

**SENARAI SEMAK CALON  
CANDIDATE'S CHECK LIST**

**ARAHAN**

Anda tidak dibenarkan bekerja dengan radas bagi lima minit pertama. Tempoh ini hendaklah digunakan untuk menyemak senarai radas, membaca soalan dan merancang eksperimen yang dijalankan. Tandakan (✓) pada ruangan kotak yang disediakan untuk menyemak bahan dan radas yang sedia ada dan dilabelkan.

**INSTRUCTION**

*You are not allowed to work with apparatus in the first five minutes. This period is used to check the apparatus list, read the question and plan the experiment which will be carried out. Mark (✓) in the box provided to check the material and apparatus prepared and supplied.*

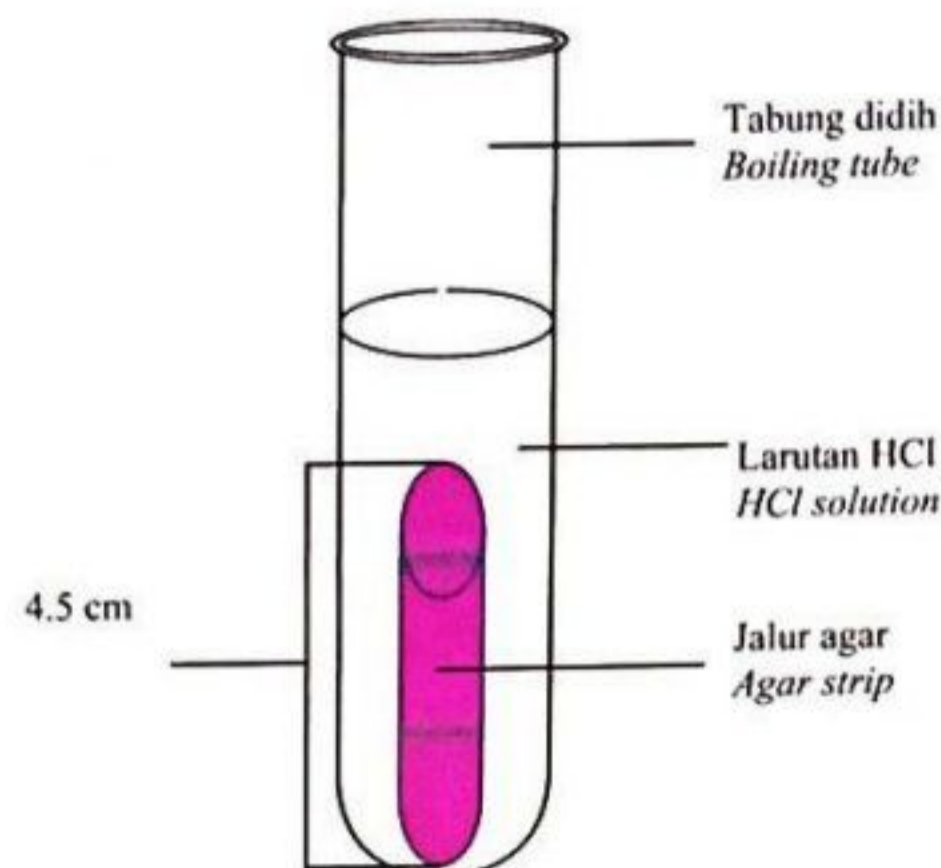
<b>Bil. No.</b>	<b>Bahan / Radas Materials / Apparatus</b>	<b>Kuantiti Quantity</b>	<b>Ya (✓) / Tidak (X) Yes (✓) / No (X)</b>
1.	Jalur Agar <i>Agar Strips</i>	1	( )
2.	Piring petri dengan penutup (dilabel Agar) <i>Petri dish with lid (Labelled Agar)</i>	1	( )
3.	Botol reagen dengan penutup / Bikar 50 ml (dilabel 0.2 M HCl) <i>Reagent Bottle with stopper / Beaker 50 ml (labelled 0.2 M HCl)</i>	1	( )
4.	Botol reagen dengan penutup / Bikar 50 ml (dilabel 0.4 M HCl) <i>Reagent Bottle with stopper / Beaker 50 ml (labelled 0.4 M HCl)</i>	1	( )
5.	Botol reagen dengan penutup / Bikar 50 ml (dilabel 0.6 M HCl) <i>Reagent Bottle with stopper / Beaker 50 ml (labelled 0.6 M HCl)</i>	1	( )
6.	Tabung didih <i>Boiling tube</i>	3	( )
7.	Rak tabung didih <i>Boiling tube rack</i>	1	( )

8.	Kertas label <i>Label</i>	3	( )
9.	Jubin putih <i>White tile</i>	1	( )
10.	Pembaris 15 cm <i>Ruler 15 cm</i>	1	( )
11.	Pisau lipat <i>Pen knife</i>	1	( )
12.	Silinder penyukat 50 ml / 100 ml <i>Measuring cylinder 50 ml / 100 ml</i>	1	( )
13.	Forsep tumpul <i>Blunt forcep</i>	1	( )
14.	Jam randik <i>Stopwatch</i>	1	( )
15.	Kertas tuala / kain lap <i>Paper towels / wiping cloth</i>	1	( )



1. Rajah 1 menunjukkan susunan radas bagi menentukan hubungan antara kadar resapan dengan kepekatan larutan yang berbeza.

*Diagram 1 shows apparatus set up to determine the relationship between the rate of diffusion and the different solution concentration.*



Rajah 1  
Diagram 1

Jalur agar dalam Rajah 1 disediakan dengan mencampurkan serbuk agar dengan larutan Natrium Hidroksida dan larutan fenolftalein akan bertukar warna ke merah jambu dengan kehadiran larutan alkali. Kehadiran asid akan meneutralkan alkali dan menyebabkan warna merah jambu fenolftalein hilang.

*The agar strip in Diagram 1 is prepared by mixing agar powder with sodium hydroxide and phenolphthalein solution will change colour to pink in the presence of alkaline solution. The presence of acid will neutralize the alkali and cause the pink colour of phenolphthalein to decolourise.*

Berikut adalah langkah-langkah eksperimen :

*The following is the steps of the experiment :*

1. Tuangkan 30ml asid hidroklorik yang berbeza kepekatan ke dalam tabung didih yang telah dilabelkan P (0.2M), Q (0.4M) dan R (0.6M).

*Pour 30ml hydrochloric acid of different concentrations into the boiling tubes that have been labelled P (0.2M), Q (0.4M) and R (0.6M).*

2. Letakkan ketiga-tiga tabung didih P, Q dan R di rak tabung didih.

*Place the three boiling tubes, P Q and R on the boiling tube rack.*

3. Potong ketiga-tiga jalur agar kepada 4.5cm dan masukkan jalur agar setiap satu dalam tabung didih P, Q dan R.

*Cut three agar strips into 4.5cm and insert one agar strip each into boiling tubes P, Q and R.*

[t.me/cikgufazliebiosensei](https://t.me/cikgufazliebiosensei)

4. mulakan jam randik serta merta.

*Start the stopwatch immedietly*

5. Rekodkan masa yang diambil untuk larutan merah jambu agar luntur.

*Record the time taken for the pink colour of the strip to decolorise.*

Berdasarkan eksperimen itu,

Based on the experiment,

(a) Nyatakan **satu** inferens berdasarkan pemerhatian.

*State **one** inferens based on observation.*

.....

.....

[1 markah / 1 mark]

(b) Bina satu jadual untuk merekod pemerhatian anda yang mengandungi :

*Construct a table to record your observations which contains :*

- Kepekatan asid hidroklorik / *Concentration of hydrochloric acid*
- Masa yang diambil untuk warna merah jambu agar luntur / *Time taken for the pink colour of agar strip to decolorise*
- Kadar resapan / *Diffusion rate*

[3 markah / 3 marks]



- (c) Nyatakan cara mengawal pemboleh ubah di bawah.  
*State how to control the variables for this experiment.*

- (i) Pemboleh ubah dimanipulasikan :  
*The manipulative variable :*

.....  
[1 markah / 1 mark]

- (ii) Pemboleh ubah bergerak balas :  
*The responding variable :*

.....  
[1 markah / 1 mark]

- (d) Terangkan hubungan antara kadar resapan dan kepekatan asid hidroklorik yang berbeza.  
*Explain the relationship between the rate of diffusion and the different concentration of hydrochloric acid.*

.....  
.....  
[2 markah / 2 marks]

- (e) Berdasarkan eksperimen berikan definisi secara operasi bagi resapan.  
*Based on the experiment, give the operational definition for diffusion.*

.....  
.....  
.....  
.....  
[2 markah / 2 marks]

- (f) Berdasarkan eksperimen ini, plotkan graf kadar resapan melawan kepekatan asid hidroklorik.  
*Based on the experiment, plot the graph of rate of diffusion against hydrochloric acid concentration.*

[2markah / 2 marks]

- (g) Ramalkan kadar resapan sekiranya kepekatan HCl digunakan ialah 1.0M dan nyatakan sebabnya.

*Predict the rate of diffusion if the concentration of HCl used is 1.0M and state the reason.*

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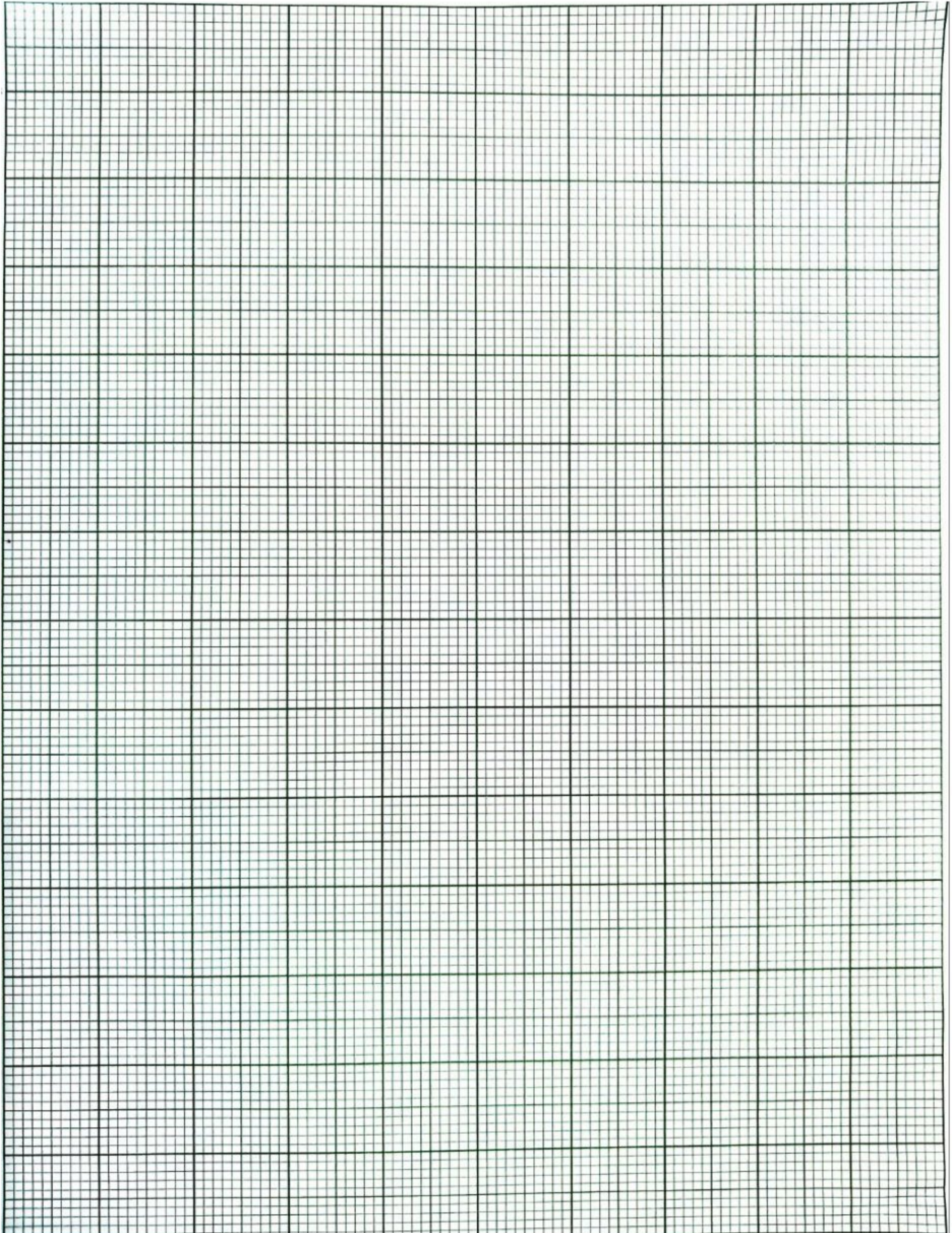
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[2 markah / 2 marks]



Graf kadar resapan melawan kepekatan asid hidroklorik  
*Graph rate of diffusion against hydrochloric acid concentration*



**KERTAS SOALAN TAMAT**  
**END OF EXAM PAPER**