

NAMA:.....

NO. ANGKA GILIRAN:.....

4531/3

Fizik

Kertas 3

Percubaan SPM

September

2008

1½ jam

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
NEGERI PERAK
2008**

FIZIK

Kertas 3

Satu jam tiga puluh minit

DO NOT OPEN THE QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO

1. *Write down your name and No. Angka Giliran at the space given.*
2. *This question paper is bilingually set.*
3. *The questions in Bahasa Malaysia have same meaning to the questions in English Language.*
4. *Candidates are allowed to answer all or part of the questions either in English Language or Bahasa Malaysia.*
5. *Candidates must read the information on page 18 and page 19.*

<i>Examiner's Code</i>			
Section	Question	Total mark	Marks obtained
A	1	16	
	2	12	
B	3	12	
	4	12	
Total			

Kertas soalan ini mengandungi 19 halaman bercetak dan 1 halaman tidak bercetak.

Section A

[28 marks]

Answer all questions

1. A student carries out an experiment to investigate the relationship between the extension of spring, x , and weight of load, w .

Diagram 1.1 shows the arrangement of the apparatus for the experiment.

Seorang murid menjalankan satu eksperimen untuk mengkaji hubungan antara pemanjangan spring, x , dengan berat pemberat, w .

Rajah 1.1 menunjukkan susunan radas untuk eksperimen tersebut.

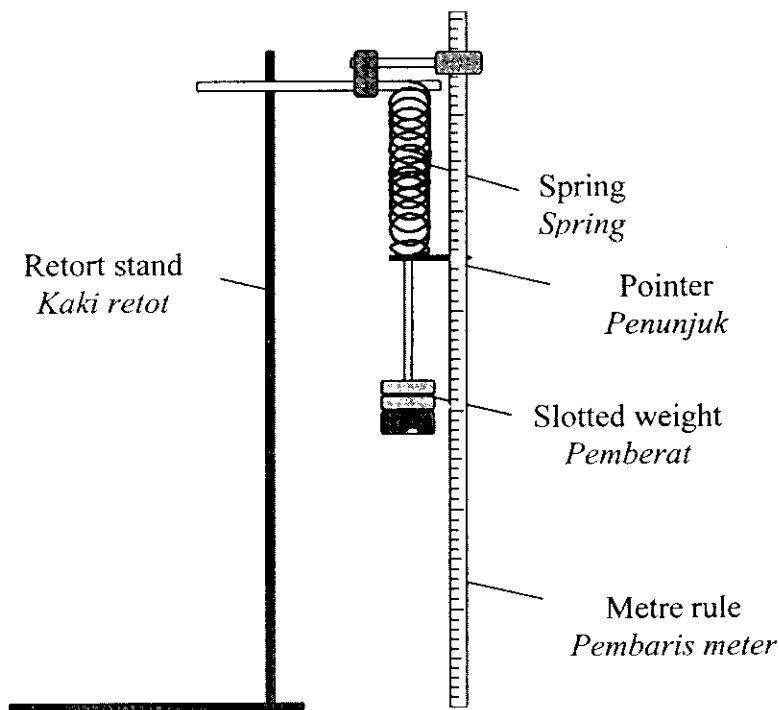


Diagram 1.1

Rajah 1.1

At the beginning of the experiment there is no load. The length of the spring is, l_0 , 20.0 cm. A load of 30 N is used and the reading is recorded. The procedures are repeated with different loads of weight, w , equal to 40 N, 50 N, 60 N and 70 N. The actual corresponding readings are shown in Diagrams 1.2, 1.3, 1.4, 1.5 and 1.6.

Spring digantung tanpa pemberat pada permulaan eksperimen. Panjang spring asal, l_0 , 20.0 cm.

Pemberat 30 N digantung pada spring dan bacaan diambil.

Prosedur diulangi dengan pemberat yang mempunyai berat yang berbeza, w , iaitu 40 N, 50 N, 60 N dan 70 N. Bacaan penunjuk pada spring yang sepadan ditunjukkan pada Rajah 1.2, 1.3, 1.4, 1.5 dan 1.6.

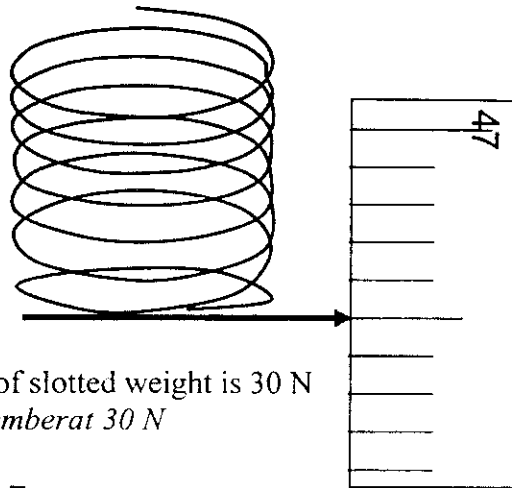


Diagram 1.2
Rajah 1.2

Weight of slotted weight is 30 N
Berat pemberat 30 N

$l = \dots\dots\dots$

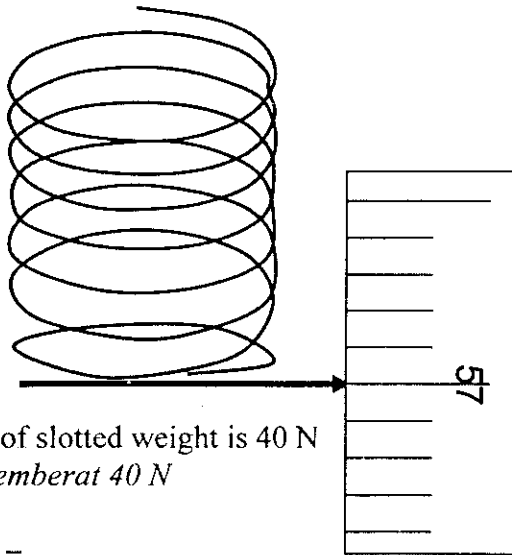


Diagram 1.3
Rajah 1.3

Weight of slotted weight is 40 N
Berat pemberat 40 N

$l = \dots\dots\dots$

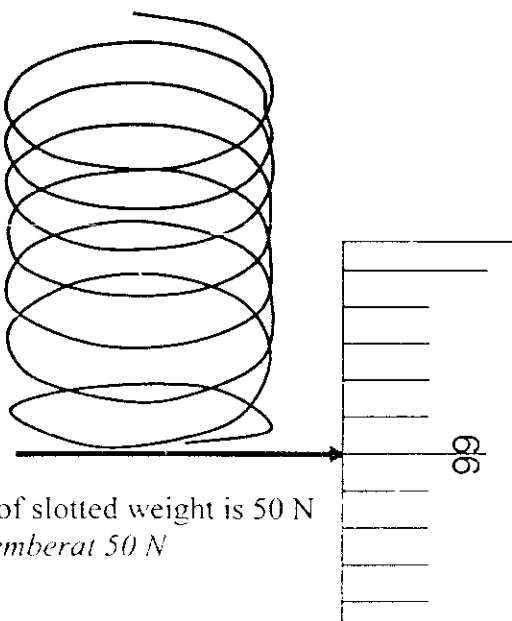


Diagram 1.4
Rajah 1.4

Weight of slotted weight is 50 N
Berat pemberat 50 N

$l = \dots\dots\dots$

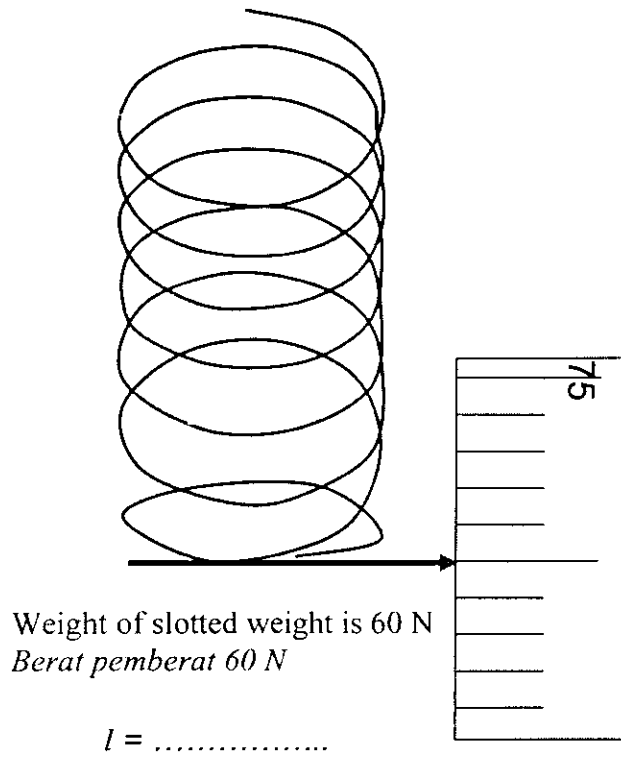


Diagram 1.5
Rajah 1.5

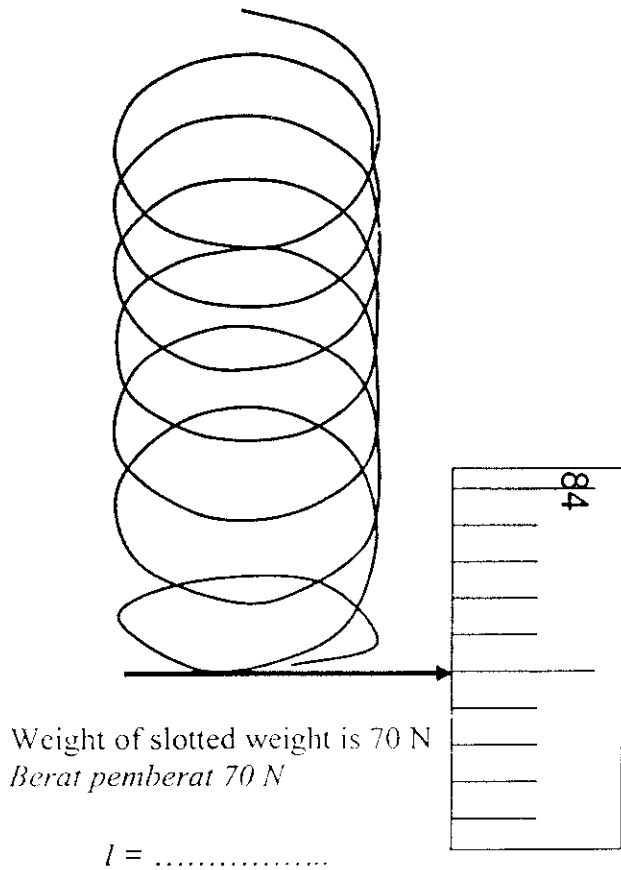


Diagram 1.6
Rajah 1.6

For
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use

(a) For the experiment described on page 2, identify:
Bagi eksperimen yang diterangkan di halaman 2, kenal pasti:

(i) The manipulated variable
Pembolehubah dimanipulasikan

1(a)(i)

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

(ii) The responding variable
Pembolehubah bergerak balas

1(a)(ii)

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

(iii) The constant variable
Pembolehubah dimalarkan

1(a)(iii)

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

(b) Based on Diagrams 1.2, 1.3, 1.4, 1.5 and 1.6 on page 4 and page 5:
Berdasarkan Rajah 1.2, 1.3, 1.4, 1.5 dan 1.6 di halaman 4 dan 5:

(i). Record the reading of each extension of spring, *l*, in the spaces provided on page 4 and page 5 respectively.
Catatkan bacaan pemanjangan spring, l, dalam ruang yang disediakan di halaman 4 dan 5.

1(b)(i)

[2 marks]
[2 markah]

(ii) Calculate the values of *x* for each of the extension of spring.
Hitungkan nilai-nilai x bagi setiap pemanjangan spring.

1(b)(ii)

[2 marks]
[2 markah]

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(iii) Tabulate your results for l and x for all values of w , in the space below.
Jadualkan keputusan anda bagi l dan x untuk semua nilai w , pada ruang di bawah

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[3 marks]
[3 markah]

1(b)(iii)

(c) On the graph paper on page 8, plot a graph of x against w .
Pada kertas graf di halaman 8, lukis graph x melawan w .

[5 marks]
[5 markah]

1(c)

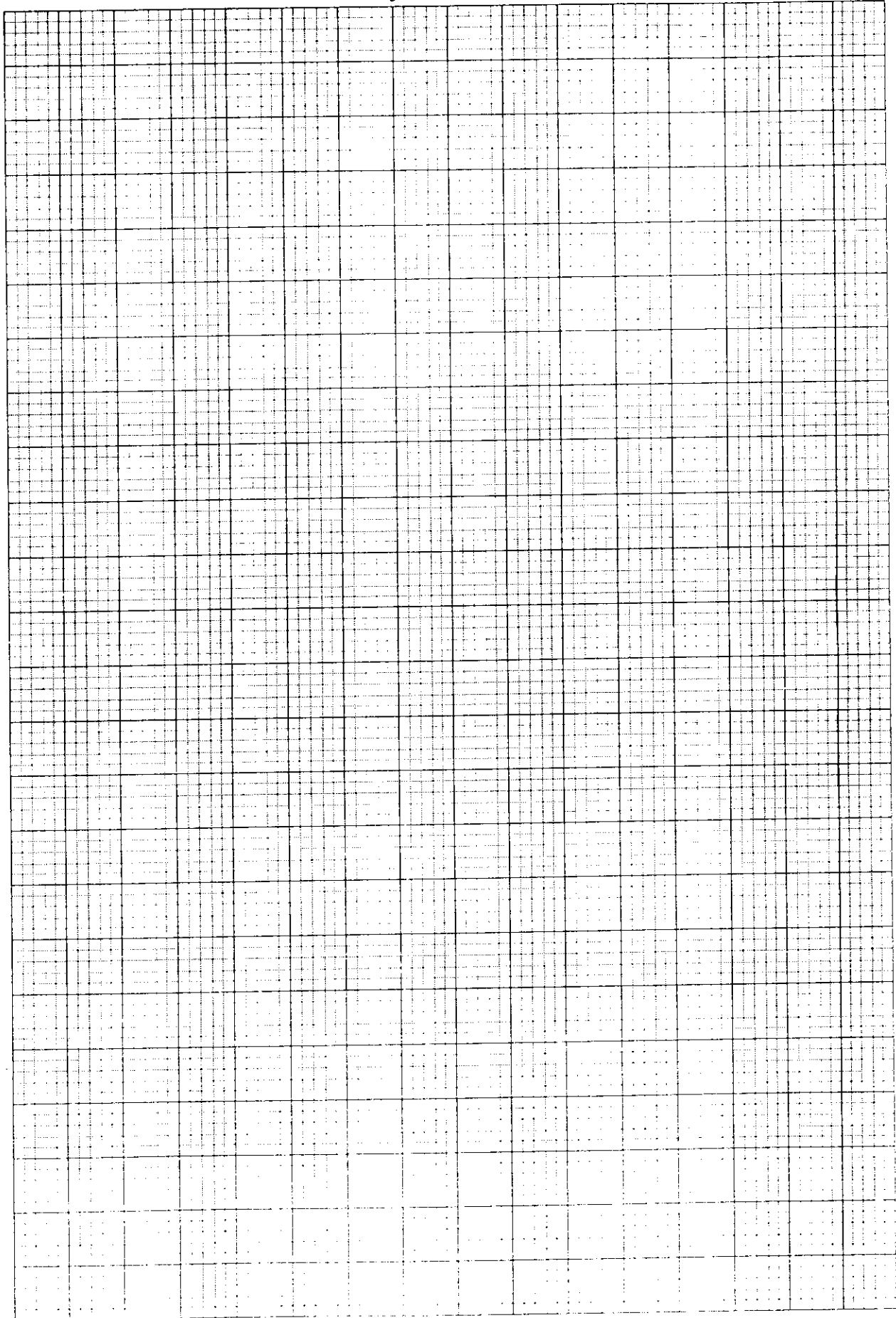
(d) Based on your graph in 1(c), state the relationship between x and w .
Berdasarkan graf anda di 1(c), nyatakan hubungan antara x dan w .

[1 mark]
[1 markah]

1(d)

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Graph of x against w
Graf x melawan w



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- 2. A student carries out an experiment to investigate the relationship between the length of constantan wire, l , and the resistance of the wire, R .

Seorang murid menjalankan eksperimen untuk mengkaji hubungan antara panjang dawai konstantan, l , dengan rintangan, R .

The results of the experiment is shown in the graph of R against l as in Diagram 2.1 on page 11.

Keputusan eksperimen ini ditunjukkan oleh graf R melawan l pada Rajah 2.1 di halaman 11.

- (a) Based on the graph in Diagram 2.1,
Berdasarkan graf pada Rajah 2.1,

- (i) what happen to R as l increases?
apakah yang berlaku pada R apabila l bertambah?

2(a)(i)

.....

[1 mark]
[1 markah]

- (ii) determine the value of R when $l = 20$ cm.
Show on the graph, how you determine the value of R .

*tentukan nilai R apabila $l = 20$ cm.
Tunjukkan pada graf itu bagaimana anda menentukan nilai R .*

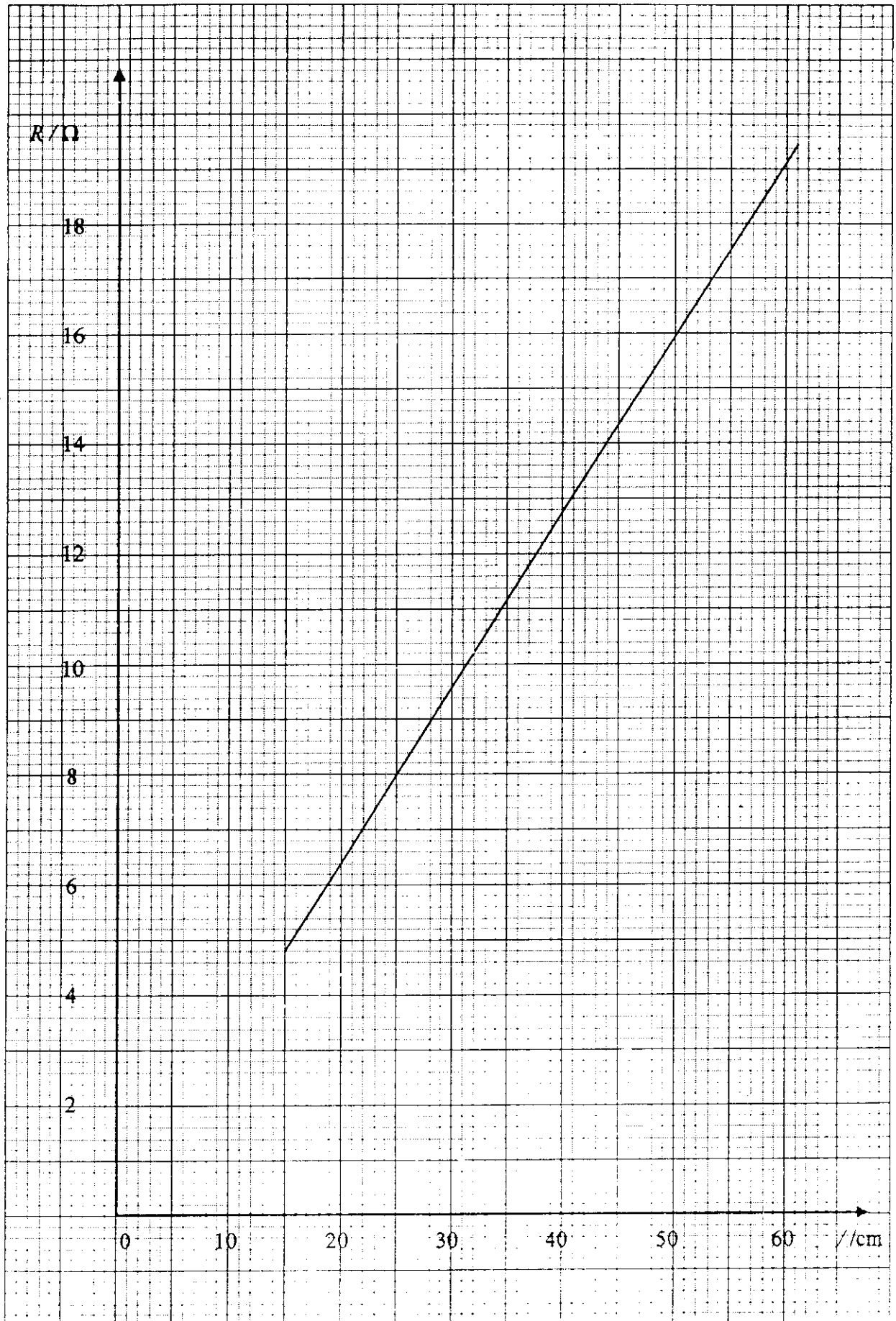
2(a)(ii)

$R =$

[2 marks]
[2 markah]

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(b) The cross-sectional area of the wire, A , is given by the formula

$$A = \frac{k}{m}, \text{ where } m \text{ is the gradient of the graph and the value of } k \text{ is } 0.5 \Omega \text{ cm.}$$

Luas keratan rentas dawai, A , diberi oleh formula $A = \frac{k}{m}$, dengan keadaan m ialah kecerunan graf dan k yang bernilai $0.5 \Omega \text{ cm}$.

(i) Calculate the gradient, m , of the graph.
Hitungkan kecerunan, m , bagi graf itu.

$$m = \dots\dots\dots$$

[3 marks]
[3 markah]

(ii) Determine the value of A .
Tentukan nilai A .

$$A = \dots\dots\dots$$

[2 marks]
[2 markah]

2(b)(i)

2(b)(ii)

(c) Another identical wire is connected in parallel to the wire. The total area,

A_1 , of the two wires in parallel is given by the formula $A_1 = \frac{p}{m}$ where the value of p is $1 \Omega \text{ cm}$. Calculate A_1 .

Suatu dawai lain yang serupa disambung secara selari dengan dawai tersebut. Jumlah luas keratan rentas, A_1 , bagi dua dawai yang selari ini diberi oleh formula $A_1 = \frac{p}{m}$ dengan keadaan p bernilai $1 \Omega \text{ cm}$.

Hitung A_1 .

$A_1 = \dots\dots\dots$

[2 marks]
[2 markah]

2(c)

(d) State **two** precautions that can be taken to improve the accuracy of the readings in this experiment.

*Nyatakan **dua** langkah berjaga-jaga yang boleh diambil untuk memperbaiki ketepatan bacaan dalam eksperimen ini.*

- 1
.....
- 2.
.....

[2 marks]
[2 markah]

2(d)

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Section B

[12 marks]

Answer any **one** question.*Jawab mana-mana satu soalan.*

3. Diagram 3.1 shows a Bourdon Gauge which is used to measure air pressure of ball. Diagram 3.2 shows the reading of the Bourdon Gauge increases when the ball stays for a long time under the sun.

Rajah 3.1 menunjukkan Tolok Bourdon yang digunakan untuk mengukur tekanan bola.

Rajah 3.2 menunjukkan bacaan Tolok Bourdon meningkat apabila bola tersebut diletakkan di bawah sinaran matahari pada jangka masa yang lama.

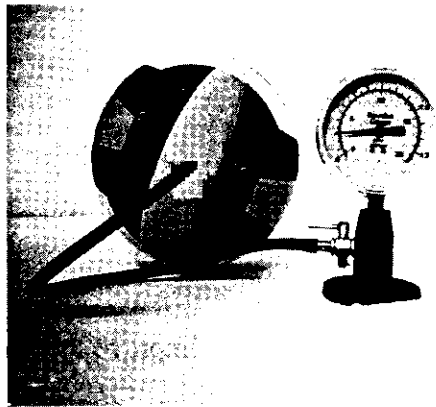


Diagram 3.1

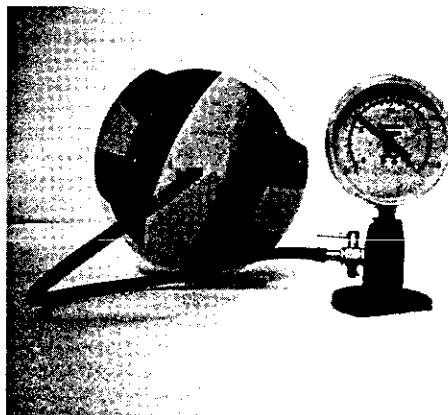
Rajah 3.1

Diagram 3.2

Rajah 3.2

Based on the above information and observation:

Berdasarkan maklumat dan pemerhatian di atas :

- (a) State **one** suitable inference. [1 mark]
*Nyatakan **satu** inferens yang sesuai.* [1 markah]
- (b) State **one** suitable hypothesis. [1 mark]
*Nyatakan **satu** hipotesis yang sesuai* [1 markah]
- (c) With the use of apparatus such as a thermometer, beaker, water and other apparatus, describe an experiment framework to investigate the hypothesis stated in 3(b).
Dengan menggunakan radas seperti thermometer, bikar, air dan radas lain, terangkan satu rangka kerja untuk menyiasat hipotesis yang dinyatakan di 3(b)

In your description, state clearly the following:

Dalam penerangan anda, jelaskan perkara berikut:

- (i) Aim of the experiment.
Tujuan eksperimen.
- (ii) Variables in the experiment.
Pembolehubah dalam eksperimen.
- (iii) List of apparatus and materials.
Senarai radas dan bahan.
- (iv) Arrangement of the apparatus.
Susunan radas.
- (v) The procedure of the experiment which include the method of controlling the manipulated variable and the method of measuring the responding variable.
Prosedur eksperimen yang mengandungi cara mengawal pembolehubah yang dimanipulasikan dan cara mengukur pembolehubah yang bergerakbalas.
- (vi) The way you would tabulate the data.
Cara untuk menjadualkan data.
- (vii) The way you would analyse the data. [10 marks]
Cara untuk menganalisis data [10 markah]

4 Diagram 4.1 and Diagram 4.2 show two cranes transferring different loads of scrapped irons.

Rajah 4.1 dan Rajah 4.2 menunjukkan dua kren pengangkat besi sedang mengangkat besi buruk yang berbeza muatan.

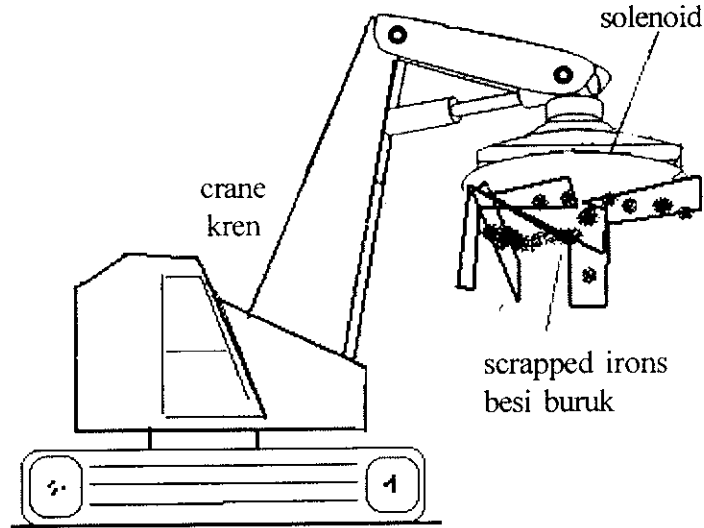


Diagram 4.1
Rajah 4.1

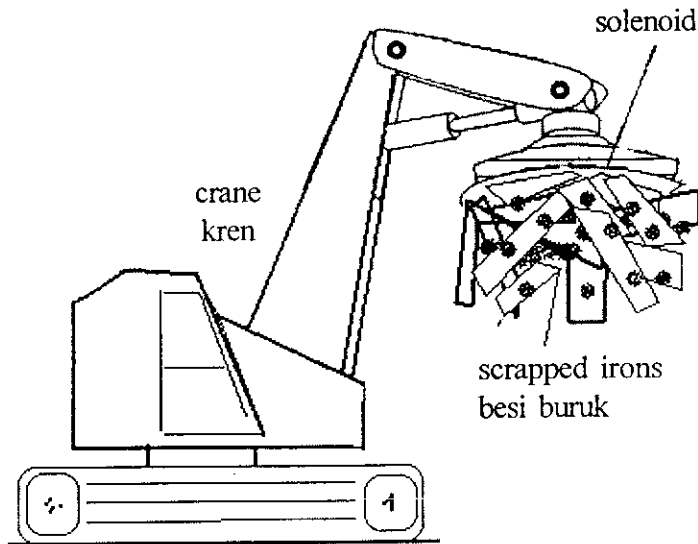


Diagram 4.2
Rajah 4.2

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Based on the above information and observation:

Berdasarkan maklumat dan pemerhatian di atas :

(a) State **one** suitable inference. [1 mark]
*Nyatakan **satu** inferens yang sesuai.* [1 markah]

(b) State **one** suitable hypothesis. [1 mark]
*Nyatakan **satu** hipotesis yang sesuai* [1 markah]

(c) With the use of apparatus such as insulated wires, power supply and other suitable apparatus, describe an experiment framework to investigate the hypothesis stated in 4(b).
Dengan menggunakan radas seperti wayar bertebat, bekalan kuasa dan lain-lain radas yang sesuai, terangkan satu rangka kerja untuk menyiasat hipotesis yang dinyatakan di 4(b)

In your description, state clearly the following:

Dalam penerangan anda, jelaskan perkara berikut:

- (i) Aim of the experiment.
Tujuan eksperimen.
- (ii) Variables in the experiment.
Pembolehubah dalam eksperimen.
- (iii) List of apparatus and materials.
Senarai radas dan bahan.
- (iv) Arrangement of the apparatus.
Susunan radas.
- (v) The procedure of the experiment which include the method of controlling the manipulated variable and the method of measuring the responding variable.
Prosedur eksperimen yang mengandungi cara mengawal pembolehubah yang dimanipulasikan dan cara mengukur pembolehubah yang bergerakba'as.
- (vi) The way you would tabulate the data.
Cara untuk menjadualkan data.
- (vii) The way you would analyse the data. [10 marks]
Cara untuk menganalisis data [10 markah]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT