

YOU CAN GET AT LEAST AN A- FOR SCIENCE SPM. I KID YOU NOT.

1. It is so so EASY to get an **A** for SCIENCE SPM! – you will agree with me once we are done with this workshop. ☺
2. It is so so NOT EASY to fail SCIENCE SPM! – again, you will agree with me once we are done with this workshop. ☺
3. DRILL, DRILL and DRILL your **PAPER 1**! Anything from the syllabi can come out, do not SPOT the questions, it is USELESS and a WASTE OF TIME! ☺
4. Maintain a score of **AROUND 30/40** for **Paper 1!** PRACTICE, PRACTICE & PRACTICE until it is consistent! (Caution, janganlah target ngam-ngam 30 markah jer, targetlah lebih-lebih sikit) ☺
5. MASTER the **Scientific Process Skills** to score around **17-18 marks** (kalau boleh, skorlah full 20 marks) for **SECTION A of Paper 2**.
6. MASTER the answering techniques for **QUESTION 10 of Paper 2 (also involves the Scientific Process Skills)**, it is a COMPULSORY question to be answered, every single year! Get a score of **around 7-8 marks out of 10 marks** for this question (again, kalau boleh dapatkan full 10 marks).
7. MASTER the answering techniques for either **QUESTION 11 or QUESTION 12**. Score another **8-9 marks out of 12 marks** for this question [kalau boleh skor lah.....(sambung sendiri)]
8. If all goes well, you only need to get around **20/38 marks** for **Section B** (that is lebih sikit daripada SEPARUH of the total marks!) to secure an A-! Takkan tak boleh kot??? ☺
9. 30 marks (Paper 1) + 18 marks (Sect A, Paper 2) + 20 marks (Sect. B, Paper 2) + 8 marks (Q10, Paper 2) + 8 marks (Q11/Q12, Paper 2) = $85/120 = 70\%!!!$

Nak Ke Tak Nak??? ☺

Brought to you by:

SEMINAR NOTES (MASTERING SECTION A of PAPER 2)

1. Making & Stating the OBSERVATION.

- ONLY state what you can see from the diagram by stating the MV and the RV of the diagram. RV must be stated with value-nilai ukuran.
-

2. Stating the PROBLEM STATEMENT.

3. Stating the HYPOTHESIS?

- a simple statement that shows the _____ between the _____ and _____ of the experiment.
 - 2 common ways of writing a hypothesis:
 - ii) "Stating the relationship between the MV & RV"
 - ii) "Choose one of the MVs/Sets, and state the value of the RV for that MV/Set."
-

4. Stating the VARIABLES?

- Variables are _____ that _____
There are _____ types of variables in any experiment.
-

Brought to you by:

5. Stating the INFERENCE?

- What is inference?
-

6. Stating the OPERATIONAL DEFINITION?

- Defining the “word” based on the experiment conducted, which involves the MV & the RV.
 - Template that can be used:
(word to be defined) is the (RV) and is affected by the (MV).
-

7. Drawing the GRAPHS.

- Read the question carefully for the **type of graph** that you need to draw:
 - Draw a graph – means the usual **Line Graph**
 - Draw a bar graph – means a **Bar Graph** (and NOT a histogram). Apa bezanya?
-

8. Additional Notes:

- i) Stating a relationship:
 - Use the variables requested by the question (normally they will ask you to state a relationship between the MV & the RV of the experiment).
 - Statement will be similar to the 1st format of stating a Hypothesis (involving relationship between the MV & RV).
- ii) Making a prediction:
 - Analyze the data from the question/the plotted graph to determine the predicted value.
 - Take a referral value from the data/graph.
 - Prediction must either be :
 - “Remains the same as (the value)”
 - “More than (the value)
 - “Less than (the value)”

Brought to you by:

SAMPLE QUESTIONS

SECTION A, PAPER 2 (part 1)

- 1** Diagram 1 shows the set-up of apparatus to investigate the purification of copper using electrolysis. Copper which is deposited on one of the electrode is weighed.

Rajah 1 menunjukkan susunan radas untuk mengkaji penulenan kuprum dengan kaedah elektrolisis. Kuprum yang terenap pada salah satu elektrod ditimbang.

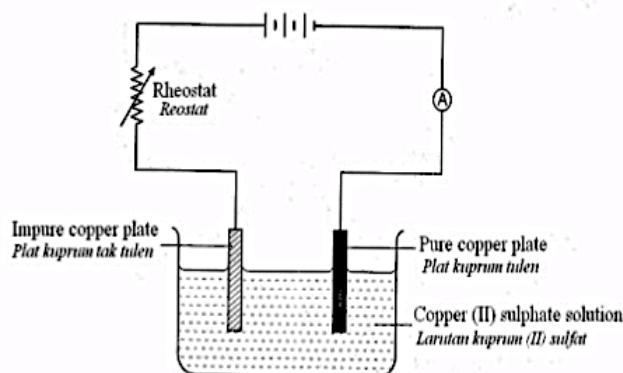


Diagram 1

Time (minutes) <i>Masa (minit)</i>	Mass of copper deposited (g) <i>Jisim kuprum terenap (g)</i>
2	0.3
4	0.6
6	0.9
8	1.2
10	
12	1.8

Table 1

Table 1 shows the mass of copper deposited when 0.5 A is used.
Jadual 1 menunjukkan jisim kuprum yang terenap apabila 0.5 A digunakan.

- (a) State one observation of this experiment/ Nyatakan satu pemerhatian bagi eksperimen ini.

.....

[1 mark]

Brought to you by:

- (b) State the hypothesis for the experiment above/Nyatakan hipotesis bagi eksperimen ini.

.....

[1 mark]

- (a) State the variables of this experiment.

Nyatakan pembolehubah-pembolehubah dalam eksperimen ini.

Manipulated:

Responding:

Constant:

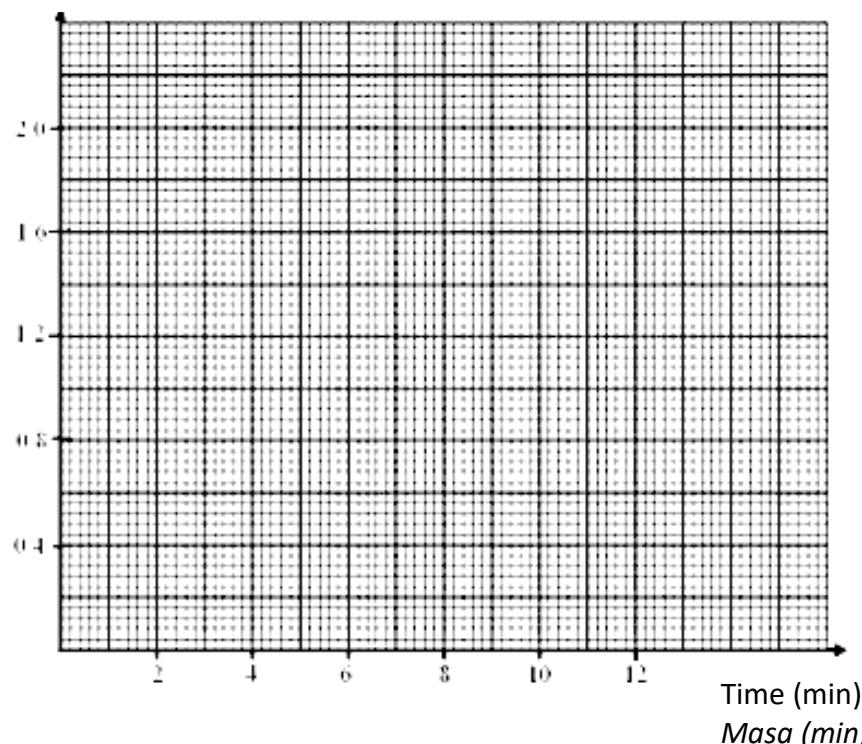
[2 marks]

- (b) Based on Table 1, draw a graph of mass of copper deposited against time.

Berdasarkan Jadual 1, lukiskan graf jisim kuprum yang terenap melawan masa.

Mass of copper (g)

Jisim kuprum terenap (g)



[2 marks]

Brought to you by:

- (d) Using the graph, determine the mass of copper deposited at the 10th minutes.

Dengan menggunakan graf, tentukan jisim kuprum yang terenap pada minit ke-10.

.....

[1 mark]

- (e) State the relationship between the mass of copper deposited with time.
Nyatakan hubungan di antara jisim kuprum yang terenap dengan masa

.....

.....

[1 mark]

- 2 Table 2 shows the result of an experiment to show the reaction between 3.0 g zinc

with 100 cm³ dilute hydrochloric acid.

Jadual 2 menunjukkan keputusan eksperimen hasil tindak balas antara 3.0 g logam zink dengan 100 cm³ asid hidroklorik cair.

Time/minutes Masa/minit	0	1	2	3	4	5	6
Volume of gas/ cm ³ / Isipadu gas / cm ³	0	27	46	57	64	67	67

Table 2

- (a) State the hypothesis for this experiment.

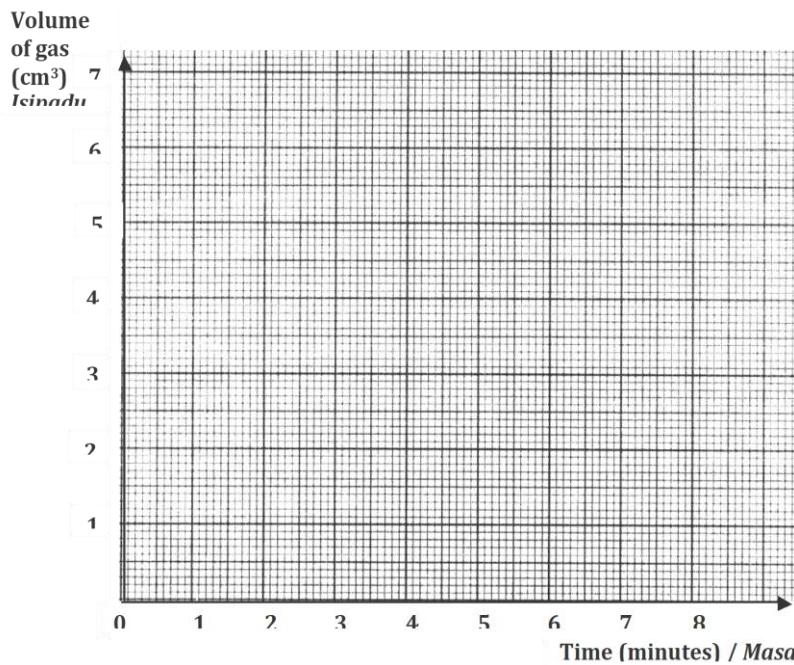
Nyatakan hipotesis dalam eksperimen di atas.

.....

[1 mark]

Brought to you by:

- (b) Plot a graph of gas volume against time based on Table 2.



[2 marks]

- (c) Based on the graph that you have plotted, determine the volume of the gas released at $2\frac{1}{2}$ minute.

Berdasarkan graf anda, tentukan isipadu gas yang terbebas pada masa $2\frac{1}{2}$ minit.

.....
[1 mark]

- (d) Predict the volume of gas released at 7 minutes.

Ramalkan isipadu gas yang terbebas pada minit ke 7.

.....
[1 mark]

Brought to you by:

- 3** Diagram 3 shows the information on the blood groups collected from 30 students in a class.

(Rajah 3 menunjukkan maklumat tentang kumpulan darah yang dikumpul daripada 30 orang pelajar di dalam satu kelas)

A	A	AB	A	B	O	B	B	B	A
AB	O	A	B	A	A	AB	O	A	O
A	B	B	O	B	B	AB	A	B	A

Diagram 3

- (a) Complete Table 3 based on the information in Diagram 3.
(Lengkapkan Jadual 3 berdasarkan maklumat dalam Rajah 3)

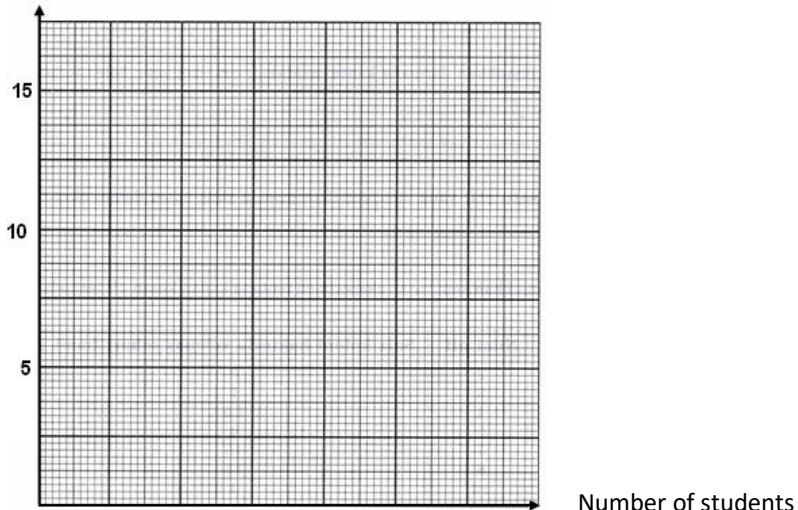
Type of blood group <i>(Jenis kumpulan darah)</i>	A	B	AB	O
Number of students <i>(Bilangan pelajar)</i>				

Table 3

[2 marks]

- (b) Draw a bar chart using the data in Table 3.
(Lukis carta bar menggunakan data dalam Jadual 3)

Blood group/Kumpulan darah



[2 marks]

- (c) Based on the bar chart in (b), state the type of variation for the blood group.

[1 mark]

Brought to you by:

- 4 The weight of male students in Form 5 Alpha are recorded in the table below.

Berat badan pelajar lelaki dalam kelas Tingkatan 5 Alfa dicatatkan di dalam jadual di bawah.

Weight of students/kg <i>Berat badan pelajar / kg</i>									
70	65	63	49	74	53	43	75	56	63
62	66	47	58	60	67	77	50	51	61
55	74	54	68	53	57	78	72	60	56

- (a) By using the data above, complete Table 4.

Dengan menggunakan data di atas, lengkapkan Jadual 4.

Weight <i>Berat badan / kg</i>	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 80
Number of student <i>Bilangan pelajar</i>								

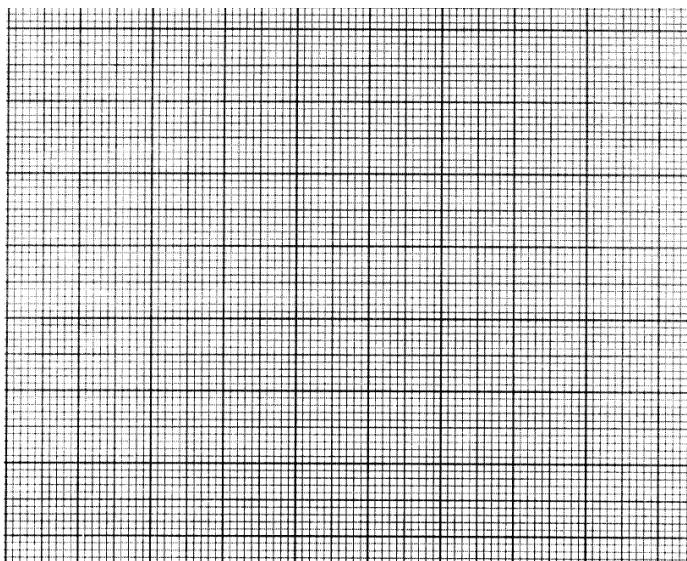
Table 4

[2 marks]

- (b) By using the result in Table 4, draw a bar graph the number of student against the weight.

Dengan menggunakan keputusan yang diperolehi dalam Jadual 4, lukiskan satu graf bar bilangan pelajar melawan berat badan.

Number of students/Bilangan pelajar



Weight/Berat badan (kg)

[2 marks]

Brought to you by:

SAMPLE QUESTIONS

SECTION A, PAPER 2 (part 2)

- 5** Diagram 5 shows an experiment to study the weight of plasticine in air and water.

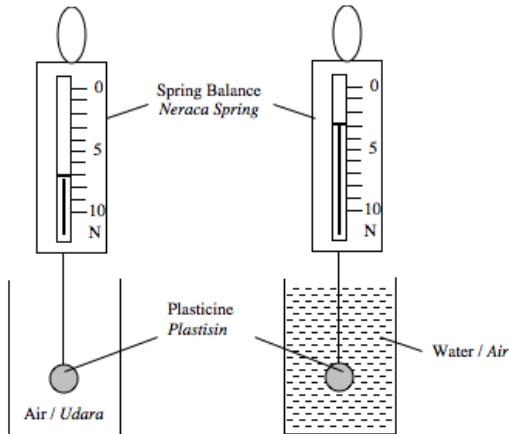


Diagram 5

- (a) State the weight of the plasticine in air.
Catat berat plastisin di udara.

.....
[1 mark]

- (b) Write **one** observation for this experiment.
Tulis satu pemerhatian bagi eksperimen itu

.....
[1 mark]

- (c) Write **one** inference for the observation made in 5(b).
Nyatakan satu inferensi berdasarkan pemerhatian dalam 5(b).

.....
[1 mark]

- (d) State the operational definition for weight.
Nyatakan definisi operasi bagi berat.

.....
[1 mark]

- (e) Predict the reading on the spring balance if the plasticine is dipped in sea water.

.....
[1 mark]

Brought to you by:

- 6 Diagram 6 shows an experiment to study the reactivity of metals when react with oxygen.

(Rajah 2 menunjukkan satu eksperimen untuk mengkaji kereaktifan logam bila bertindak balas dengan oksigen)

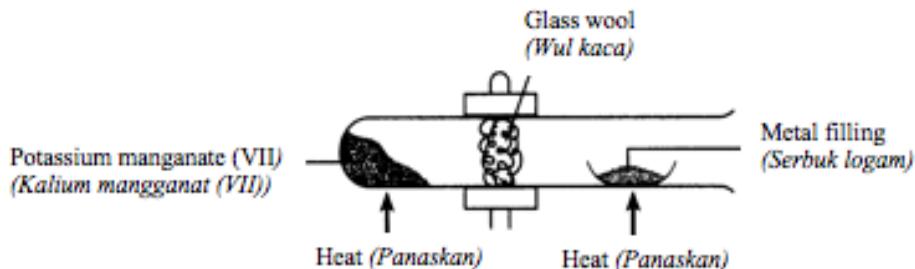


Diagram 6

Three types of metals X, Y and Z are used and the results are shown in the Table 6.

(Tiga jenis logam iaitu X, Y dan Z telah digunakan dan keputusan pemerhatian ditunjukkan dalam Jadual 6)

Metal/Logam	Observation/Pemerhatian (Condition of burning/Keadaan keterbakaran)
X	Burns with bright light / Terbakar dengan nyalaan terang
Y	Glows dimly / Membara malap
Z	Burns moderately / Terbakar sederhana

Table 6

- (a) Write down **one** inference that can be made from observation in Table 3.
(Tuliskan **satu** inferensi yang boleh dibuat berdasarkan pemerhatian pada Jadual 3)

[1 mark]

- (b) State the following variables in this experiment.
(Nyatakan pembolehubah berikut dalam eksperimen ini)

- (i) Manipulated (Dimanipulasi)

- (ii) Constant (dimalarkan)

[2 marks]

Brought to you by:

- (c) Based on the results in Table 6, arrange the reactivity of the metals from the most reactive to the least reactive.
(Berdasarkan keputusan dalam Jadual 6, susun kereaktifan logam daripada paling reaktif kepada kurang reaktif).

[1 mark]

- (d) If the metals used in this experiment are magnesium, zinc and iron, predict what is metal X?
(Jika logam-logam yang digunakan di dalam eksperimen ini adalah magnesium, zink dan besi, ramalkan apakah logam X?)

[1 mark]

THE END

Brought to you by: