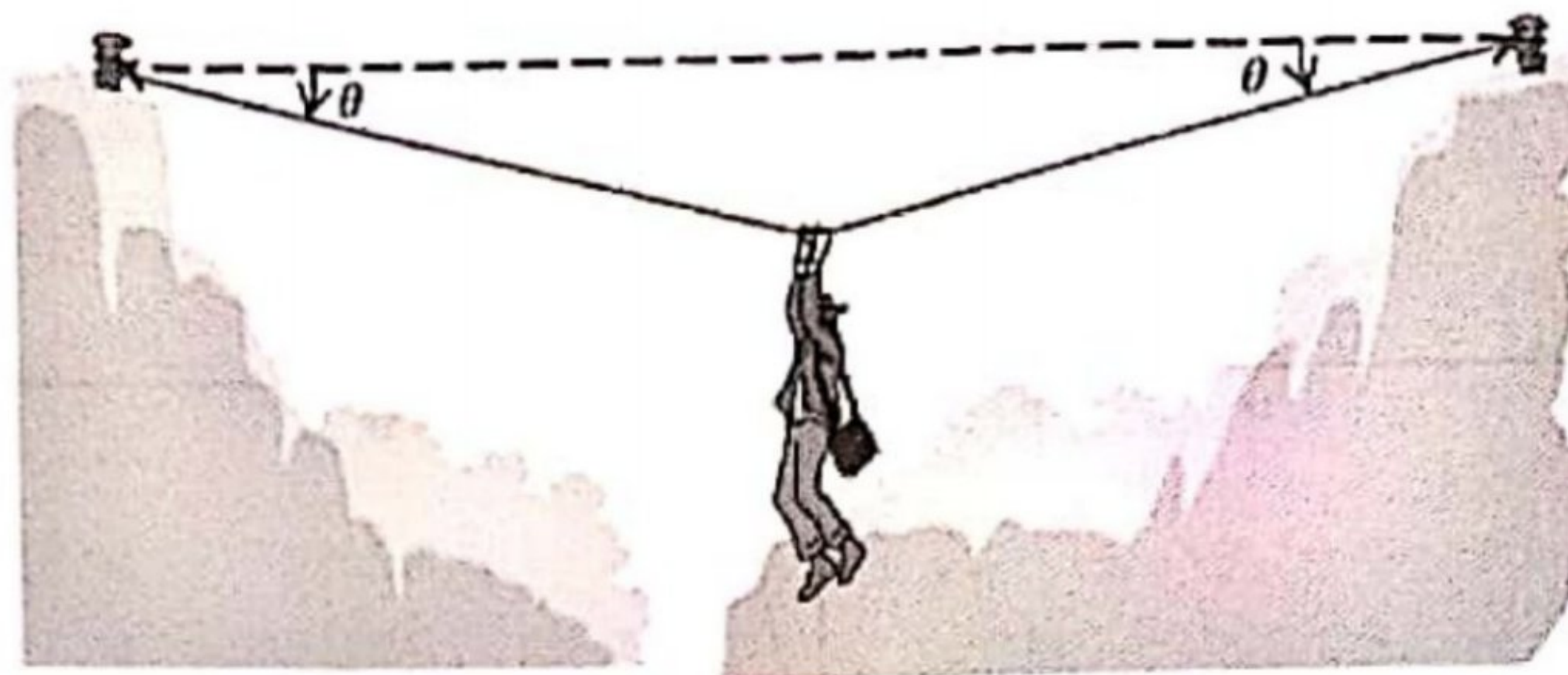


- 7 Rajah 7.1 menunjukkan seorang ahli arkeologi yang berjisim 65 kg sedang bergerak melintasi dua tebing batu menggunakan seutas tali yang diregangkan. Dia berhenti berehat di tengah-tengah tali tersebut.

Diagram 7.1 shows an archaeologist with a mass of 65 kg is move across two cliffs using a stretched rope. He stops to rest in the middle of the rope.



Rajah 7.1
Diagram 7.1

7(a)

1

- (a) Apakah yang dimaksudkan dengan keseimbangan daya?
What is meant by force in equilibrium?

.....

[1 markah]

[1 mark]

- (b) Lukiskan segi tiga daya bagi berat beban, W dan tegangan tali, T yang dihasilkan oleh ahli arkeologi tersebut.

Draw the triangle of forces for the weigh W and the tensions of the rope T caused by the archaeologist.

7(b)

1

[1 markah]

[1 mark]

- (c) Hitungkan tegangan tali, T yang dihasilkan oleh ahli arkeologi itu sekiranya kedua-dua sudut, θ ialah 20° .
Calculate the tension of the rope, T produced by the archaeologist if the both angles, θ is 20° .

[2 markah]
[2 marks]

7(c)

2

- (d) Rajah 7.2 menunjukkan sebuah kereta sorong.
Diagram 7.2 shows a wheelbarrow.



Rajah 7.2
Diagram 7.2

Kereta sorong <i>Wheelbarrow</i>	Kaedah menggerakkan kereta sorong <i>Method to move the wheelbarrow</i>	Saiz tayar <i>Size of tyre</i>
K	 Tolak <i>Push</i>	Besar <i>Bigger</i>

[Lihat halaman sebelah
SULIT]

L	 Tarik Pull	Besar Bigger
M	 Tolak Push	Kecil Small

Jadual 7
Table 7

Berdasarkan Jadual 7, nyatakan ciri-ciri kereta sorong supaya kereta sorong ini lebih sesuai digunakan di tapak pembinaan.

Based on Table 7, state the suitable characteristics of wheelbarrow so that it can be more suitable to be used at construction site.

- (i) Kaedah menggerakkan kereta sorong
Method to move the wheelbarrow

.....

Sebab
Reason

.....

[2 markah]
[2 marks]

7(d)(i)

2

- (ii) Saiz tayar
Size of tyre

.....

Sebab
Reason

.....

[2 markah]

[2 marks]

7(d)(ii)

	2
--	---

- (e) Berdasarkan jawapan dalam 7(d)(i) dan 7(d)(ii), pilih jenis kereta sorong yang paling sesuai untuk digunakan untuk kerja berat dalam pembinaan.
Based on the answer in 7(d)(i) dan 7(d)(ii), choose the most suitable wheelbarrow to use for heavy duty in construction.

.....

[1 markah]

[1 mark]

7(e)

	1
--	---

Jumlah

A7

[Lihat halaman sebelah

SULIT

	9
--	---

TERHAD

6

- 2 Rajah 2 menunjukkan seorang lelaki sedang menarik sebuah beg beroda dengan daya, F pada sudut θ° dengan ufuk.

Diagram 2 shows a man is pulling a trolley bag with force, F at an angle θ° to the horizontal.



Rajah 2
Diagram 2

- (a) Apakah yang dimaksudkan dengan leraian daya?
What is the meaning of resolution of force?

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

- (b) (i) Pada Rajah 2, tanda dan labelkan komponen daya, F selari dengan permukaan, F_x .
On Diagram 2, mark and label the component of the force, F parallel to the surface, F_x .

[1 markah / 1 mark]

- (ii) Tulis satu rumus untuk magnitud bagi F_x .
Write an equation for the magnitude of F_x .

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

[Lihat halaman sebelah
TERHAD

8. Rajah 8 menunjukkan seorang lelaki menggunakan spring elastik semasa melakukan senaman regangan lengan.

Diagram 8 shows a man using an elastic spring during his arm exercise.



Rajah 8
Diagram 8

Apabila daya, $F = kx$ dikenakan, spring meregang dan kembali ke kedudukan asalnya apabila daya dialihkan, di mana k ialah pemalar spring dan x ialah pemanjangan spring.
When force, $F = kx$ is applied, the spring stretches and return to its original position once the force is removed, where k is spring constant and x is extension of the spring.

- (a) Namakan hukum fizik yang berkaitan dengan rumus daya di atas.
Name the physics law related with the above formula.

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

- (b) Daya maksimum yang boleh dikenakan kepada spring elastik itu ialah 300 N menyebabkan pemanjangan spring maksimum 10 cm.
Hitung pemalar k spring tersebut.
*The maximum the force can be applied to the elastic spring is 300 N caused the maximum extension of the spring 10 cm.
Calculate the spring constant of the spring.*

[2 markah]
[2 marks]

- (c) Cadangkan pengubahsuaian kepada spring elastik itu apabila satu lagi spring yang serupa dibekalkan supaya dapat digunakan untuk daya yang lebih besar dan beri sebab kepada jawapan anda.
Suggest modification to the elastic spring when another one identical spring is provided so that it can be used for a bigger force and give reason for your answer.

- (i) Ketebalan dawai spring.
Thickness wire of the spring.

.....
Sebab:

Reason:

.....
[2 markah]

[2 marks]

- (ii) Diameter gegelung spring.
Diameter coil of spring.

.....
Sebab:

Reason:

.....
[2 markah]

[2 marks]

- (iii) Susunan spring.
Arrangement of the springs.

.....
Sebab:

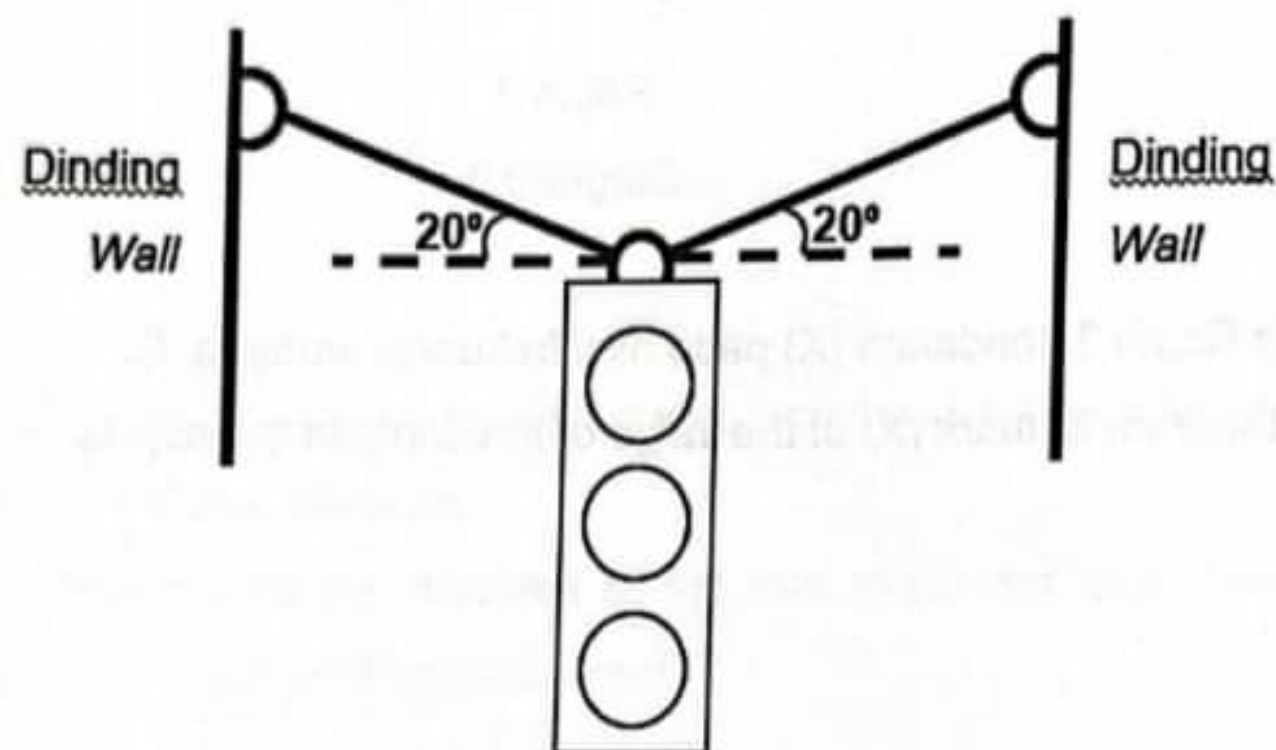
Reason:

.....
[2 markah]

[2 marks]

- 4 Rajah 4 menunjukkan sebuah lampu isyarat dengan jisim 20 kg digantung menggunakan dua kabel antara dua dinding.

Diagram 4 shows a traffic light with mass 20 kg hang with two cables between two walls.



Rajah 4

Diagram 4

- (a) Apakah yang dimaksudkan dengan keseimbangan daya?

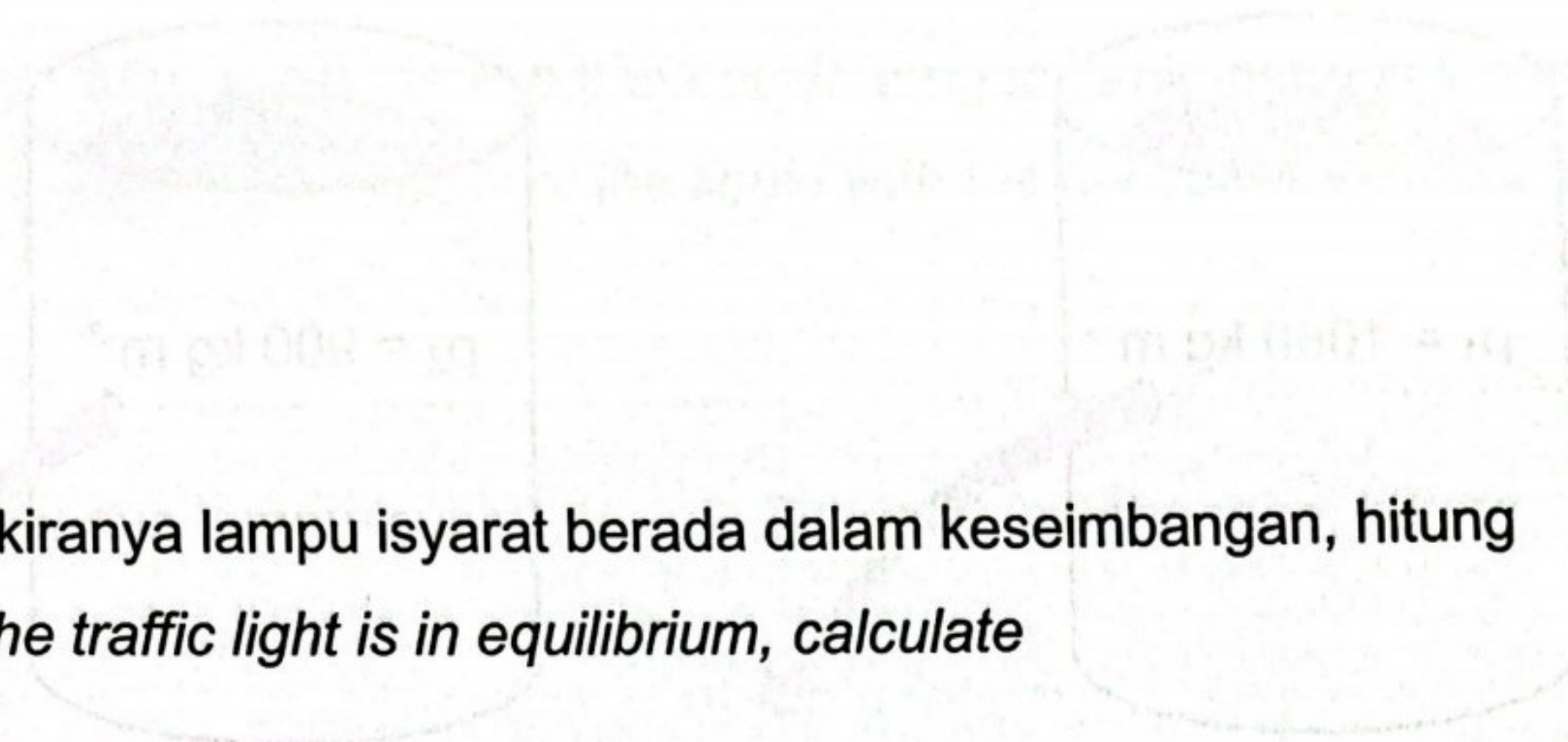
What is meant by forces in equilibrium?

.....
[1 markah]

[1 mark]

Berdasarkan Rajah 4,
Based on Diagram 4,

- (b) lukiskan segi tiga daya yang bertindak pada lampu isyarat itu.
draw a triangle of forces acts on the traffic light.



[2 markah]

[2 marks]

- (c) Sekiranya lampu isyarat berada dalam keseimbangan, hitung
If the traffic light is in equilibrium, calculate

- (i) berat lampu isyarat.
the weight of the traffic light.

[2 markah]

[2 marks]

- (ii) tegangan pada setiap tali.
the tension of each string.

[3 markah]

[3 marks]

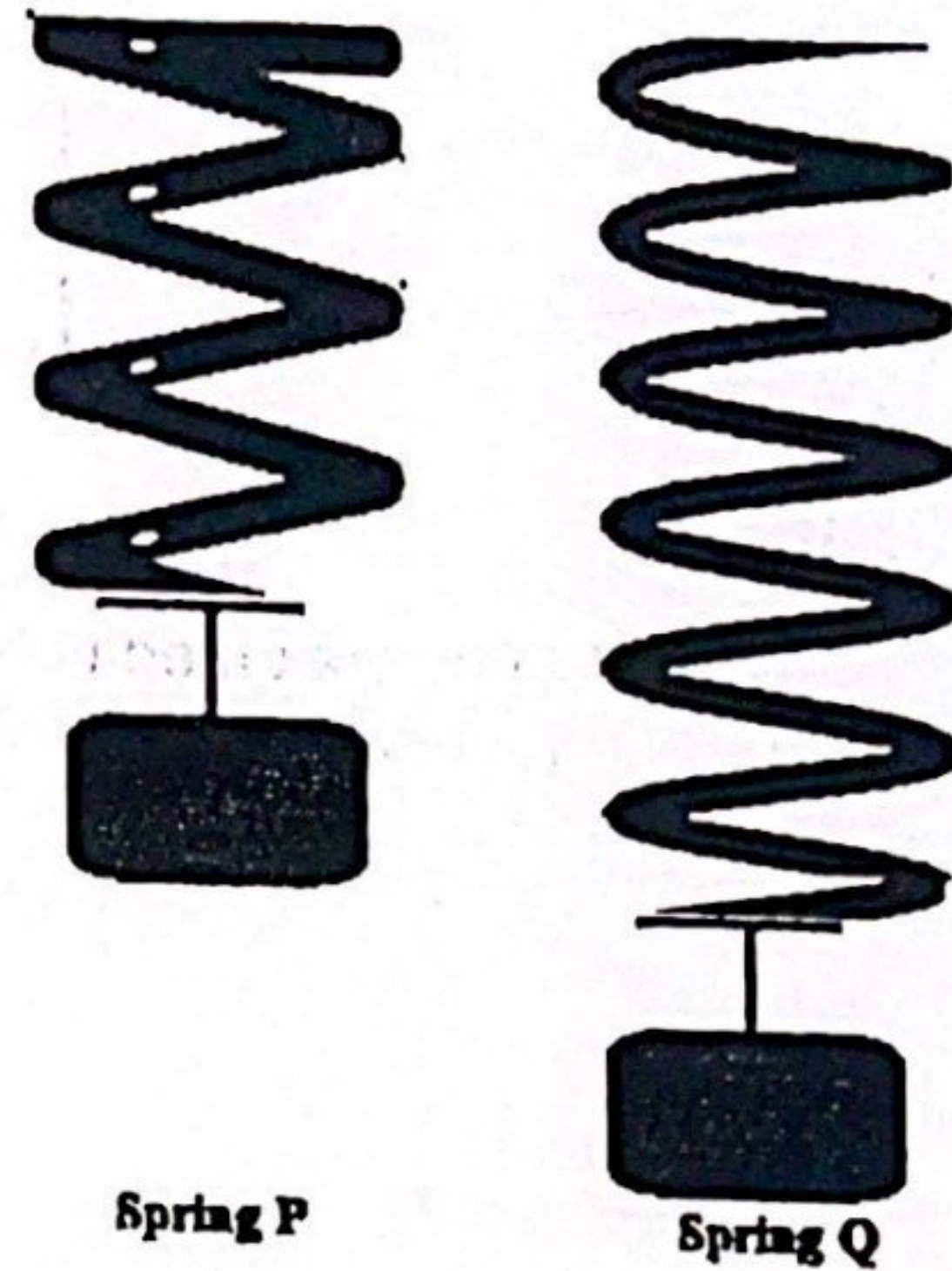
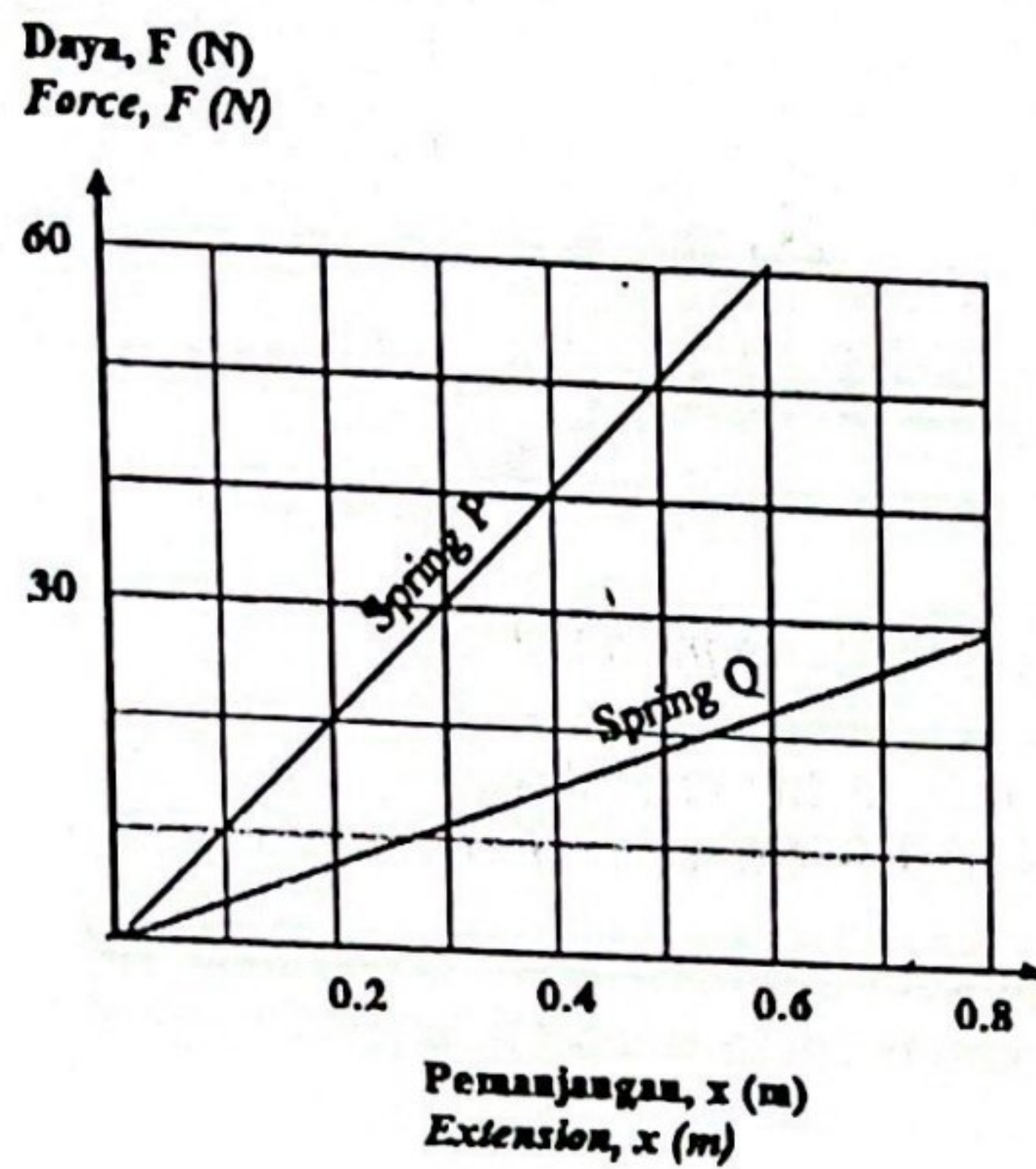
- (d) Sekiranya sudut mengufuk antara kabel dan lampu isyarat bertambah, apakah yang berlaku kepada tegangan kabel itu?

If the horizontal angle between the cable and the traffic light increase, what will happen to the cable tension?

[1 markah]

[1 mark]

6. Rajah 6.1 menunjukkan graf daya melawan pemanjangan bagi spring P dan spring Q. Spring P dan spring Q diperbuat dari bahan yang sama dan mempunyai panjang asal yang sama.
 Diagram 6.1 shows the graph of force against extension for spring P and spring Q. Spring P and spring Q are made of the same material and have the same original length.



Rajah 6. 1 / Diagram 6.1

- (a) Apakah yang dimaksudkan dengan kekenyalan?
 What is the meaning of elasticity?

.....

[1 markah / 1 mark]

- (b) Kira nilai pemalar spring bagi spring P
 Calculate the value of spring constant for spring P.

[2 markah / 2 marks]

- (c) Berdasarkan Rajah 6.1, bandingkan
 Based on Diagram 6.1 and 6.2, compare

- (i) ketebalan wayar spring P dan spring Y
 thickness of spring wire P and spring Y

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

- (ii) Pemanjangan spring P dan spring Q
The extension of spring P and spring Q

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

- (iii) Pemalar spring bagi spring P dan spring Q
Spring constant for spring P and spring Q

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

- (d) Berdasarkan jawapan anda di 6(b), nyatakan hubungan antara ketebalan wayar spring dengan
Based on your answer in 6(b), state the relationship between the thickness of the spring wire and

- (i) pemanjangan spring
the extension of spring

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

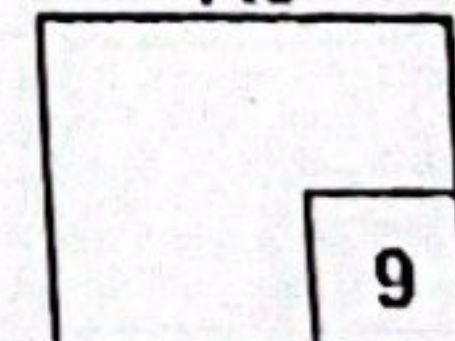
- (ii) pemalar spring
spring constant

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

- (e) Namakan hukum yang mengaitkan perkara di atas?
Name the law that relates to the above?

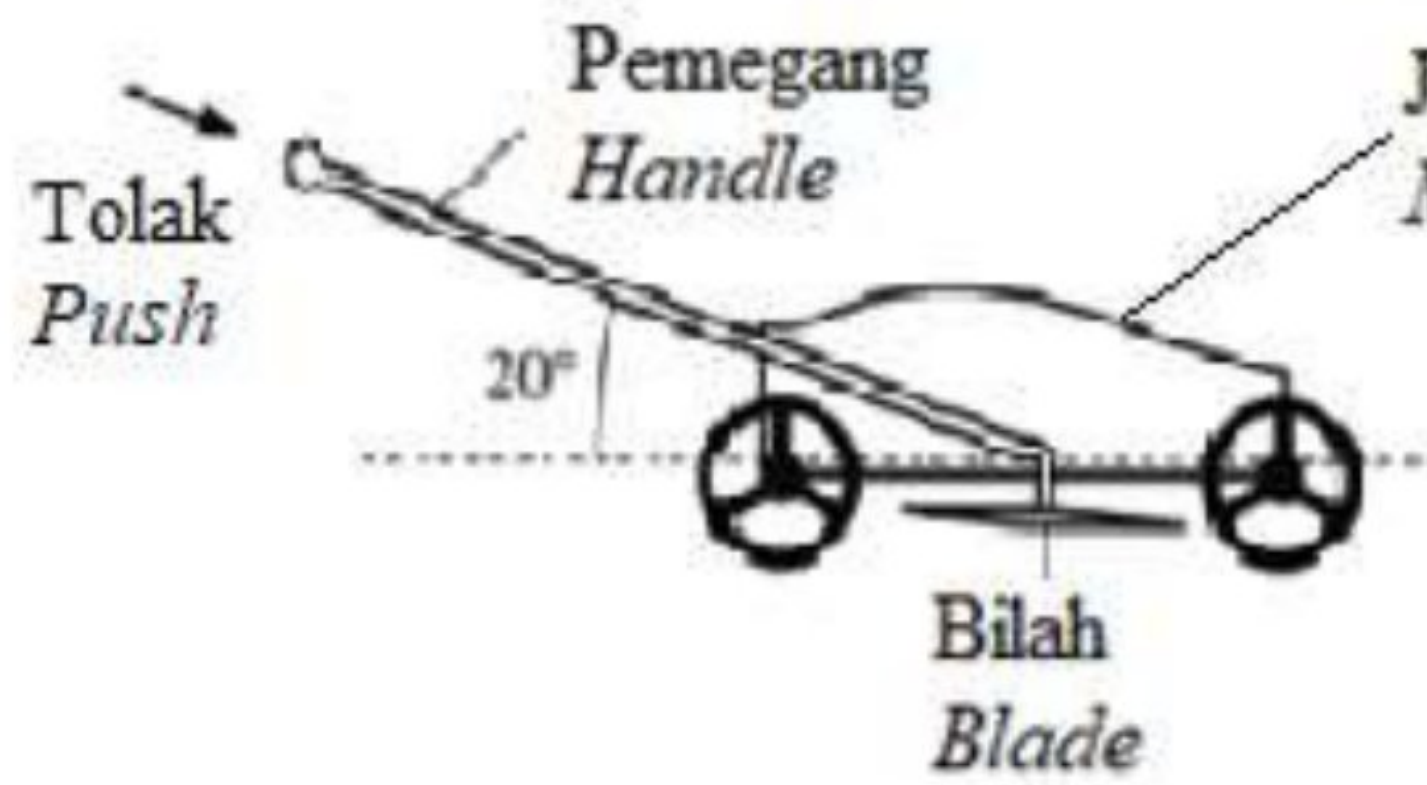
.....
 [1 markah / 1 mark]

Total
 A6

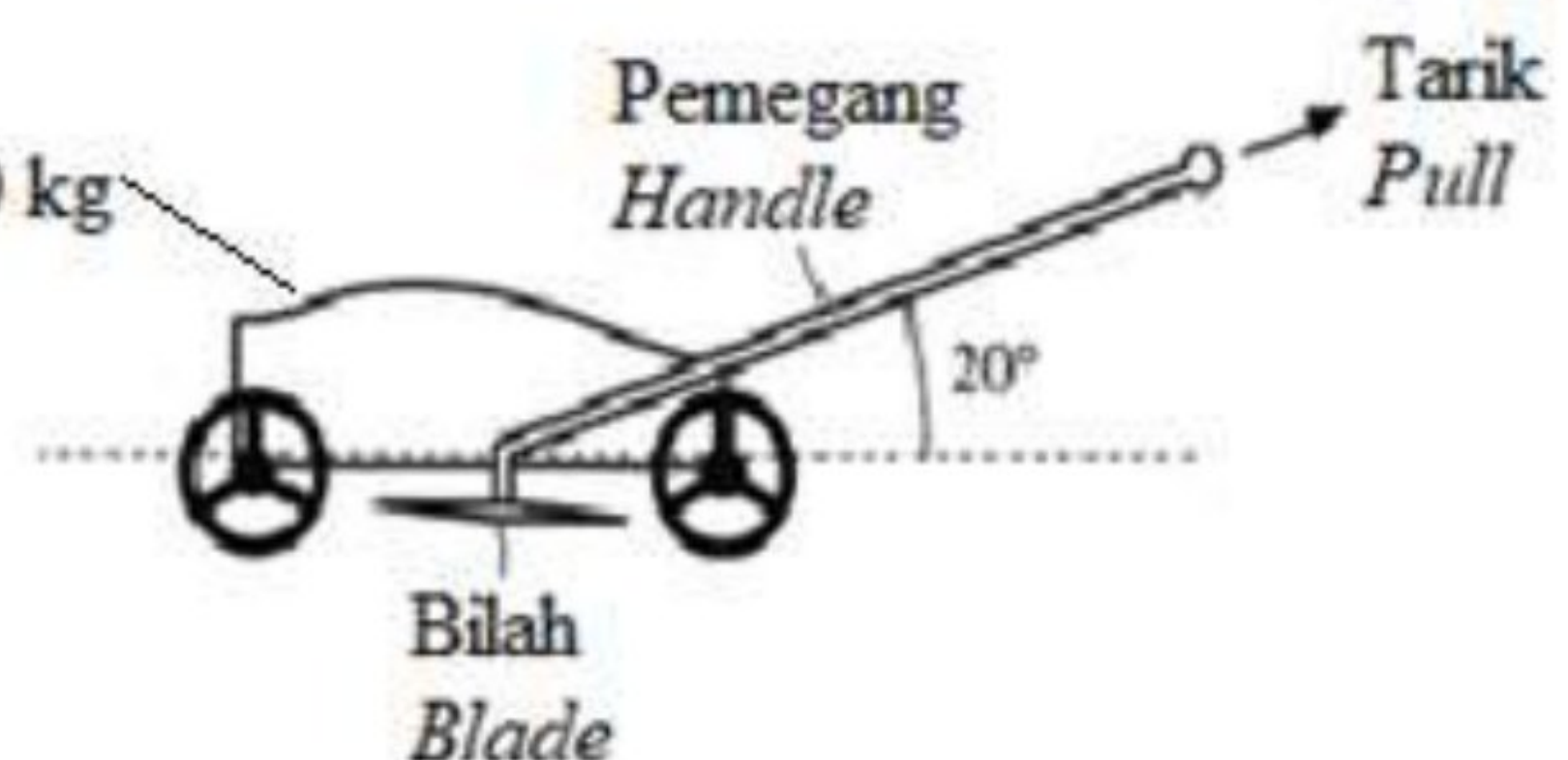


6. Rajah 6.1 dan Rajah 6.2 menunjukkan sebuah mesin rumput digerakkan dengan dua kaedah yang berbeza. Daya yang bertindak ke atas pemegang, F boleh dilarikan kepada dua komponen menegak, F_Y dan mengufuk, F_X .

Diagram 6.1 dan Diagram 6.2 show a lawn mower is move with two different methods. The force acting on the handle, F can be resolved into vertical component, F_Y and horizontal component, F_X .



Rajah 6.1
Diagram 6.1

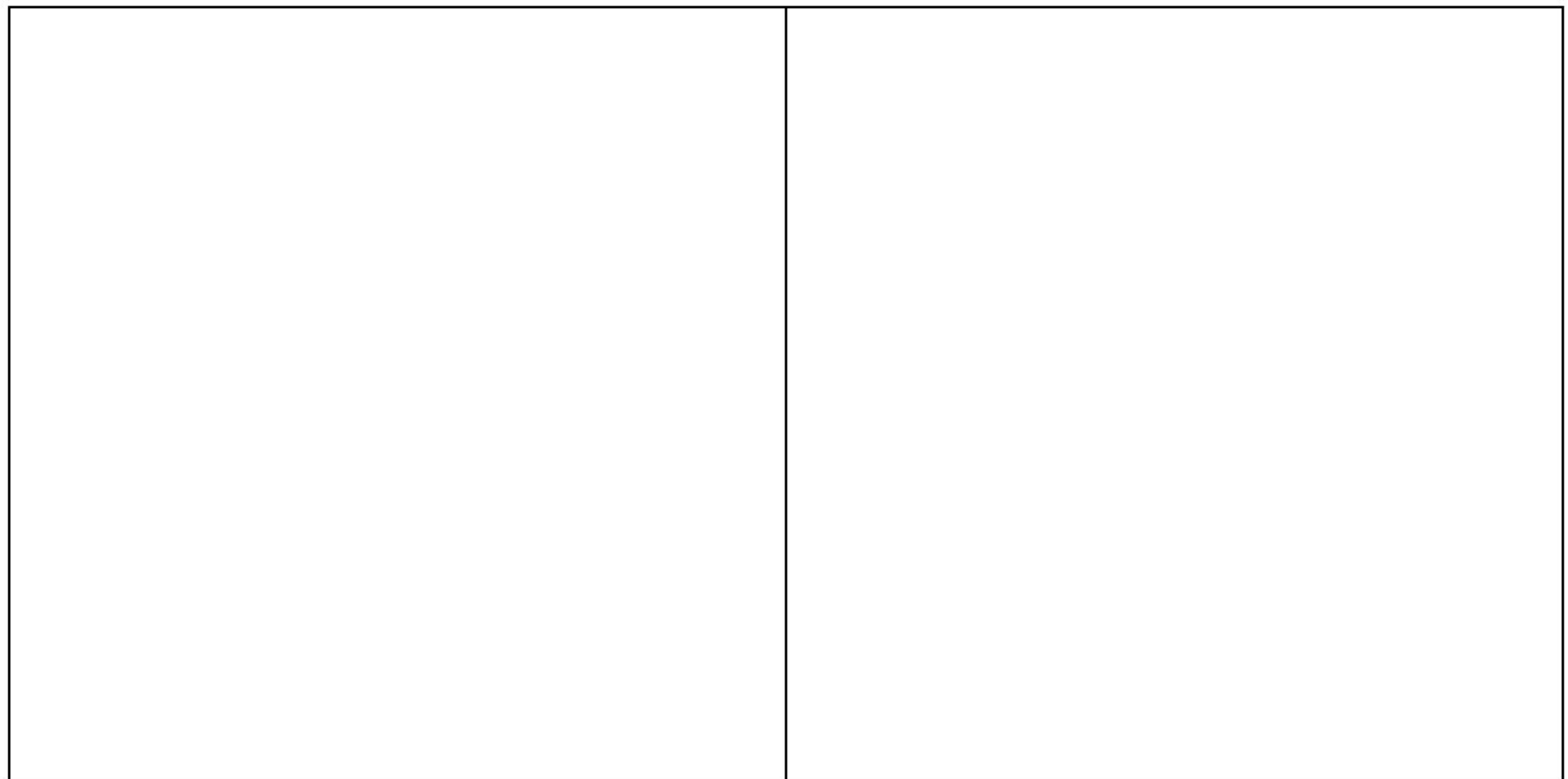


Rajah 6.2
Diagram 6.2

- (a) Takrifkan leraian daya.
Define resolution of forces.

[1 markah/mark]

- (b) Lukis rajah segitiga untuk menunjukkan leraian daya bagi Rajah 6.1 dan Rajah 6.2.
Draw diagrams of a triangle to show the resolution of forces for Diagram 6.1 and Diagram 6.2.



Rajah 6.1
Diagram 6.1

Rajah 6.2
Diagram 6.2

[2 markah/marks]

(c) Berdasarkan Rajah 6.1 dan Rajah 6.2, bandingkan
Based on Diagram 6.1 and Diagram 6.2, compare

(i) kaedah menggerakkan mesin rumput.
the method of moving the lawn mower.

.....
 [1 markah/mark]

(ii) arah komponen daya menegak, F_Y .
the direction of force in vertical component, F_Y .

.....
 [1 markah/mark]

(iii) daya bersih yang bertindak ke atas permukaan tanah.
the net force acting upon the ground surface.

.....
 [1 markah/mark]

(d) Hubungkan antara arah komponen daya menegak, F_Y dan daya bersih yang bertindak ke atas permukaan tanah.
Relate the direction of force in vertical component, F_Y and the net force acting upon the ground surface.

.....
 [1 markah/mark]

(e) Kaedah yang manakah paling sesuai digunakan untuk memotong rumput dengan lebih berkesan. Beri sebab bagi jawapan anda.
Which method is the most suitable to be applied to cut the grass more efficiently. Give reason for your answer.

.....

 [2 markah/marks]

Total A6

	9
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BAHAGIAN C

[20 markah]

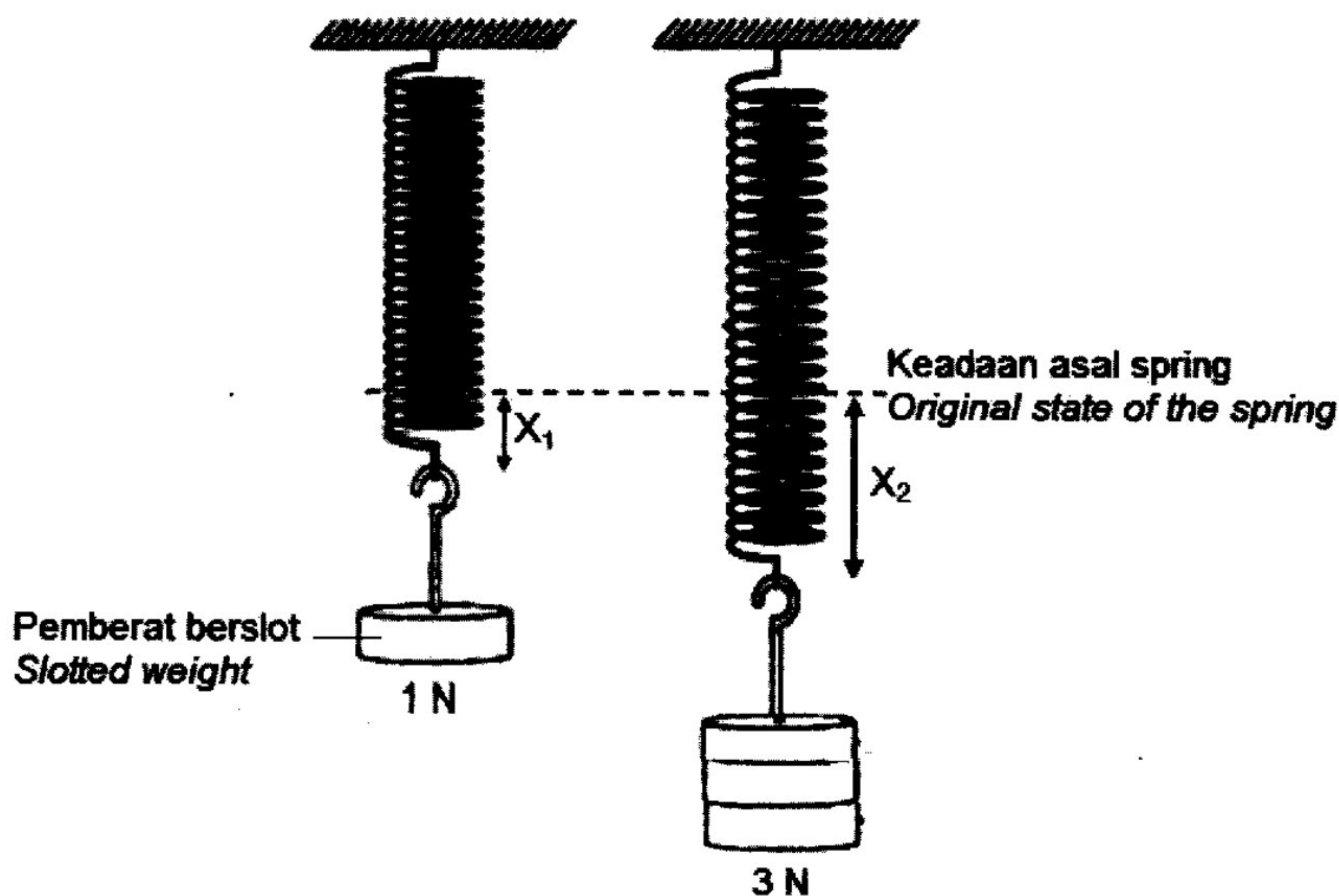
Soalan ini mesti dijawab.

11. Rajah 11.1(a) dan Rajah 11.1(b) menunjukkan spring yang sama digantungkan dengan pemberat 1 N dan 3 N untuk mengkaji kekenyalan satu spring.

Diagram 11.1(a) and Diagram 11.1(b) show the same spring suspended by 1 N and 3 N weight to study the elasticity of a spring.

X_1 dan X_2 merupakan pemanjangan spring yang terhasil.

X_1 and X_2 are extension of the spring produced.



Rajah 11.1(a)
Diagram 11.1(a)

Rajah 11.1(b)
Diagram 11.1(b)

- (a) Apakah yang dimaksudkan kekenyalan?
What is meant by elasticity?

[1 markah]

[1 mark]

(b) Berdasarkan Rajah 11.1 (a) dan Rajah 11.1(b)
Based on Diagram 11.1 (a) and Diagram 11.1(b)

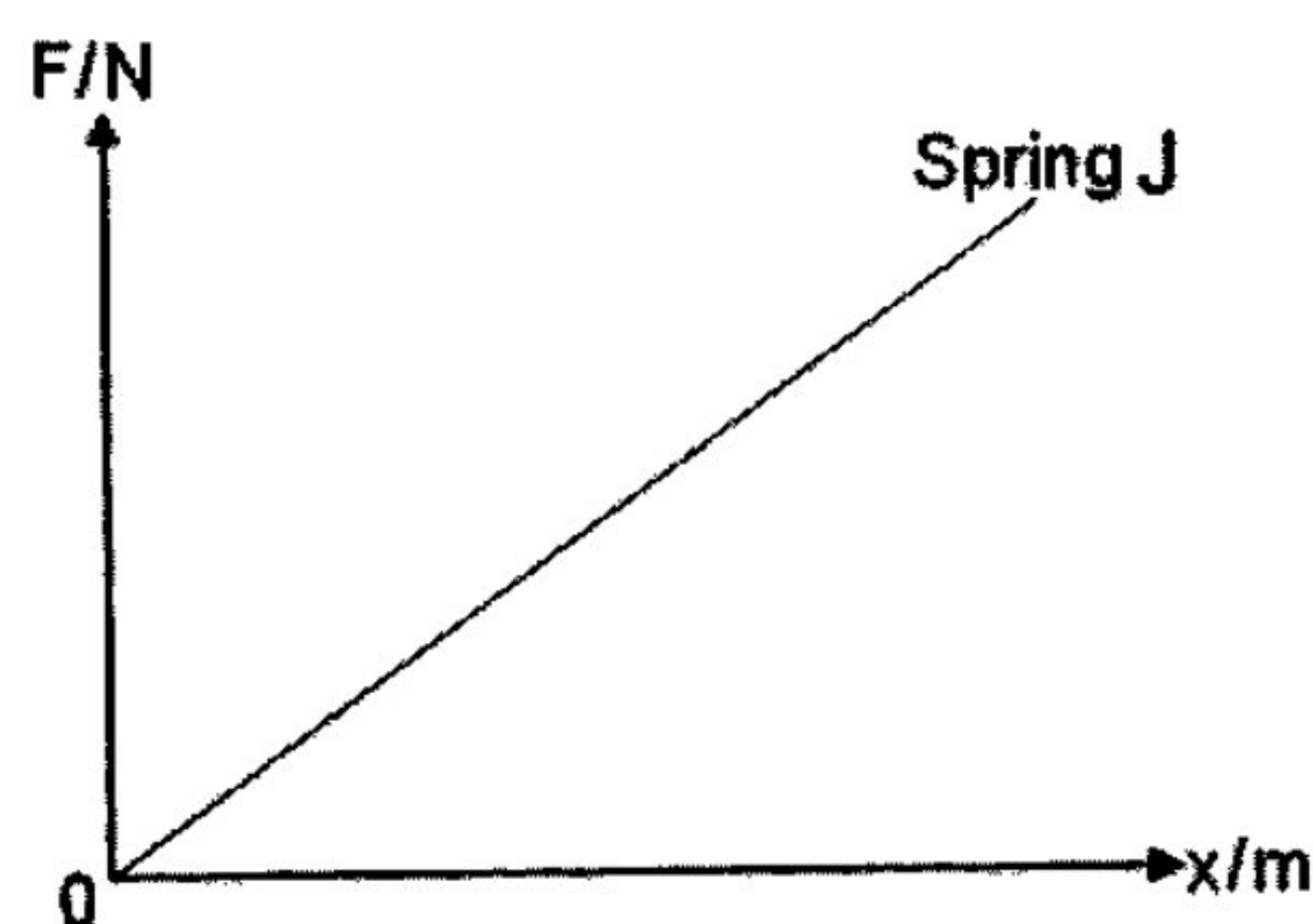
- (i) Bandingkan pemalar spring, berat beban dan pemanjangan spring, x .
Compare the spring constant, the weight of load and the extension of the spring, x
- (ii) Hubungkait berat beban dan pemanjangan spring. Namakan hukum fizik yang terlibat.
Relate the weight of load and extension of the spring. Name the physics law involved.

[5 markah]

[5 marks]

(c) Rajah 11.2 menunjukkan graf daya, F melawan pemanjangan spring, x bagi suatu spring J.

Diagram 11.2 shows a graph of force, F against spring extension, x for a spring J.



Rajah 11.2
Diagram 11.2

Berdasarkan graf dalam Rajah 11.2, terangkan bagaimana kekerasan spring dan tenaga keupayaan kenyal yang tersimpan di dalam spring dapat ditentukan.

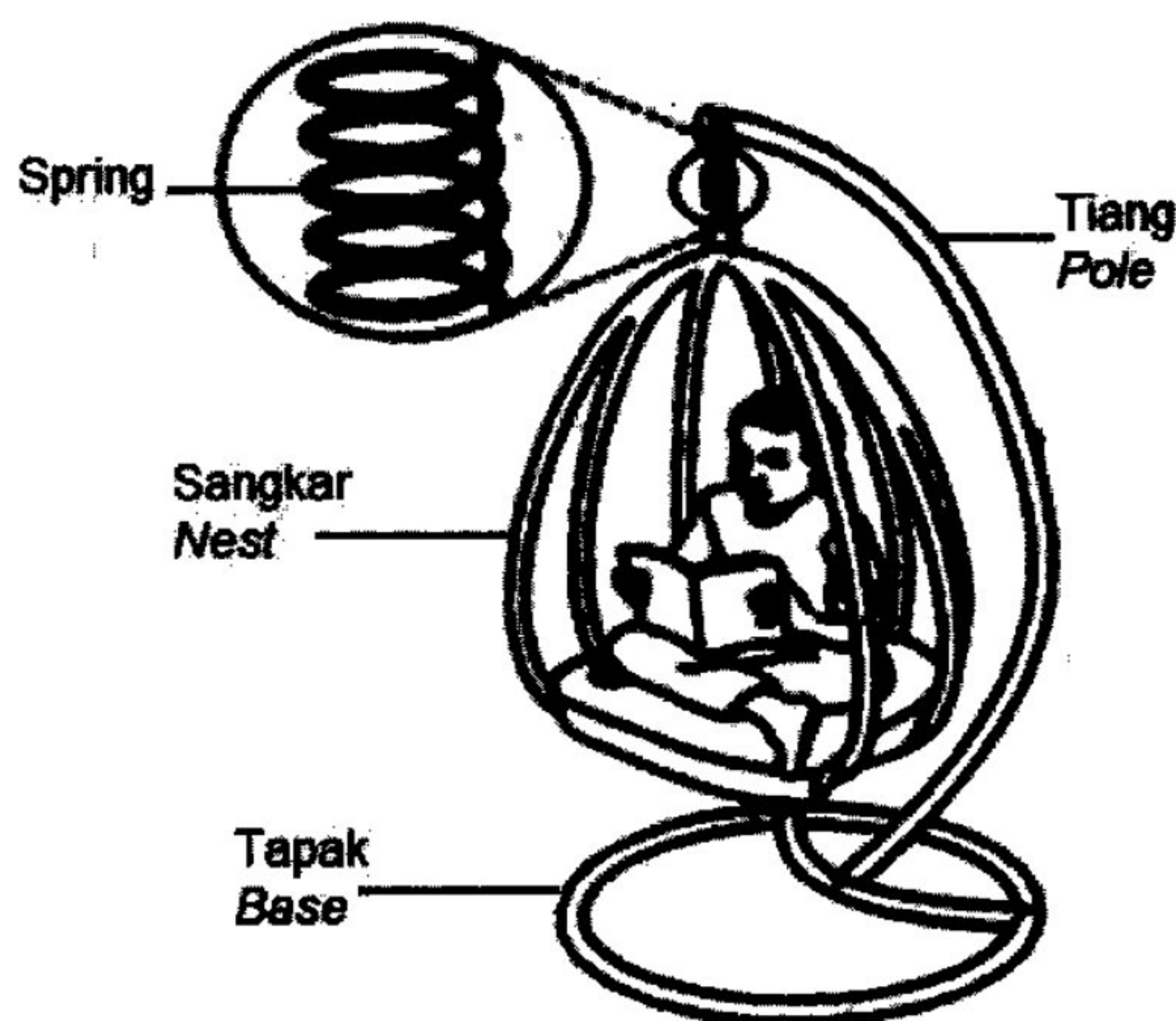
Based on graph in Diagram 11.2, explain how the stiffness of the spring and the elastic potential energy stored in the spring can be determined.

[4 markah]

[4 marks]

- (d) Rajah 11.3 menunjukkan buaian yang diduduki oleh seorang kanak-kanak. Spring buaian itu telah memanjang apabila diduduki oleh kanak-kanak itu.

Diagram 11.3 shows a swing is sitting by a child. The spring of the swing was extended when the child is seated.



Rajah 11.3

Diagram 11.3

Anda dikehendaki merekacipta sebuah buaian yang boleh digunakan oleh orang dewasa yang berjisim lebih besar.

You are required to create a swing that can be used by adult of larger mass.

Nyata dan terangkan cadangan anda berdasarkan ciri-ciri buaian dan spring.

State and explain your suggestions based on the characteristics of the cradle and the spring.

[10 markah]

[10 marks]

KERTAS TAMAT