



**PEPERIKSAAN PERCUBAAN BERSAMA
PENILAIAN MENENGAH RENDAH
TAHUN 2012**

ANJURAN BERSAMA

**MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM)
CAWANGAN PERLIS**

**SAINS
Kertas 1**

Satu jam

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam Bahasa Inggeris mendahului soalan yang sepadan dalam Bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Kertas soalan ini mengandungi 25 halaman bercetak.

1. Which of the following apparatus can be used to measure the weight of an object?
Antara radas berikut, yang manakah boleh digunakan untuk mengukur berat suatu objek?

A.



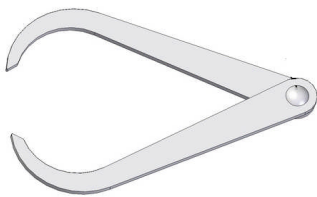
B.



C.



D.



2. Diagram 1 shows a map.
Rajah 1 menunjukkan sebuah peta.

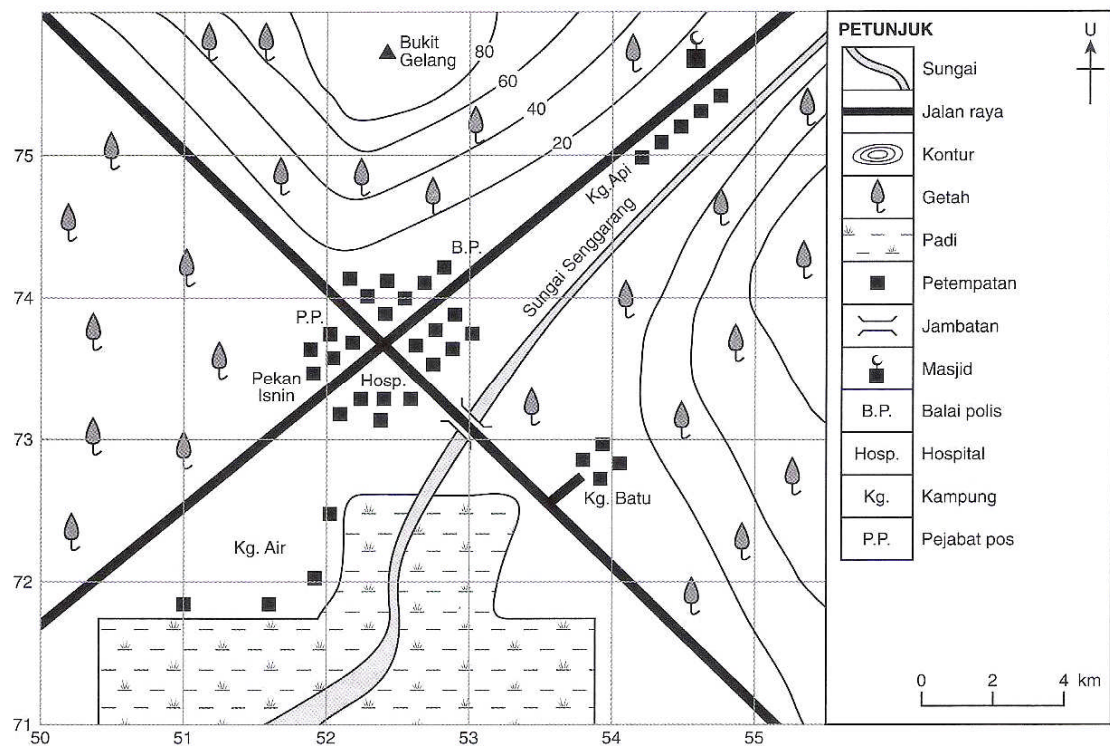


Diagram 1
Rajah 1

To measure the distance from Pekan Isnin to Kampung Api, other than a thread and a ruler, we can use

Untuk mengukur jarak daripada Pekan Isnin ke Kampung Api, selain dari menggunakan benang dan pembaris, kita boleh menggunakan

- A An external caliper and a ruler
Angkup luar dan pembaris
- B An opisometer and a ruler
Opisometer dan pembaris
- C Internal caliper and a ruler
Angkup dalam dan pembaris
- D Vernier caliper
Angkup vernier

3. Diagram 2 shows the organization of cells in the human body.
Rajah 2 menunjukkan organisasi sel pada manusia.

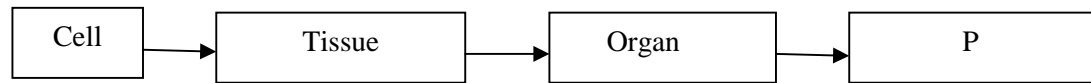


Diagram 2
Rajah 2

Which of the following is P?
Antara berikut yang manakah P?

- A Sperm
Sperma
 - B Small intestine
Usus kecil
 - C Muscle
Otot
 - D Blood circulatory system
Sistem peredaran darah
4. Diagram 3 shows a ferry.
Rajah 3 menunjukkan sebuah feri.



Diagram 3
Rajah 3

The ferry floats because it
Feri terapung kerana ia

- A is heavier than water
lebih berat daripada air
- B is denser than water
lebih tumpat daripada air
- C has a bigger volume and lower density
mempunyai isipadu yang besar dan ketumpatan yang lebih rendah
- D has mass and occupies space
mempunyai jisim dan memenuhi ruang

5. Diagram 4 shows a method used to separate mixture
Rajah 4 menunjukkan satu kaedah mengasingkan suatu campuran

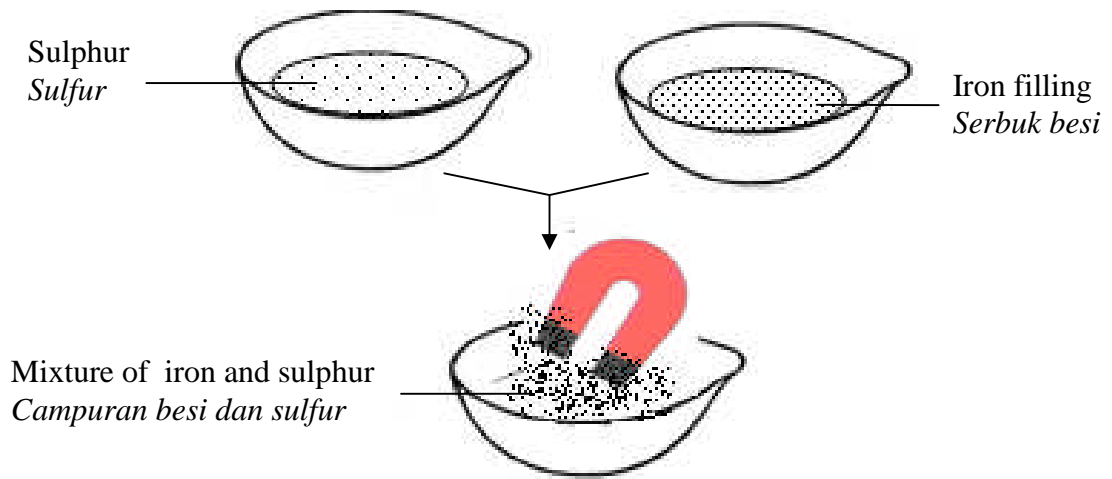


Diagram 4
Rajah 4

This method can be applied to separate
Kaedah ini boleh digunakan untuk mengasingkan

- A solid and solid
pepejal dan pepejal
- B solid and liquid
pepejal dan cecair
- C solid and gas
pepejal dan gas
- D liquid and gas
cecair dan gas

6. Diagram 5 shows an activity conducted by a student
Rajah 5 menunjukkan aktiviti yang dijalankan oleh seorang pelajar

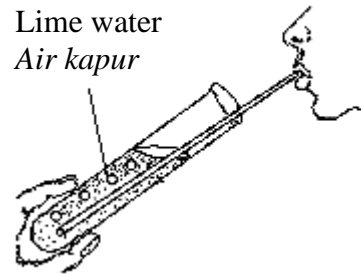


Diagram 5
Rajah 5

What will happen to limewater?
Apakah yang akan terjadi kepada air kapur?

- A Turns blue black
Menjadi biru gelap
- B Unchanged
Tidak berubah
- C Turns chalky
Menjadi keruh
- D Turns yellow
Menjadi kuning

- 7 Diagram 6 shows atmospheric layers.
Rajah 6 menunjukkan lapisan atmosfera.

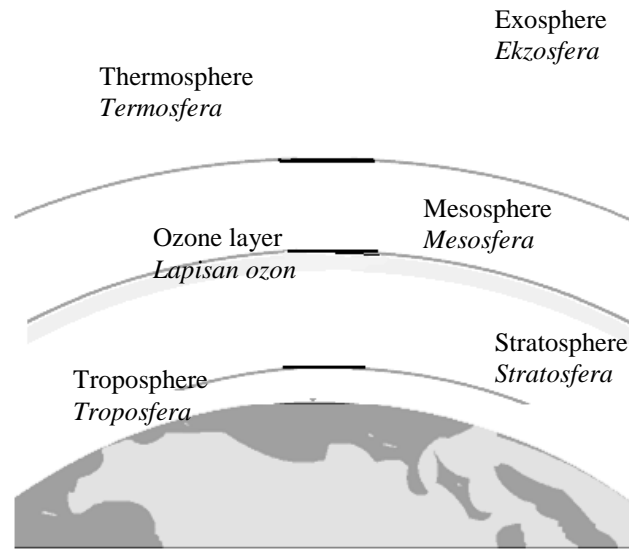


Diagram 6
Rajah 6

Which of the following cause the thinning of the ozone layer?
Antara yang berikut, apakah yang menyebabkan penipisan lapisan ozon?

- A Cigarette smoke
Asap rokok
- B Open burning
Pembakaran terbuka
- C Carbon monoxide
Karbon monoksida
- D Chlorofluorocarbon (CFC)
Kloroflorokarbon (CFC)

- 8 Diagram 7 shows a windmill.
Rajah 7 menunjukkan satu kincir angin.

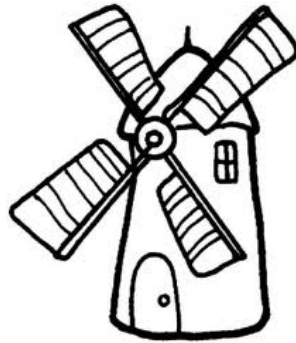


Diagram 7
Rajah 7

What energy changes take place?
Apakah perubahan tenaga yang berlaku?

- A Potential energy → kinetic energy → electrical energy
Tenaga keupayaan → tenaga kinetik → tenaga elektrik
- B Kinetic energy → potential energy → light energy
Tenaga kinetik → tenaga keupayaan → tenaga cahaya
- C Chemical energy → sound energy → light energy
Tenaga kimia → tenaga bunyi → tenaga cahaya
- D Light energy → electrical energy → light energy
Tenaga cahaya → tenaga elektrik → tenaga cahaya

- 9 Diagram 8 shows an ice cream.
Rajah 8 menunjukkan sebatang ais krim.

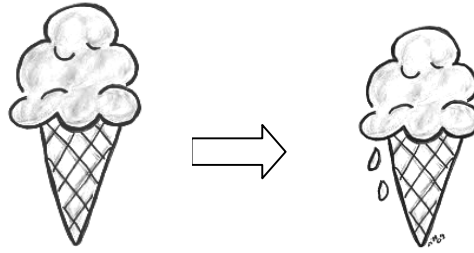


Diagram 8
Rajah 8

What process has take place?
Apakah proses yang berlaku?

- A Freezing
Pembekuan
- B Sublimation
Pemejalwapan
- C Melting
Peleburan
- D Evaporation
Penyejatan

- 10 Diagram 9 shows a steel spoon in a cup of hot coffee.
Rajah 9 menunjukkan sudu keluli dalam secawan kopi panas.



Diagram 9
Rajah 9

Why the spoon becomes hot?
Mengapakah sudu tersebut menjadi panas?

- A Heat from the coffee is transferred to the steel spoon through conduction
Haba dari kopi dipindahkan ke sudu keluli melalui konduksi
- B Heat from the steel spoon is transferred to the coffee through convection
Haba dari sudu keluli dipindahkan ke kopi melalui perolakan
- C Heat from the surroundings is transferred to the steel spoon through radiation
Haba dari persekitaran dipindahkan ke sudu keluli melalui sinaran
- D Heat from the steel spoon is lost to the surroundings
Haba dari sudu keluli hilang ke persekitaran
- 11 What is the sensory organ that we used to detect pain and pressure?
Apakah organ deria yang kita gunakan untuk mengesan kesakitan dan tekanan?
- A Eyes
Mata
- B Nose
Hidung
- C Skin
Kulit
- D Tongue
Lidah

- 12 Diagram 10 shows the areas of tastes on a human tongue.
Rajah 10 menunjukkan kawasan rasa pada lidah manusia.

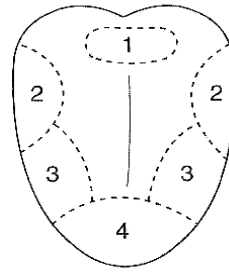


Diagram 10
Rajah 10

Which areas are **most** sensitive to lemon juice, salt and ice cream?
*Kawasan yang manakah **paling** peka terhadap jus limau, garam dan ais krim?*

	Lemon juice <i>Jus limau</i>	Salt <i>Garam</i>	Ice cream <i>Ais krim</i>
A	1	2	3
B	1	3	4
C	2	4	1
D	2	3	4

- 13 Which of the following is the correct sequence of nose detecting a smell?
Antara berikut, manakah urutan yang betul ketika hidung mengesan bau?

- A Receptor → smell → nerves → brain
Reseptor → bau → saraf → otak
- B Smell → nerves → receptor → brain
Bau → saraf → reseptor → otak
- C Smell → receptor → nerves → brain
Bau → reseptor → saraf → otak
- D Smell → nerves → receptor → brain
Bau → saraf → reseptor → otak

- 14 Diagram 11 shows a disease.
Rajah 11 menunjukkan sejenis penyakit.



Diagram 11
Rajah 11

Lacking of which mineral may caused this disease?
Kekurangan mineral manakah menyebabkan penyakit ini?

- A Iodine
Iodin
- B Calcium
Kalsium
- C Iron
Besi
- D Potassium
Kalium
- 15 Which of the following statements is **true** about the cause of constipation?
*Antara pernyataan berikut, yang manakah **benar** tentang penyebab sembelit?*
- A Loss of appetite.
Hilang selera.
- B Drinking a lot of water.
Minum banyak air.
- C Eating food without fibre.
Makan makanan tanpa serat
- D A lot of undigested food in the intestine.
Banyak makanan tak tercerna dalam usus.

- 17 Diagram 13 shows a pyramid number.
Rajah 13 menunjukkan suatu piramid nombor

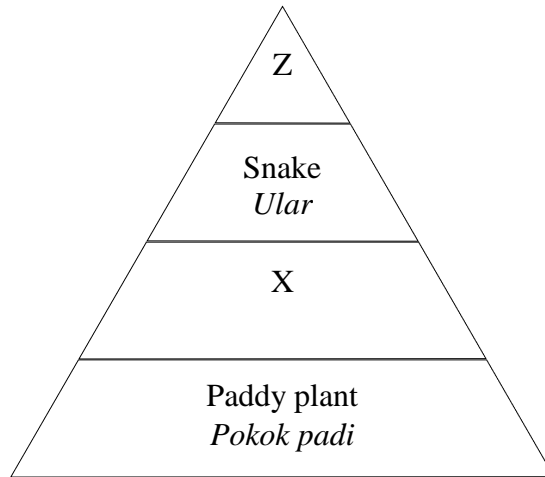
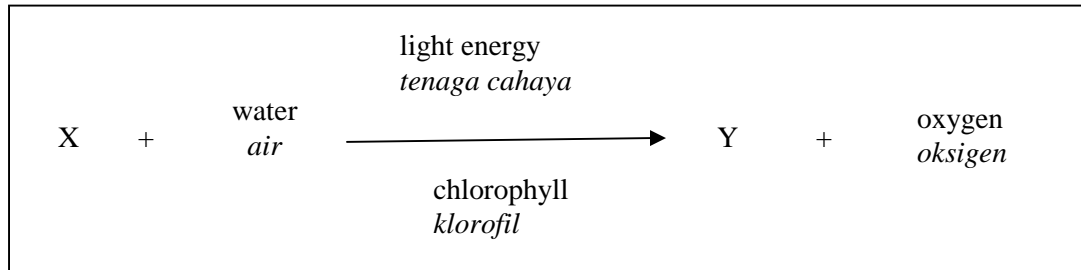


Diagram 13
Rajah 13

Which organism should be in level X and Z ?
Organisma yang manakah patut berada di aras X dan Z ?

	X	Z
A	Caterpillar <i>Ulat Beluncas</i>	Owl <i>Burung Hantu</i>
B	Sparrow <i>Burung Pipit</i>	Chicken <i>Ayam</i>
C	Frog <i>Katak</i>	Caterpillar <i>Ulat Beluncas</i>
D	Rat <i>Tikus</i>	Eagle <i>Helang</i>

- 18 The following information shows a word equation of the process of photosynthesis.
Maklumat berikut menunjukkan persamaan perkataan bagi proses fotosintesis.



What are X and Y?
Apakah X dan Y ?

	X	Y
A	Carbon <i>Karbon</i>	Water vapour <i>Wap air</i>
B	Glucose <i>Glukosa</i>	Carbon dioxide <i>Carbon dioksida</i>
C	Hydrogen <i>Hidrogen</i>	Carbon monoxide <i>Karbon monoksida</i>
D	Carbon dioxide <i>Carbon dioksida</i>	Glucose <i>Glukosa</i>

- 19 Which of the following can help to save water?
Manakah di antara berikut, dapat membantu menjimatkan air?

- A Turn on the shower while soaping.
Buka paip mandian hujan semasa menyabun badan.
- B Use a washing machine only when the load of clothes is full.
Gunakan mesin basuh apabila muatan pakaian telah penuh.
- C Let the water run while brushing your teeth.
Biarkan air mengalir semasa memberus gigi.
- D Washing dishes under a running tap.
Membasuh pinggan dibawah air yang sentiasa mengalir dari paip.

20. Which of the following is **correctly** matched?
Antara berikut, manakah dipadankan dengan betul?

	Substance <i>Bahan</i>	Uses <i>Kegunaan</i>
A	Sodium hydroxide <i>Natrium hidroksida</i>	To make hair conditioners <i>Untuk membuat perapi rambut</i>
B	Formic acid <i>Asid formik</i>	As an eyewash <i>Sebagai pencuci mata</i>
C	Vinegar <i>Cuka</i>	Neutralise acidic gases <i>Meneutralkan gas berasid</i>
D	Milk of magnesia <i>Susu magnesia</i>	To relief indigestion <i>Untuk melegakan ketidakhadaman</i>

- 21 Diagram 14 shows that hot air exerts pressure.

Rajah 14 menunjukkan udara panas menghasilkan tekanan.

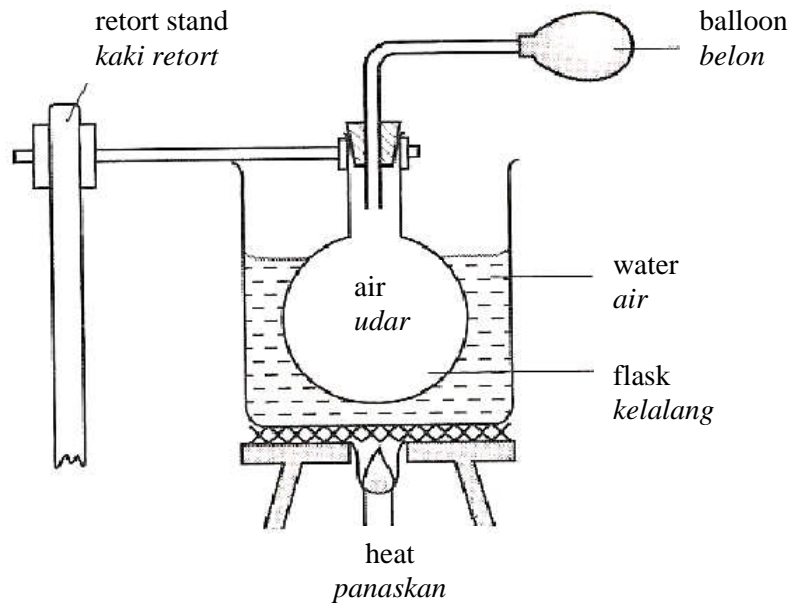


Diagram 14

Rajah 14

Why does the balloon expand when the water in the beaker is heated?

Mengapakah belon mengembang apabila air dalam bikar dipanaskan?

- A Kinetic energy of air particles in balloon decreases, air in flask enter the balloon.

Tenaga kinetik zarah-zarah udara dalam belon berkurang, udara dalam kelalang masuk ke dalam belon.

- B Air pressure in flask decreases, air pressure from outside force air enter the balloon.

Tekanan udara dalam kelalang berkurang, tekanan udara luar menolak udara memasuki belon

- C Air density in flask decreases, air move upward to enter the balloon.

Ketumpatan udara dalam kelalang berkurang, udara bergerak ke atas memasuki belon.

- D Air pressure in flask increases, push air upward, air volume in balloon increases.

Tekanan udara dalam kelalang meningkat, menolak udara ke atas, isipadu udara dalam belon bertambah.

- 22 Diagram 15 show a football player stop a ball.
Rajah 15 menunjukkan pemain bola sepak menahan satu hantaran bola.

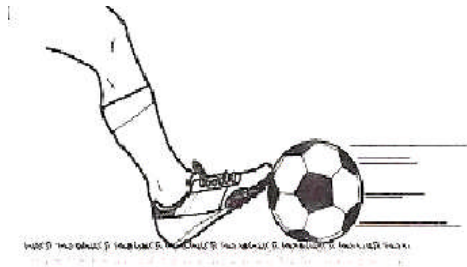


Diagram 15
Rajah 15

Name the effect of force as shown above.
Namakan kesan daya yang ditunjukkan dalam rajah di atas.

- A Force can change position
Daya boleh mengubah kedudukan
- B Force can change speed
Daya boleh mengubah kelajuan
- C Force can change size
Daya boleh mengubah saiz
- D Force can change direction of motion of an object
Daya boleh mengubah arah gerakan sesuatu objek

- 23 Diagram 16 shows a student weight of 400 N, carrying a load of 100 N up a staircase.
Rajah 16 menunjukkan seorang pelajar dengan berat 400 N, membawa beban seberat 100 N menaiki tangga.

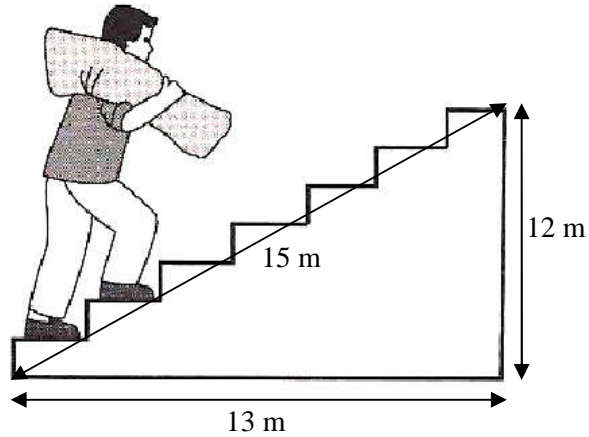


Diagram 16
Rajah 16

Calculate the work done.
Hitung kerja yang dilakukan.

- A 4800 J
- B 6000 J
- C 6500 J
- D 7500 J

- 24 Diagram 17 shows a cross section of plant stem.
Rajah 17 menunjukkan satu keratan rentas batang tumbuhan

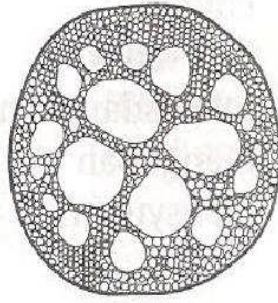
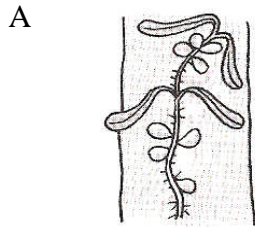
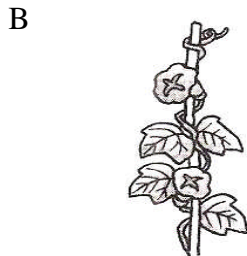


Diagram 17
Rajah 17

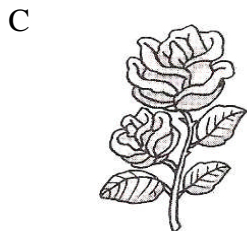
Which plant has a structure as above?
Manakah antara tumbuhan berikut mempunyai struktur seperti di atas?



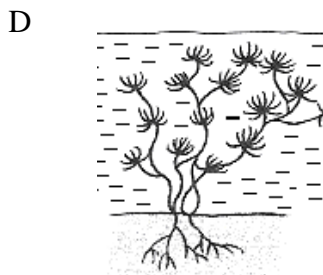
Money plant
Pokok duit-duit



Morning glory plant
Pokok seri pagi



Rose plant
Pokok bunga ros



Elodea
Elodea

- 25 Diagram 18 shows an object.
Rajah 18 menunjukkan suatu objek.

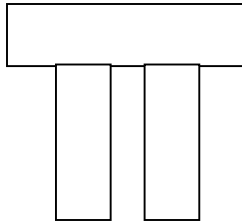


Diagram 18
Rajah 18

How the object can be made to achieve the highest stability?
Bagaimanakah objek itu dapat mencapai keadaan yang paling stabil?

- A Shorten its legs
Pendekkan kakinya
- B Bend its legs
Bengkokkan kakinya
- C Widen its legs
Menjarakkan kakinya
- D Shorten and widen its legs
Memendek dan menjarakkan kakinya

- 26 Diagram 19 shows two models of levers.
Rajah 19 menunjukkan dua model tuas.

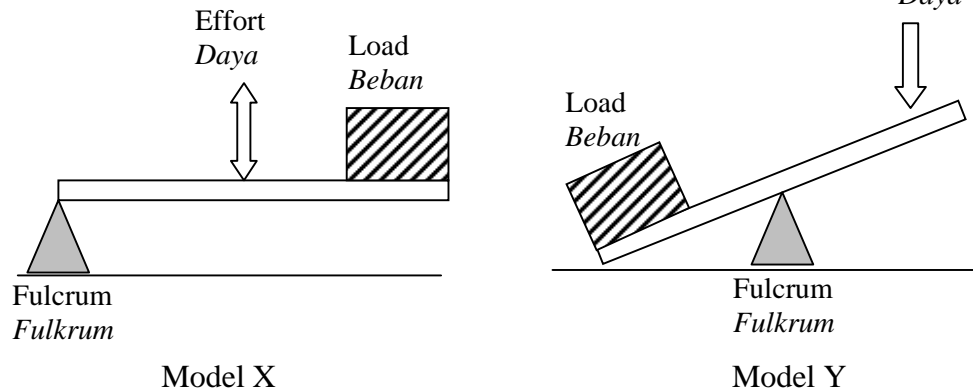
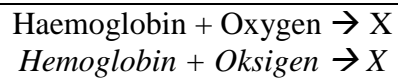


Diagram 19
Rajah 19

Which tools can be represented by Models X and Y?
Apakah peralatan yang boleh mewakili Model X dan Y?

	X	Y
A	Hoe <i>Cangkul</i>	Paper cutter <i>Pemotong kertas</i>
B	Wheelbarrow <i>Kereta sorong</i>	Pliers <i>Playar</i>
C	Fishing rod <i>Joran pancing</i>	See saw <i>Jongkang-jongkit</i>
D	Paper cutter <i>Pemotong kertas</i>	Broom <i>Penyapu</i>

- 27 The following word equation shows the formation of substance X in the blood.
Persamaan perkataan berikut menunjukkan pembentukan bahan X dalam darah.



What is substance X?
Apakah bahan X?

- A Plasma
Plasma
- B Oxyhaemoglobin
Oksihemoglobin
- C Red blood cells
Sel darah merah
- D Carboxyhaemoglobin
Karboksihemoglobin

- 28 Table 1 shows two components of blood, P and Q.
Jadual 1 menunjukkan dua komponen darah, P dan Q.

Blood components <i>Komponen darah</i>	Function <i>Fungsi</i>
P	Carries oxygen <i>Mengangkut oksigen</i>
Q	Helps to stop bleeding <i>Membantu menghentikan pendarahan</i>

Table 1
Jadual 1

What are the components P and Q?
Apakah komponen P dan Q?

	P	Q
A	Plasma <i>Plasma</i>	Platelets <i>Platlet</i>
B	Red blood cells <i>Sel darah merah</i>	White blood cells <i>Sel darah putih</i>
C	Plasma <i>Plasma</i>	White blood cells <i>Sel darah putih</i>
D	Red blood cells <i>Sel darah merah</i>	Platelets <i>Platlet</i>

- 29 Which of the following excretory organ removes mineral salt, urea and water?
Antara organ perkumuhan berikut, yang manakah menyingkirkan garam mineral, urea dan air?

- A Kidney
Ginjal
- B Lungs
Paru-paru
- C Hidung
Nose
- D Large intestine
Usus besar

- 30 Diagram 20 shows a plant that reproduce by vegetative.
Rajah 20 menunjukkan satu tumbuhan yang membiak secara vegetatif.

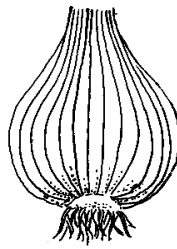


Diagram 20
Rajah 20

Which of the following plant reproduce with the same way as shown above?
Manakah antara tumbuhan berikut membiak dengan cara yang sama seperti di atas?

- A Yam
Keladi
- B Potato
Kentang
- C Strawberry
Strawberi
- D Lily
Lili

- 31 Diagram 21 shows the condition of uterine wall during a menstrual cycle with the stages labeled W, X, Y and Z.

Rajah 21 menunjukkan keadaan dinding uterus semasa fasa kitar haid yang dilabelkan W, X, Y dan Z.

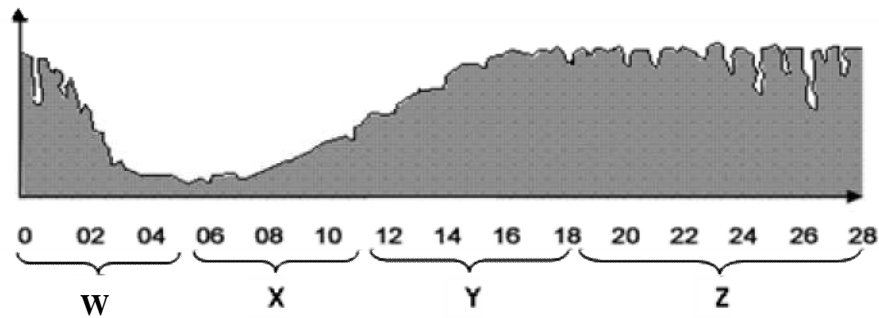


Diagram 21

Rajah 21

Which of the following shows the correct phase in menstrual cycle?

Manakah antara berikut menunjukkan fasa yang betul dalam kitar haid?

	W	X	Y	Z
A	Menstrual phase <i>Fasa haid</i>	Repair phase <i>Fasa pemulihan</i>	Fertile phase <i>Fasa subur</i>	Premenstrual phase <i>Fasa pra haid</i>
B	Premenstrual phase <i>Fasa pra haid</i>	Repair phase <i>Fasa pemulihan</i>	Menstrual phase <i>Fasa haid</i>	Fertile phase <i>Fasa subur</i>
C	Premenstrual phase <i>Fasa pra haid</i>	Menstrual phase <i>Fasa haid</i>	Repair phase <i>Fasa pemulihan</i>	Fertile phase <i>Fasa subur</i>
D	Menstrual phase <i>Fasa haid</i>	Fertile phase <i>Fasa subur</i>	Repair phase <i>Fasa pemulihan</i>	Premenstrual phase <i>Fasa pra haid</i>

- 32 Diagram 22 shows a substance that can be used in birth control.
Rajah 22 menunjukkan satu bahan yang boleh digunakan untuk mengawal kehamilan.

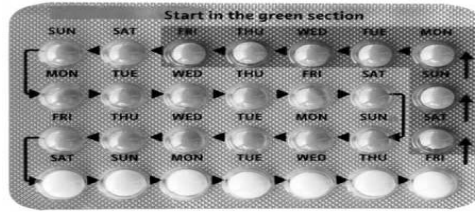


Diagram 22
Rajah 22

How its function?
Bagaimana ia berfungsi?

- A Prevent implantation
Mengelak penempelan
- B Kill sperm
Membunuh sperma
- C Prevent ovulation
Mengelak ovulasi
- D Prevent fertilisation
Mengelak persenyawaan
- 33 The following information describes a process in humans
Maklumat berikut menerangkan satu proses pada manusia

- Involves the increment of mass
Melibatkan pertambahan jisim
- Involves in changes of shape and size
Melibatkan perubahan bentuk dan saiz

What is the process?
Apakah proses itu?

- A Growth
Tumbesaran
- B Excretion
Perkumuhan
- C Respiration
Respirasi
- D Fertilisation
Persenyawaan

- 34 Diagram 23 shows a fractional distillation of petroleum.
Rajah 23 menunjukkan penyulingan berperingkat bagi petroleum.

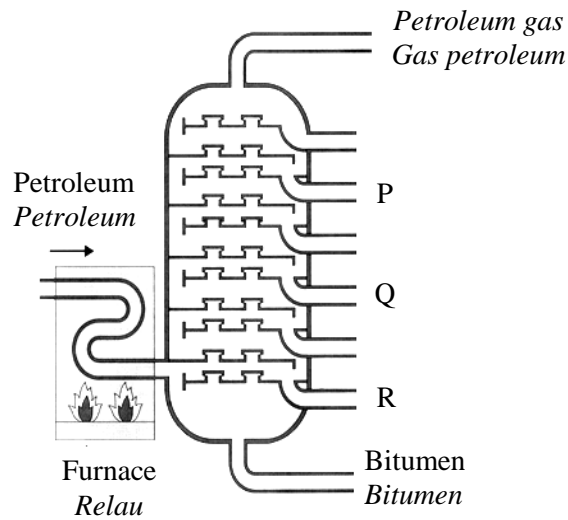
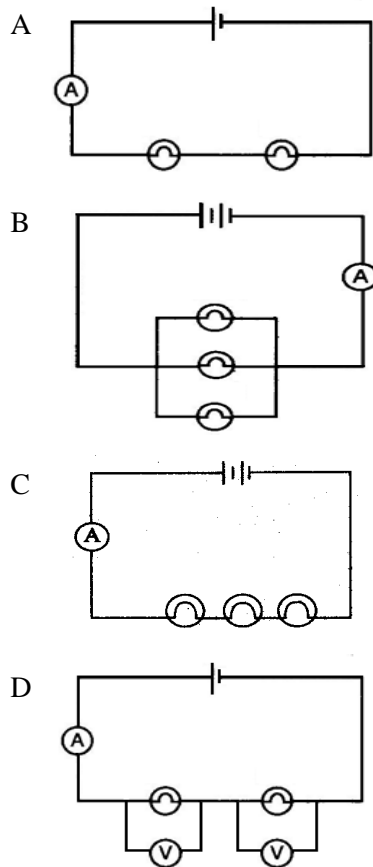


Diagram 23
Rajah 23

What are the fractions labeled P , Q and R?
Apakah pecahan yang dilabelkan P , Q dan R?

	P	Q	R
A	Diesel <i>Diesel</i>	Fuel oil <i>Minyak bahan api</i>	Naphta <i>Nafta</i>
B	Naphta <i>Nafta</i>	Diesel <i>Diesel</i>	Fuel oil <i>Minyak bahan api</i>
C	Fuel oil <i>Minyak bahan api</i>	Naphta <i>Nafta</i>	Diesel <i>Diesel</i>
D	Fuel oil <i>Minyak bahan api</i>	Diesel <i>Diesel</i>	Naphta <i>Nafta</i>

- 35 Which of the following electric circuits show a parallel circuit?
 Manakah antara litar elektrik berikut menunjukkan litar selari?



- 36 Diagram 24 shows a complete electrical circuit.
 Rajah 24 menunjukkan litar elektrik yang lengkap.

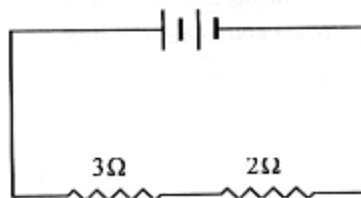


Diagram 24
 Rajah 24

Calculate the total resistance.
 Hitungkan jumlah rintangan.

- A 0.4 Ω
 B 1.2 Ω
 C 5.0 Ω
 D 6.0 Ω

- 37 Diagram 25 shows a transformer.
Rajah 25 menunjukkan satu transformer.

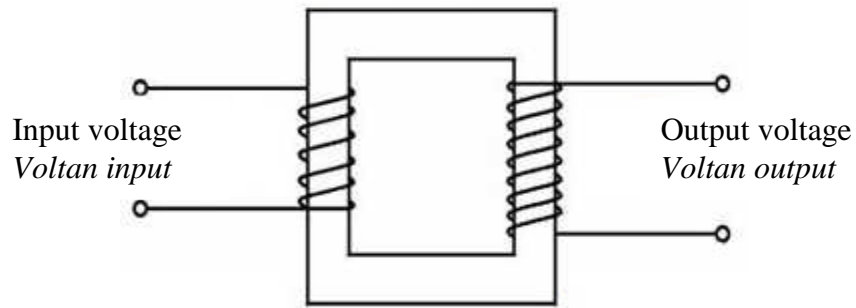


Diagram 25
Rajah 25

Which of the following are **true** about the transformer?
*Antara yang berikut, manakah **benar** tentang transformer itu?*

- I. It is a set-up transformer.
Ia merupakan transformer injak naik.
 - II. The input current is lower than output current.
Arus input adalah lebih rendah daripada arus output.
 - III. The output voltage is higher than the input voltage.
Voltan output adalah lebih tinggi daripada voltan input.
- A I and II only
I dan II sahaja
- B I and III only
I dan III sahaja
- C II and III only
II dan III sahaja
- D I, II and III
I, II, dan III

- 38 Diagram 26 shows an electric kettle.
Rajah 26 menunjukkan sebuah cerek elektrik.



Diagram 26
Rajah 26

Calculate the electrical energy used in kWh by a 2000W, 240V electrical kettle, that is used for 45 minutes.

Hitungkan tenaga elektrik yang digunakan dalam kWh, oleh sebuah cerek elektrik yang berlabel 2000W dan 240V, jika ia digunakan selama 45 minit.

- A 1.5 kWh
1.5 kWj
- B 90 kWh
90 kWj
- C 180 kWh
180 kWj
- D 1 500 kWh
1 500 kWj

- 39 Diagram 27 shows the layers of the Sun.
Rajah 27 menunjukkan lapisan pada Matahari.

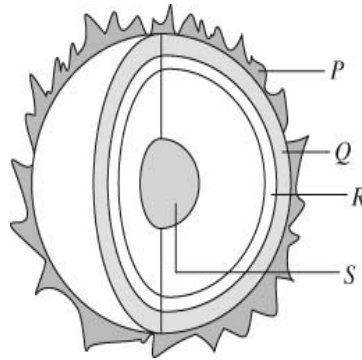


Diagram 27
Rajah 27

Which layer is a chromosphere?
Lapisan manakah adalah kromosfera?

- A P
- B Q
- C R
- D S

- 40 Which of the following is the satellite launched by Malaysia?
Antara yang berikut, manakah satelit yang dilancarkan oleh Malaysia?

- A Viking
- B Mariner 1
- C Measat 1
- D TongSat I

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of **40** questions.
Kertas soalan ini mengandungi 40 soalan.
2. Answer **all** questions.
Jawab semua soalan.
3. Each question is followed by four alternative answers **A, B, C** and **D**. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.
Tiap-tiap soalan diikuti oleh empat pilihan jawapan, iaitu A, B, C dan D. Bagi setiap soalan, pilih satu jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.
4. If you wish to change your answer, erase the blackened mark that you have made.
Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat.
5. The diagrams in the questions provided are not drawn to the scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
6. You may use a scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik.

Skema Pemarkahan Percubaan Penilaian Menengah Rendah (PMR) 2012**Sains - KERTAS 1**

Nombor Soalan	Jawapan
1	B
2	B
3	D
4	C
5	A
6	C
7	D
8	A
9	C
10	A
11	C
12	D
13	A
14	A
15	C
16	C
17	D
18	D
19	B
20	D
21	D
22	B
23	B
24	D
25	B
26	C
27	B
28	D
29	A
30	D
31	A
32	C
33	A
34	B
35	B
36	C
37	B
38	A
39	C
40	C

Nama :

Angka Giliran :



**PEPERIKSAAN PERCUBAAN BERSAMA
PENILAIAN MENENGAH RENDAH (PMR) 2012**

**MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM)
CAWANGAN PERLIS**

SAINS

Kertas 2

Satu jam tiga puluh minit

**JANGAN BUKA KERTAS SOALAN INI
SEHINGGA DI BERITAHU**

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.*
4. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Bahagian	Soalan	Markah penuh	Markah Diperolehi
A	1	6	
	2	6	
	3	6	
	4	6	
	5	8	
	6	8	
B	7	8	
	8	12	
Jumlah		60	

Kertas soalan ini mengandungi 23 halaman bercetak.

Section A
Bahagian A

[40 marks]
[40 markah]

Answer **all** questions
Jawab semua soalan

- 1 Diagram 1 shows a cross section of three types of blood capillaries.
Rajah 1 menunjukkan keratan rentas tiga jenis salur darah.

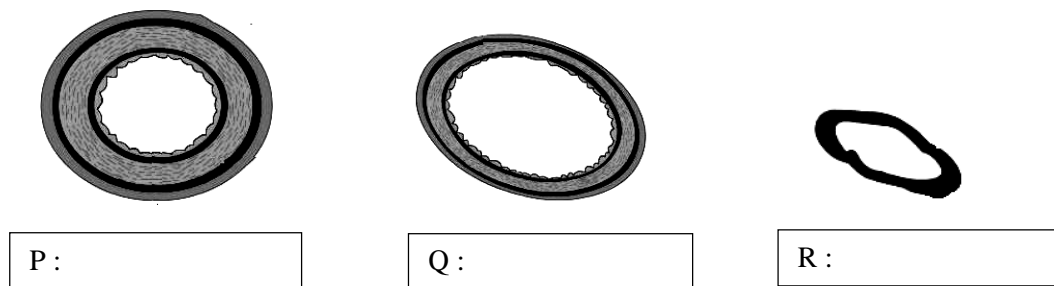


Diagram 1
Rajah 1

[3 marks]
[3 markah]

- (a) In Diagram 1, label the P, Q and R by using the terms given.
Pada Rajah 1, label P, Q dan R dengan menggunakan istilah-istilah yang diberikan.

Vein	Capillary	Artery
<i>Vena</i>	<i>Kapilari</i>	<i>Arteri</i>

- (b) Draw lines to match the blood capillaries with its function.
Lukis garisan untuk memadankan salur darah dengan fungsinya.

Blood capillaries
Salur darah

Function
Fungsi

P

Carries blood away from the heart to the lungs
Membawa darah keluar dari jantung ke peparu

Q

Carries blood from lungs towards the heart
Membawa darah dari peparu ke jantung

R

Joins an artery and a vein
Menyambungkan arteri dan vena

[3 marks]

[3 markah]

6

- 2 Diagram 2 shows a classification of plants.
Rajah 2 menunjukkan pengelasan tumbuhan.

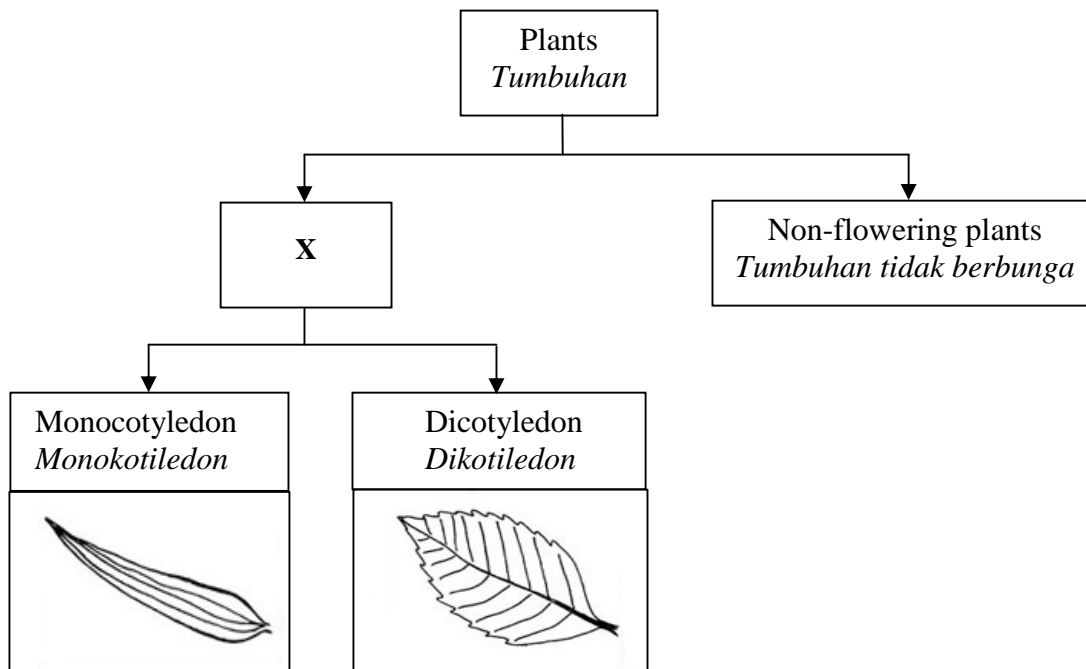


Diagram 2
Rajah 2

- (a) Name the group represented by X?
Namakan kumpulan yang diwakili oleh X?

[1 mark]
 [1 markah]

- (b) State the characteristics of monocotyledon and dicotyledon in the boxes provided.
Nyatakan ciri-ciri bagi tumbuhan monokotiledon dan dikotiledon di dalam kotak yang disediakan.

	Monocotyledon <i>Monokotiledon</i>	Dicotyledon <i>Dikotiledon</i>
Roots <i>Akar</i>		
Leaves <i>Daun</i>		

[4 marks]
 [4 markah]

- (c) Give **one** example of non-flowering plants.
Beri satu contoh tumbuhan tidak berbunga.

[1 mark]
 [1 markah]

6

- 3 Diagram 3 shows a process that take place in green plants
Rajah 3 menunjukkan satu proses yang berlaku di dalam tumbuhan hijau.

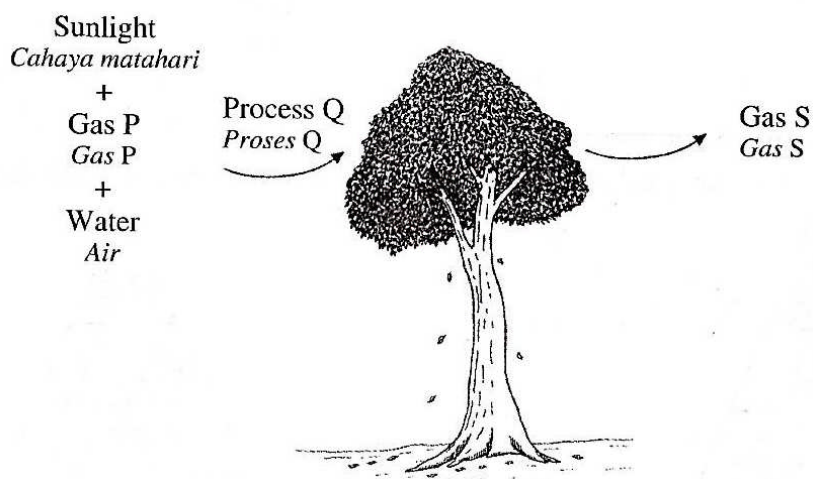


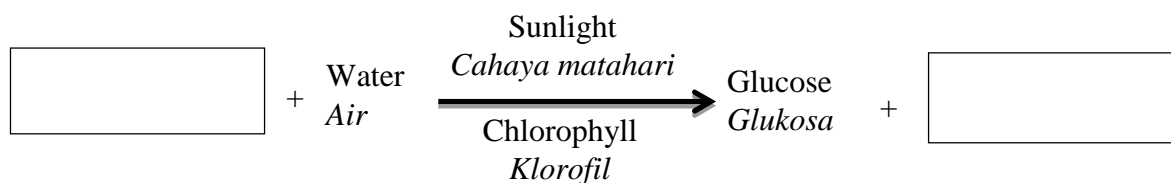
Diagram 3
 Rajah 3

- (a) Name the gases that shown in Diagram 3.
Namakan gas yang ditunjukkan dalam Rajah 3.

- (i) Gas P : _____
Gas P : _____
- (ii) Gas S : _____
Gas S : _____

[2 marks]
 [2 markah]

- (b) Write down the word equation to show process Q.
Tuliskan persamaan perkataan bagi menunjukkan proses Q.



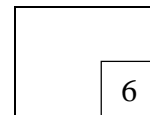
[2 marks]
 [2 markah]

- (c) State the uses of gas S.
Nyatakan kegunaan gas S.

(i)

(ii)

[2marks]
 [2 markah]



- 4 Diagram 4.1 shows the structure of an organ in the human body.
Rajah 4.1 menunjukkan struktur satu organ dalam badan manusia.

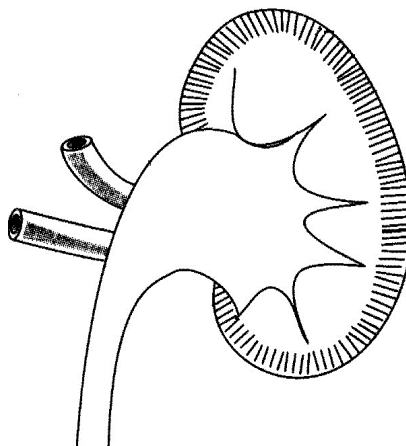


Diagram 4.1
 Rajah 4.1

- (a) (i) Name the organ in Diagram 4.1.
Namakan organ dalam Rajah 4.1.

- (ii) State the main function of the organ.
Nyatakan fungsi utama organ ini.

[2 marks]

[2 markah]

- (b) Diagram 4.2 shows a machine X which is used to treat people living with kidney failure.

Rajah 4.2 menunjukkan mesin X yang digunakan untuk merawat seseorang yang mengalami kegagalan ginjal.

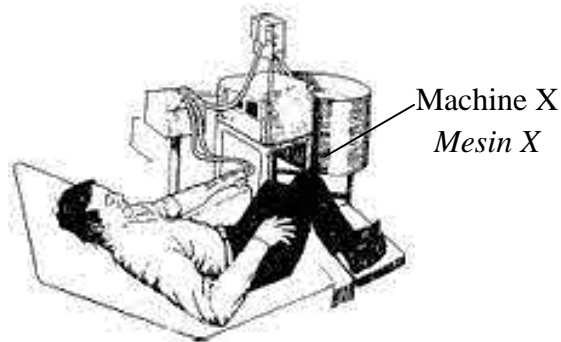


Diagram 4.2

Rajah 4.2

- (i) Name machine X in Diagram 4.2.
Namakan mesin X dalam Rajah 4.2.

[1 mark]

[1 markah]

- (ii) State another method to overcome kidney failure.
Nyatakan kaedah lain yang boleh merawat kegagalan ginjal.

[1 mark]

[1 markah]

- (iii) Suggest two ways to maintain the healthy kidneys.
Cadangkan dua cara untuk mengekalkan ginjal yang sihat.

1. _____

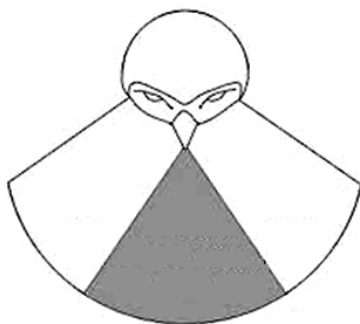
2. _____

[2 marks]

[2 markah]

6

- 5 Diagram 5.1 shows two types of vision of animals P and Q.
Rajah 5.1 menunjukkan dua jenis penglihatan bagi haiwan P dan Q.



P



Q

Diagram 5.1
Rajah 5.1

- (a) (i) State the type of vision of animal P and Q.
Nyatakan jenis penglihatan haiwan P dan Q.

Animal P :

Haiwan P _____

Animal Q :

Haiwan Q _____

[2 marks]

[2 markah]

- (ii) Compare the eye position between these two animals.
Bandingkan kedudukan mata bagi kedua-dua haiwan ini.

[1 mark]

[1 markah]

- (iii) State **one** advantage of field of vision for animal Q.
*Nyatakan **satu** kelebihan medan penglihatan haiwan Q.*

[1 mark]

[1 markah]

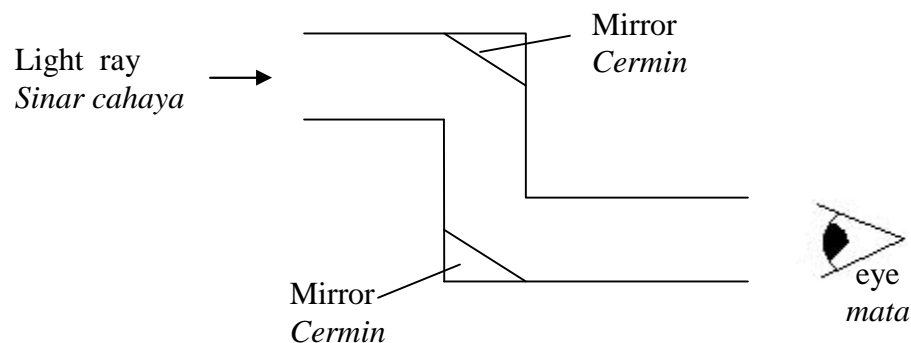
- (b) Diagram 5.2 shows a navy using periscope in a submarine.
Rajah 5.2 menunjukkan seorang tentera laut sedang menggunakan sebuah periskop dalam kapal selam.



Diagram 5.2

Rajah 5.2

- Draw an arrow to show the reflections of light in the periscope.
Lukis anak panah untuk menunjukkan pantulan cahaya dalam periskop.



[1 mark]

[1 markah]

- (c) State **one** example of phenomena of refraction in our daily life.
*Nyatakan **satu** contoh fenomena pembiasan dalam kehidupan seharian kita.*

[1 mark]

[1 markah]

- (d) State **two** characteristics of light.
*Nyatakan **dua** ciri-ciri cahaya.*

(i)

(ii)

[2 marks]

[2 markah]

8

- 6 Diagram 6.1 below shows three people in a lift carrying them in a building. They have different mass, 50kg, 60kg and 40kg respectively.

Rajah 6.1 di bawah menunjukkan tiga orang dalam sebuah lif yang membawa mereka dalam sebuah bangunan. Setiap orang mempunyai jisim yang berbeza, 50kg, 60kg dan 40kg masing-masing.

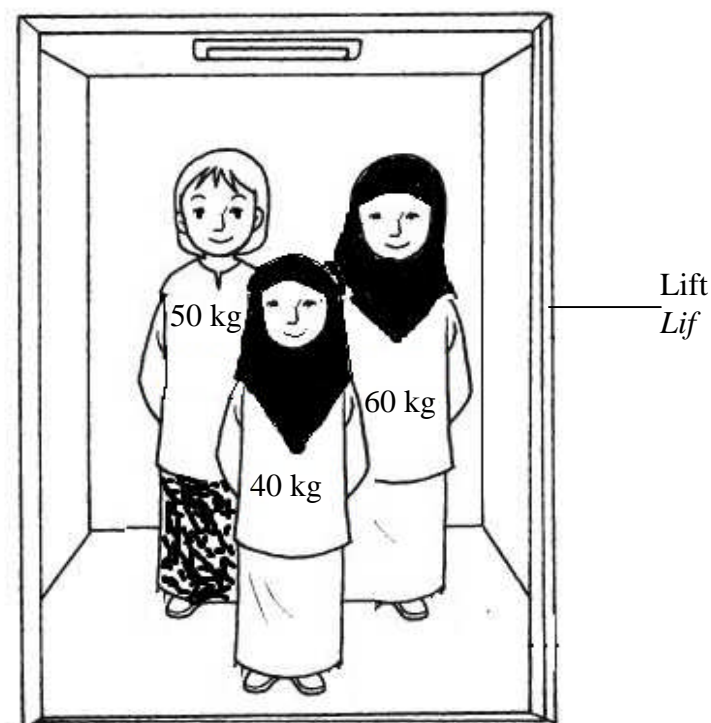


Diagram 6.1
Rajah 6.1

- (a) State the unit of work done?
Nyatakan unit bagi kerja?

[1mark]
[1 markah]

- (b) The lift move from the ground floor to the fifth floor. If a floor height is 3 meter,
Lif bergerak dari tingkat bawah ke tingkat lima. Jika setiap tingkat ialah 3 meter,

- (i) What is the height of the fifth floor?
Berapakah ketinggian tingkat lima?

[2marks]
[2 markah]

- (ii) Calculate work done by the lift.
Hitung kerja yang dilakukan oleh lif.

$$\begin{array}{l} \text{Work Done} = \text{Force} \times \text{Distance} \\ \text{Kerja} \quad \quad = \text{Daya} \times \text{Jarak} \end{array}$$

[2 marks]
[2 markah]

- (c) The lift took 9 seconds to arrive at the fifth floor. Calculate the power of the lift.
Lif tersebut mengambil masa 9 saat untuk sampai ke tingkat lima. Hitung kuasa lif tersebut.

$$\text{Power} = \frac{\text{Work Done}}{\text{Time Taken}}$$
$$\text{Kuasa} = \frac{\text{Kerja}}{\text{Masa}}$$

[2 marks]

[2markah]

- (d) Diagram 6.2 shows a weightlifter on weight lifting.
Rajah 6.2 menunjukkan seorang peserta angkat berat.

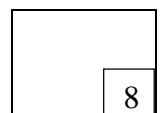


Diagram 6.2
Rajah 6.2

Why a weightlifter powdered his hand before lifting the weight?
Mengapakah seorang ahli angkat berat perlu menyapu tangannya dengan tepung sebelum melakukan acara angkat berat?

[1 mark]

[1 markah]



Section B
Bahagian B

[20 marks]
[20 markah]

- 7 Diagram 7.1 shows an experiment carried out to investigate the heat conductivity of four different substances.

Rajah 7.1 menunjukkan satu eksperimen yang dijalankan untuk mengkaji kekonduksian haba bagi empat bahan yang berbeza.

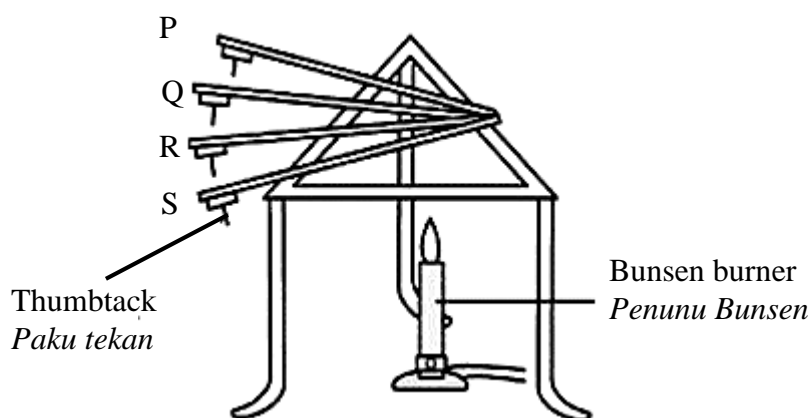


Diagram 7.1
Rajah 7.1

The result of the time taken for each thumbtack to fall is recorded in Table 7.2.

Keputusan masa yang diambil bagi setiap paku tekan jatuh direkodkan dalam Jadual 7.2.

Type of rod <i>Jenis Rod</i>	Time taken for thumbtack to fall off (s) <i>Masa yang diambil untuk paku tekan jatuh (s)</i>
<i>P</i>	70
<i>Q</i>	53
<i>R</i>	28
<i>S</i>	38

Table 7.2
Jadual 7.2

- (a) What is the method of the heat transfer in this experiment?
Apakah kaedah bagi pemindahan haba dalam eksperimen ini?

[1 mark]
[1 markah]

- (b) Based on the result in table 7.2, state one inference about rod R.
Berdasarkan keputusan dalam jadual 7.2, nyatakan satu inferens bagi rod R.

[1 mark]
[1 markah]

- (c) State the variables involved in this experiment.
Nyatakan pembolehubah yang terlibat dalam eksperimen ini.

Manipulated variable <i>Pembolehubah dimanipulasi</i>	
Responding variable <i>Pembolehubah bergerak balas</i>	

[2 marks]
[2 markah]

- (d) Predict the time for thumbtack to fall off if rod R been replaced with rod T that have better transfer rate of heat from rod R.
Ramalkan masa yang diambil untuk paku tekan jatuh jika digantikan satu rod T yang konduksi habanya lebih baik dari rod R.

[1 mark]
[1 markah]

- (e) The substances below are represents P, Q, R and S.
Bahan-bahan di bawah mewakili P, Q, R dan S.

Copper, Iron, Aluminium, Glass <i>Kuprum, Besi, Aluminium, Kaca</i>
--

Identify P, Q, R and S.
Kenalpasti P, Q, R dan S.

P : _____

Q: _____

R: _____

S: _____

[4 marks]
[4 markah]

- (f) Arrange the heat conductivity of substances P, Q, R and S in descending order.
Susun kekonduksian haba bagi bahan-bahan P, Q, R dan S dalam urutan menurun.

[1 marks]
[1 markah]

- 8 Diagram 8.1 shows two identical cars are applying brake in two different condition of the road.

Rajah 8.1 menunjukkan dua kenderaan yang sama mengenakan brek pada dua permukaan jalan yang berbeza.



 <p style="text-align: center;">Situation A <i>Situasi A</i></p> <p>Condition of the road : Wet <i>Keadaan jalan : Basah</i></p> <p>Time taken to stop : 10 seconds <i>Masa diambil untuk berhenti : 10 saat</i></p>	 <p style="text-align: center;">Situation B <i>Situasi B</i></p> <p>Condition of the road : Dry <i>Keadaan jalan : Kering</i></p> <p>Time taken to stop : 5 seconds <i>Masa diambil untuk berhenti : 5 saat</i></p>
--	--

Diagram 8.1

Rajah 8.1

- (a) Based on Diagram 8.1,
Berdasarkan pada Rajah 8.1
- (i) Compare the condition of the road in Situation A and Situation B.
Bandingkan keadaan jalan dalam Situasi A dan Situasi B.

- (ii) Write **one** inference about Situation B.
*Tuliskan **satu** inferens mengenai Situasi B.*

[2 marks]

[2 markah]

- (b) Diagram 8.2 shows an experiment to investigate how different type of surfaces affects frictional force.

Rajah 8.2 menunjukkan eksperimen untuk mengkaji bagaimana jenis permukaan yang berlainan mempengaruhi daya geseran.

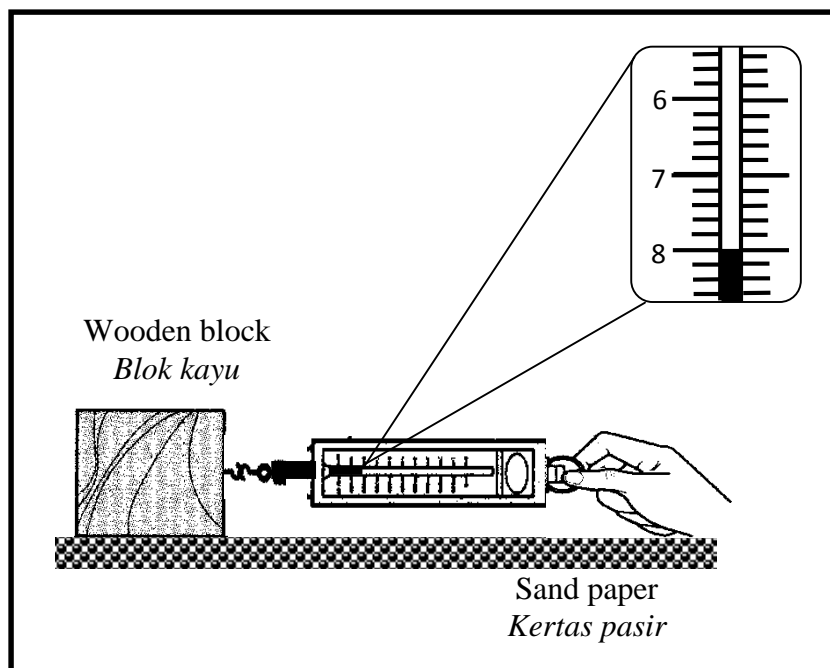


Diagram 8.2(a)

Rajah 8.2(a)

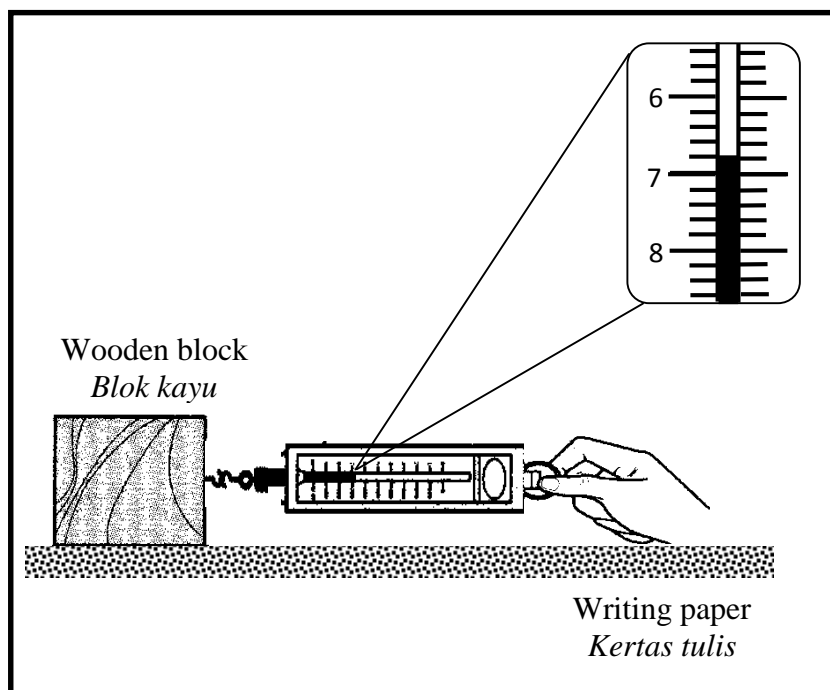


Diagram 8.2(b)

Rajah 8.2(b)

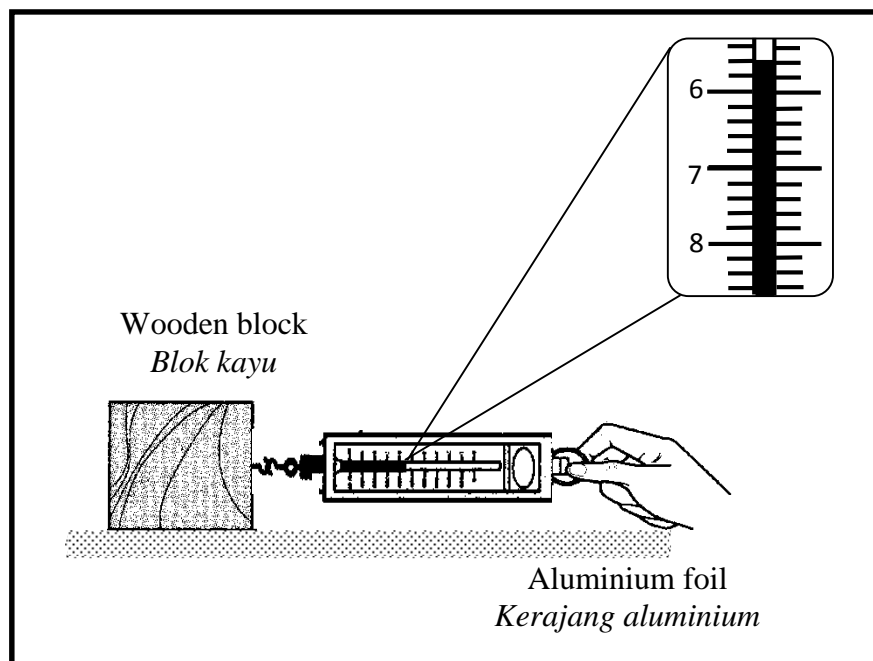


Diagram 8.2(c)

Rajah 8.2(c)

- (i) Based on Diagram 8.2, **record** the reading of spring balance in Table 8.3.
 Berdasarkan Rajah 8.2, **rekodkan** bacaan neraca spring dalam Jadual 8.3.

Types of surface <i>Jenis permukaan</i>	Reading of spring balance (N) <i>Bacaan neraca spring(N)</i>
Sand paper <i>Kertas pasir</i>	8.0 N
Writing paper <i>Kertas tulis</i>	
Aluminium foil <i>Kerajang aluminium</i>	

Table 8.3

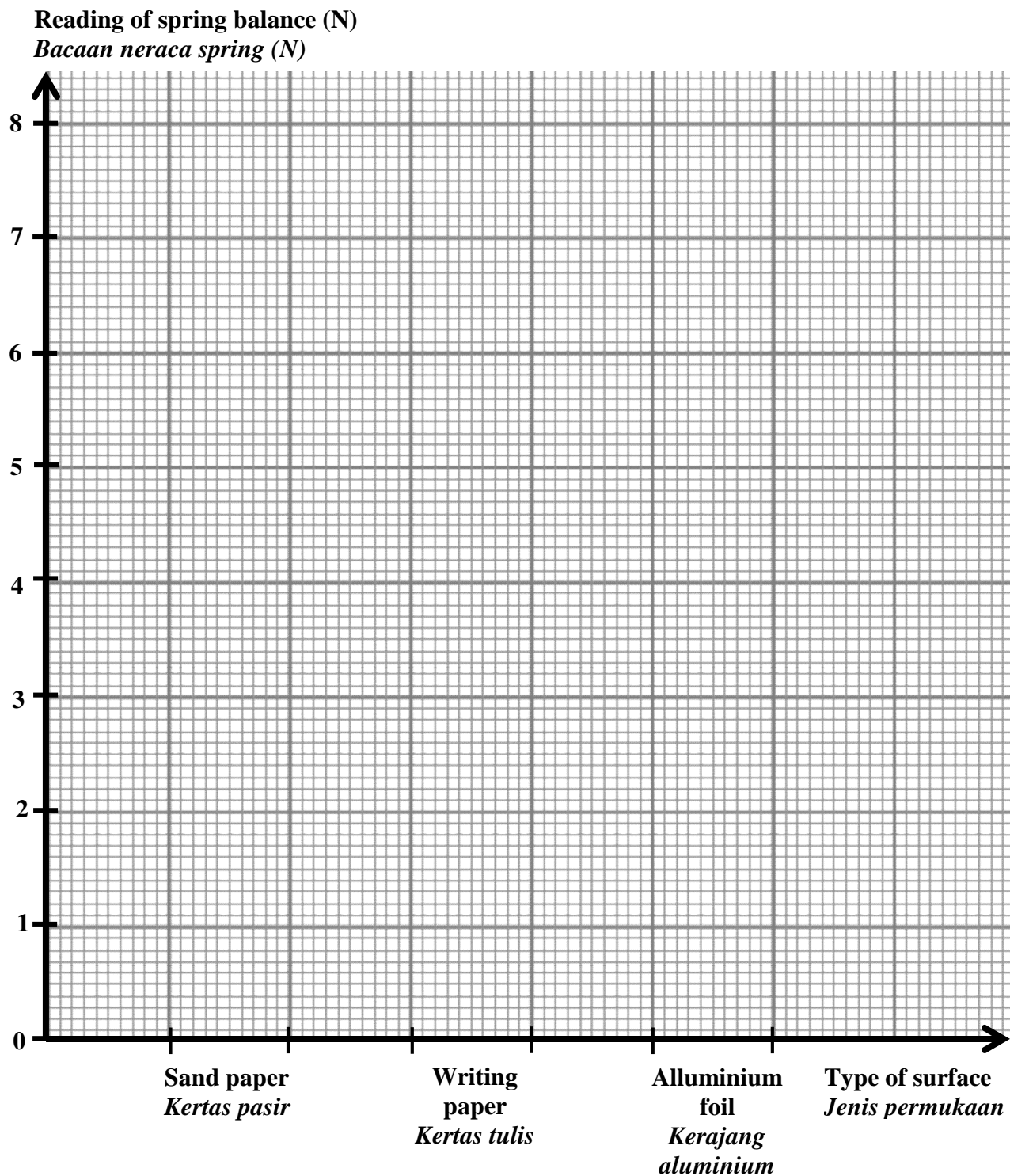
Jadual 8.3

[2 marks]

[2 markah]

- (ii) Based on the data in Table 8.3, **draw** a bar chart to show the reading of the spring balance with the different surfaces.

Berdasarkan data pada Jadual 8.3, lukis carta bar untuk menunjukkan bacaan pada neraca spring bagi permukaan yang berlainan.



[2 marks]

[2 markah]

- (c) Based on the graph drawn, **write** a relationship between the types of surface and the reading of spring balance.

*Berdasarkan graf yang dilukis, **tulis** satu hubungan antara jenis permukaan dan bacaan neraca spring.*

[1 mark]

[1 markah]

- (d) State the **variables** involved in this experiment.

*Nyatakan **pembolehubah** yang terlibat dalam eksperimen ini.*

Manipulated variables <i>Pembolehubah dimanipulasi</i>	
Responding variables <i>Pembolehubah bergerak balas</i>	

[2 marks]

[2 markah]

- (e) Based on Table 8.3, state the operational definition for 'frictional force'.

Berdasarkan Jadual 8.3, nyatakan definisi secara operasi untuk 'daya geseran'.

[1 mark]

[1 markah]

- (f) Diagram 8.4 shows the tools labeled P , Q, R and S.
Rajah 8.4 menunjukkan beberapa peralatan yang dilabelkan P , Q , R dan S.



P



Q



R



S

Diagram 8.4
Rajah 8.4

Based on Diagram 8.4, classify the tools according to their function in order to reduce friction or increase friction

Berdasarkan Rajah 8.4, kelaskan peralatan berikut mengikut penggunaannya untuk mengurangkan geseran atau meningkatkan geseran

Classification <i>Pengkelasan</i>	Tools <i>Peralatan</i>
Reduce friction <i>Mengurangkan geseran</i>	
Increase friction <i>Meningkatkan geseran</i>	

[2 marks]

[2 markah]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES

1. *This question paper consists of **two** sections: **Section A** and **Section B**.*
2. *Write your answer in the space provided in the question paper.*
3. *Show your working, it may help you to get marks.*
4. *If you wish to cancel any answer, neatly cross out the answer.*
5. *The diagrams in the questions provided are not drawn to scale unless stated.*
6. *Marks allocated for each question or part question are shown in brackets.*
7. *The time suggested to answer **Section A** is 60 minutes and **Section B** is 30 minutes.*
8. *You may use a non-programmable scientific calculator.*
9. *Hand in this question paper at the end of the examination.*

MAKLUMAT UNTUK CALON

1. *Kertas soalan ini mengandungi dua bahagian: **Bahagian A** dan **Bahagian B**.*
2. *Tulis jawapan anda dalam ruang yang disediakan dalam kertas soalan.*
3. *Tunjukkan kerja kira mengira, ini membantu anda mendapatkan markah.*
4. *Sekiranya anda hendak membatalkan sesuatu jawapan, buat garisan di atas jawapan itu.*
5. *Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.*
6. *Markah yang diperuntukkan bagi setiap soalan atau ceraian soalan ditunjukkan dalam kurungan.*
7. *Masa yang dicadangkan untuk menjawab **Bahagian A** ialah 60 minit dan **Bahagian B** ialah 30 minit.*
8. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*
9. *Serahkan kertas soalan ini diakhir peperiksaan.*



**ANJURAN
MAJLIS PENGETUA SEKOLAH MENENGAH
CAWANGAN PERLIS**

**PEPERIKSAAN PERCUBAAN BERSAMA
PENILAIAN MENENGAH RENDAH (PMR)
TAHUN 2012**

SAINS

KERTAS 2

Satu jam tiga puluh minit

**JANGAN BUKA KERTAS SOALAN INI
SEHINGGA DI BERITAHU**

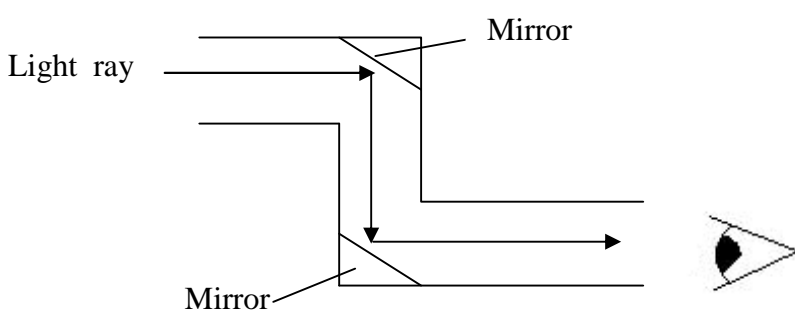
1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam Bahasa Inggeris mendahului soalan yang sepadan dalam Bahasa Melayu.*
3. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam Bahasa Inggeris atau Bahasa Melayu.*
4. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Bahagian	Soalan	Markah penuh	Markah Diperolehi
A	1	6	
	2	6	
	3	6	
	4	6	
	5	8	
	6	8	
B	7	8	
	8	12	
Jumlah		60	

Kertas soalan ini mengandungi **23** halaman bercetak

QUESTIONS		MARK SCHEME	SUB MARK	TOTAL MARK									
1	a	Able to name the structures <u>Answer</u> P : Artery Q : Vein R : Capillary	1 1 1	3									
	b	Able to match the structures with its function correctly <u>Answer</u> <div><div>P</div><div>Carries blood away the heart to the lungs</div></div> <div><div>Q</div><div>Carries blood from lungs towards the heart</div></div> <div><div>R</div><div>Joins an artery and a vein</div></div>	1 1 1	3									
		TOTAL	6										
2	a	Able to classify the sources of energy <u>Answer</u> Flowering plant	1	1									
	b	Able to compare the characteristic of monocotyledon and dicotyledon. <u>Answer</u> <table><tr><td></td><td>Monocotyledons</td><td>Dicotyledons</td></tr><tr><td>Roots</td><td>Fibrous roots</td><td>Tap roots</td></tr><tr><td>Leaves</td><td>Have parallel veins</td><td>Have network veins</td></tr></table>		Monocotyledons	Dicotyledons	Roots	Fibrous roots	Tap roots	Leaves	Have parallel veins	Have network veins	2 2	4
	Monocotyledons	Dicotyledons											
Roots	Fibrous roots	Tap roots											
Leaves	Have parallel veins	Have network veins											

	c	<p>Able to state one examples of non flowering plant. <u>Answer</u></p> <p>Fern/Mosses/Fungi/Algae/Conifers/Mushroom <i>* Choose any relevant answer.</i></p>	1	1
		TOTAL	6	
3	a	<p>Able to name the gases used/ released in photosynthesis. <u>Answer</u></p>		
	i)	Carbon dioxide	1	
	ii)	Oxygen	1	2
	b	<p>Able to write a word equation for photosynthesis correctly. <u>Answer</u></p> <div style="display: flex; align-items: center; justify-content: center; gap: 20px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">Carbon dioxide</div> <div>→</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Oxygen</div> </div>	2	2
	c	<p>Able to state two uses of gas S that released during photosynthesis correctly. <u>Answer</u></p> <p>Combustion// respiration// decomposition/decaying// rusting/oxidation</p> <p><i>* Accept any two answer</i></p>	2	2
		TOTAL	6	
4	a (i)	<p>Able to name the excretory organ. <u>Answer</u></p> <p>Kidney.</p>	1	
	(ii)	<p>Able to name and give the main function of the excretory organ. <u>Answer</u></p> <p>Filter blood/ Produce urine</p>	1	2
	b i)	<p>Able to name the machine correctly. <u>Answer</u></p> <p>Dialysis machine</p>	1	
	ii)	<p>Able to state another method to overcomes kidney failure. <u>Answer</u></p> <p>Kidney transplant</p>	1	

	iii)	<p>Able to suggest two ways to maintain the healthy kidney. <u>Answer</u></p> <p>1. Drink plenty of water. 2. Reduce intake of salt and sugar in the daily diet. 3. Exercise regularly</p> <p><i>* Choose any relevant answer.</i></p>	1 1	4
		TOTAL	6	
5	a (i)	<p>Able to state the type of visions for animal P and Q. <u>Answer</u></p> <p>P : Stereoscopic vision Q : Monocular vision</p>	1 1	2
	(ii)	<p>Able to compare the location of an eye for animal P and Q. <u>Answer</u></p> <p>Eyes in animal P located at the front of the head while animal Q has eyes located at the side of the head.</p>	1	1
	(iii)	<p>Able to state one advantage for vision in animal Q. <u>Answer</u></p> <p>Animal Q/ prey can detect predators from all directions/ Animal Q/ prey can escape from the predators</p>	1	1
	b	<p>Able to show the reflection in periscope using an arrow.. <u>Answer</u></p> 	1	1
	c	<p>Able to state one example phenomenon in daily life regarding to refraction. <u>Answer</u></p> <p>Pond appears to be shallower than its actual position/ Drinking straw in a glass of water appears to be bent/ the stars to be further than its actual position</p> <p><i>* accept any related answer</i></p>	1	1

	d	<p>Able to state two characteristic of light. <u>Answer</u></p> <ol style="list-style-type: none"> 1. Light travel in a straight line 2. Light can be reflected 3. Light can be refracted. 4. Light can be dispersed <p><i>* choose any two answers</i></p>	2	2
		TOTAL	8	
6	a	<p>Able to state the unit of work done. <u>Answer</u></p> <p>Newton meter/ Joule</p>	1	1
	b (i)	<p>Able to calculate the height of fifth floor. <u>Answer</u></p> <p>= 3m x 5 = 15 meter</p>	1 1	2
	(ii)	<p>Able to calculate the work done. <u>Answer</u></p> <p>= (50+60+40)10 x 15 = 22500 J</p>	1 1	2
	c	<p>Able to calculate the power. <u>Answer</u></p> <p>= $\frac{22500}{9}$ = 2500 W</p>	1 1	2
	d	<p>Able to give reason why a weightlifter powdered his hand. <u>Answer</u></p> <p>To increase the frictional force of his hand</p>	1	1
		TOTAL	8	
7	a	<p>Able to name the method of heat transfer. <u>Answer</u></p> <p>Conduction</p>	1	1
	b	<p>Able to state the inference about R. <u>Answer</u></p> <p>Thumbtack at rod R fall off first because rod R conduct heat better/ faster</p>	1	1

	c	<p>Able to state the manipulated and responding variable.</p> <p><u>Answer</u></p> <table><tr><td>Manipulated variable <i>Pembolehubah dimanipulasi</i></td><td>Type of rod/ substance</td></tr><tr><td>Responding variable <i>Pembolehubah bergerak balas</i></td><td>Time taken for thumbtack to fall off</td></tr></table>	Manipulated variable <i>Pembolehubah dimanipulasi</i>	Type of rod/ substance	Responding variable <i>Pembolehubah bergerak balas</i>	Time taken for thumbtack to fall off	2	2				
Manipulated variable <i>Pembolehubah dimanipulasi</i>	Type of rod/ substance											
Responding variable <i>Pembolehubah bergerak balas</i>	Time taken for thumbtack to fall off											
	d	<p>Able to predict the time for thumbtack to fall.</p> <p><u>Answer</u></p> <p>Accept all answer that less than 28 second.</p> <p><i>* Reject answer 0 second and 28 second.</i></p>	1	1								
	e	<p>Able to identify substances P, Q, R and S.</p> <p><u>Answer</u></p> <p>P : Glass Q: Iron R: Cooper S: Alluminium</p>	1 1 1 1	4								
	f	<p>Able to arrange the heat conductivity in descending order.</p> <p><u>Answer</u></p> <p>R, S, Q, P</p>	1	1								
		TOTAL	10									
8	a i	<p>Able to compare the condition of the road in Situation A and Situation B</p> <p><u>Answer</u></p> <p>The road is wet in Situation A and dry in Situation B (vice-versa)</p>	1	1								
	ii	<p>Able to write one inference about Situation B</p> <p><u>Answer</u></p> <p>The time taken to stop the car in Situation B faster than in Situation A because the road is dry (vice versa)/</p> <p>The time taken to stop the car in Situation B faster because the road is dry(vice versa)</p>	1	1								
	b i	<p>Able to record the reading of spring balance</p> <p><u>Answer</u></p> <table><tr><td>Types of surface <i>Jenis permukaan</i></td><td>Reading of spring balance (N) <i>Bacaan neraca spring(N)</i></td></tr><tr><td>Sand paper</td><td>8.0 N</td></tr><tr><td>Writing paper</td><td>6.8 N</td></tr><tr><td>Aluminium foil</td><td>5.6 N</td></tr></table>	Types of surface <i>Jenis permukaan</i>	Reading of spring balance (N) <i>Bacaan neraca spring(N)</i>	Sand paper	8.0 N	Writing paper	6.8 N	Aluminium foil	5.6 N	1 1	2
Types of surface <i>Jenis permukaan</i>	Reading of spring balance (N) <i>Bacaan neraca spring(N)</i>											
Sand paper	8.0 N											
Writing paper	6.8 N											
Aluminium foil	5.6 N											

ii	<p>Able to draw a bar chart to show the reading of the spring balance with the different surfaces.</p> <p><u>Answer</u></p> <p><u>Note</u></p> <p>1. Able to plot all point correctly</p> <p>2. Able to draw the bar correctly</p> <p>Reading of the spring balance</p> <p><i>Bacaan neraca spring</i></p> <div><table><thead><tr><th>Types of surfaces</th><th>Reading of spring balance</th></tr></thead><tbody><tr><td>Sand paper</td><td>8</td></tr><tr><td>Writing paper</td><td>6.8</td></tr><tr><td>Aluminium foil</td><td>5.5</td></tr></tbody></table></div>	Types of surfaces	Reading of spring balance	Sand paper	8	Writing paper	6.8	Aluminium foil	5.5	1 1	2
Types of surfaces	Reading of spring balance										
Sand paper	8										
Writing paper	6.8										
Aluminium foil	5.5										
c	<p>Able to state a relationship between the types of surfaces and the reading of spring balance.</p> <p><u>Answer</u></p> <p>The rougher the surface , the higher the reading of spring balance/</p> <p>The smoother the surface , the lower the reading of spring balance</p>	1	1								
d	<p>Able to state the responding variable involved in this experiment</p> <p><u>Answer</u></p> <table><tr><td>Manipulated variables</td><td>The types of surfaces</td></tr><tr><td>Responding variables</td><td>The reading of spring balance/ Magnitude of frictional force</td></tr></table>	Manipulated variables	The types of surfaces	Responding variables	The reading of spring balance/ Magnitude of frictional force	1 1	2				
Manipulated variables	The types of surfaces										
Responding variables	The reading of spring balance/ Magnitude of frictional force										

	e	<p>Able to state the operational definition of ‘ the frictional force’</p> <p><u>Answer</u></p> <p>The frictional force is the reading of spring balance</p>	1	1						
	f	<p>Able to classify the tool according to their function to reduce or increase friction</p> <p><u>Answer</u></p> <table><tr><th>Classification</th><th>Tools</th></tr><tr><td>Reduce friction</td><td>P, R, S</td></tr><tr><td>Increase friction</td><td>Q</td></tr></table>	Classification	Tools	Reduce friction	P, R, S	Increase friction	Q	1 1	2
Classification	Tools									
Reduce friction	P, R, S									
Increase friction	Q									
		TOTAL	12							