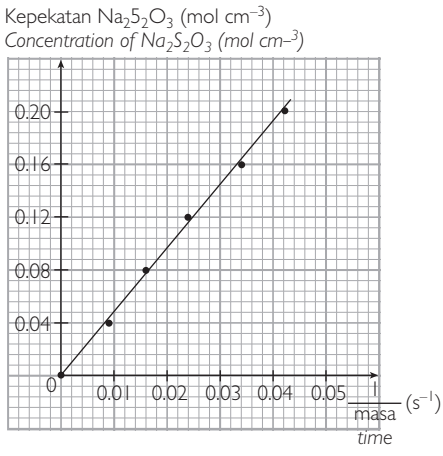
KBAT Menganalisis

Tujuan *Aim*	Untuk menyiasat kesan kepekatan mempengaruhi kadar tindak balas antara natrium tiosulfat dengan asid sulfurik *To investigate the effect of the effect of concentration on the rate of reaction between sodium thiosulphate and dilute sulphuric acid*
Penyataan Masalah *Problem Statement*	Bagaimanakah kepekatan mempengaruhi kadar tindak balas antara natrium tiosulfat dengan asid sulfurik? *How does the concentration affect the rate of reaction between sodium thiosulphate and dilute sulphuric acid?*
Hipotesis *Hypothesis*	Semakin tinggi kepekatan larutan natrium tiosulfat, semakin tinggi kadar tindak balas dengan asid. *The higher the concentration of sodium thiosulphate solution, the higher the rate of reaction with acid.*
Pemboleh ubah *Variable*	(a) Dimanipulasi : _____ *Manipulated* : _____ (b) Bergerak balas : _____ *Responding* : _____ (c) Ditetapkan : _____ *Fixed* : _____
Bahan dan radas *Materials and apparatus*	0.2 mol dm^{-3} natrium tiosulfat, 1.0 mol dm^3 sulfurik asid, air suling 10 cm^3 100 cm^3 silinder penyukat, 100 cm^3 kelalang kon, kertas putih bertanda "X" dan jam randik *0.2 mol dm^{-3} sodium thiosulphate, 1.0 mol dm^3 sulphuric acid, 10 cm^3 distilled water, 100 cm^3 measuring cylinder, 100 cm^3 conical flask, white paper with "X" mark and stopwatch*
Prosedur *Procedure*	 **1** Sukat 50 cm^3 larutan natrium tiosulfat 0.2 mol dm^{-3} dengan menggunakan 100 cm^3 silinder penyukat dan dituang ke dalam kelalang kon kering. *Measured 50 cm^3 of 0.2 mol dm^{-3} sodium thiosulphate solution using a 100 cm^3 measuring cylinder and is poured into a dry conical flask.* **2** Letak kelalang kon di atas sehelai kertas yang mempunyai tanda 'X'. *Placed the conical flask is on top of a piece of paper with a 'X' mark.* **3** Sukat 5 cm^3 asid sulfurik 1 mol dm^{-3} dengan menggunakan 10 cm^3 silinder penyukat dan tuang ke dalam larutan natrium tiosulfat dengan cepat. Jam randik dimulakan dengan serta-merta. *Measured 5 cm^3 of 1 mol dm^{-3} sulphuric acid is using a 10 cm^3 measuring cylinder. The acid is then quickly poured into sodium thiosulphate solution. The stop watch is started immediately.* **4** Goncang campuran bahan tindak balas dalam kelalang kon dan tanda 'X' dilihat tegak dari atas kelalang kon. *Swirled the reaction mixture in the conical flask and the 'X' mark is viewed vertically from the top of conical flask.* **5** Jam randik dihentikan sebaik saja tanda 'X' hilang daripada pandangan. Rekodkan masa yang diambil. *The stop watch is stopped immediately when the mark 'X' is no longer visible. Recorded the time taken.* **6** Ulang langkah 1 – 5 dengan menggunakan campuran isi padu larutan natrium tiosulfat dan isi padu air suling yang berbeza seperti ditunjukkan dalam jadual. *Steps 1 to 5 are repeated using different mixture volume of sodium thiosulphate solution with different volumes distilled water as shown in the table.*

Eksperimen

Pemerhatian /Perbincangan
Observations /Discussion

Eksperimen *Experiment*	1	2	3	4	5
Isi padu larutan natrium tiosulfat 0.2 mol dm^{-3} *Volume of 0.2 mol dm^{-3} sodium thiosulphate solution, cm^3*	50.0	40.0	30.0	20.0	10.0
Isi padu air suling *Volume of distilled water, cm^3*	10.0	20.0	30.0	40.0	50.0
Isi padu larutan asid sulfurik 0.2 mol dm^{-3} *Volume of 1.0 mol dm^{-3} sulphuric acid, cm^3*	5.0	5.0	5.0	5.0	5.0
Kepekatan larutan natrium tiosulfat *Concentration of sodium thiosulphate, mol dm^{-3}*	0.20	0.16	0.12	0.08	0.04
Masa yang diambil, *Time taken, s*	25.0	31.0	42.0	63.0	112.0
1/ masa *1/ time, s^{-1}*	0.040	0.032	0.024	0.016	0.009

Graf kepekatan larutan natrium tiosulfat lawan masa *Graph concentration of sodium thiosulphate solution*	**Graf kepekatan larutan natrium tiosulfat lawan 1/masa** *Graph concentration of sodium thiosulphate solution against 1/time*
 Graf 1 *Graph 1*	 Graf 2 *Graph 2*

Inferens
Inferences

1 Berdasar Graf 1, semakin tinggi kepekatan larutan natrium tiosulfat, semakin _____ untuk tanda 'X' hilang daripada pandangan.

Based Graph 1, the higher the concentration of sodium thiosulphate solution, the _____ _____ for 'X" mark to disappear from view.

2 Berdasar Graf 2, semakin tinggi _____, semakin besar nilai 1/masa. 1/masa mewakili kadar tindak balas. Jesteru, kadar tindak balas meningkat apabila kepekatan larutan natrium tiosulfat meningkat. KBAT **Menganalisis**

Based Graph 2, the higher the _____, the larger the value of 1/time. 1/time represent the rate of reaction. Hence, the rate of reaction increases when the concentration of sodium thiosulphate solution increases.

Kesimpulan
Conclusion

Apabila kepekatan satu bahan tindak balas _____, kadar tindak balas juga _____. Maka hipotesis diterima.

When the total surface area of a reactant _____, the rate of reaction _____.There for the hypothesis is accepted.

EKSPERIMEN KENDIRI

8 GETAH ASLI

Buku Teks: BAB 2 m.s. 176 – 178

KBAT Menganalisis

Tujuan *Aim*	Untuk mengkaji kesan asid dan alkali terhadap gumpalan lateks *To investigate the effects of acid and alkali on coagulation of latex*
Penyataan Masalah *Problem Statement*	Bagaimanakah jenis larutan yang ditambah kepada lateks mempengaruhi penggumpalannya? *How does the solution added to latex affect its coagulation?*
Hipotesis *Hypothesis*	Apabila asid etanoik ditambah ke dalm lateks, lateks menggumpal manakala apabila larutan ammonia ditambah ke dalam lateks, lateks tidak menggumpal. *When ethanoic acid is added into latex, the latex coagulate whereas when ammonia solution is added into latex, the latex does not coagulate.*
Pemboleh ubah *Variable*	(a) Dimanipulasi : _____ *Manipulated* : _____ (b) Bergerak balas : _____ *Responding* : _____ (c) Ditetapkan : _____ _____ *Fixed* : _____ _____
Bahan dan radas *Materials and apparatus*	Asid etanoik 1 mol dm^{-3}, larutan ammonia 1 mol dm^{-3}, lateks ,bikar 100 cm^3, rod kaca, penitik, 100 cm^3 silinder penyukat *Ethanoic acid 1 mol dm^{-3}, ammonia solution 1 mol dm^{-3} , latex, 100 cm^3 beaker, glass rod, dropper, 100 cm^3 measuring cylinder*
Prosedur *Procedure*	**1** 20 cm^3 lateks disukat dengan menggunakan silinder penyukat dan dituang ke dalam dua bikar. Bikar masing-masing dilabelkan sebagai A dan B. *20 cm^3 of latex is measure using measuring cylinder and poured into two beakers. These beakers are labelled as A and B respectively.* **2** Lateks dalam bikar A ditambah setitik demi setitik 5 cm^3 asid etanoik dan campuran dikacau dengan rod kaca, *Latex in beaker A is added drop-by-drop with 5 cm^3 of ethanoic acid and the mixture are stirred thoroughly with glass rod.* **3** Langkah 1-2 diulang dengan menggantikan asid etanoik dengan larutan ammonia dalam bikar B. *Steps 1-2 are repeated by replacing ethanoic acid with ammonia solution in beaker B.* **4** Campuran dalam bikar A dan B dibiarkan selama 3 jam. *The mixture in beakers A and B is left for 3 hours.* **5** Perubahan pada lateks diperhatikan dan direkodkan. *The changes in latex is observed and recorded.*

Eksperimen

Pemerhatian /Inferens
Observations /Inference

Bikar *Beaker*	**Pemerhatian dalam air bromin** *Observation with bromine water*	**Inferens** *Inference*
A (Lateks + asid etanoik) *(Latex + ethanoic acid)*	Lateks menggumpal *Latex coagulates*	
B (Lateks + larutan ammonia) *(Latex + ammonia solution)*	Lateks tidak menggumpal *Latex remains in liquid state*	

Kesimpulan
Conclusion

Asid menggumpalkan lateks manakala alkali mencegah lateks daripada menggumpal.
Acid coagulates latex whereas alkali prevents latex from coagulating.