



MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM)
NEGERI SEMBILAN DARUL KHUSUS

PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5 TAHUN 2023

SAINS

1511/1

Tingkatan 5

Kertas 1

Okt./Nov. 2023

1 ¼ jam

1 jam 15 minit

JANGAN BUKA KERTAS PEPERIKSAAN SEHINGGA DIBERITAHU

1. *Kertas peperiksaan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris.*
3. *Calon dikehendaki menjawab **semua** soalan dalam kertas peperiksaan ini.*

Kertas peperiksaan ini mengandungi 32 halaman bercetak.

[Lihat halaman sebelah]

- 1 Terdapat satu kebakaran kecil yang melibatkan gas metana. Apakah jenis alat pemadam kebakaran yang boleh digunakan untuk memadamkan kebakaran tersebut?

There was a small fire involving methane gas.

What type of fire extinguisher can be used to extinguish the fire?

- | | |
|---|---|
| A Air
<i>Water</i> | B Buih
<i>Foam</i> |
| C Air sabun
<i>Soap water</i> | D Serbuk kering
<i>Dry powder</i> |

- 2 Rajah 1 menunjukkan seorang individu yang sedang memberi bantuan kecemasan.

Diagram 1 shows an individual who is giving an emergency help.



Rajah 1
Diagram 1

Antara berikut, manakah merupakan kaedah yang betul?

Which of the following is the correct procedure?

- A** Heimlich Maneuvre
Heimlich Maneuvre
- B** Teknik pernafasan dalaman
Deep breathing technique
- C** Teknik genggam dan bongkok
Clenched fist and bent technique
- D** Resusitasi kardiopulmonari (CPR)
Cardiopulmonary resuscitation (CPR)

3 Apakah kesan jisim badan berlebihan?

What is the effect of excess body mass?

A Anoreksia nervosa
Anorexia nervosa

B Osteoporosis
Osteoporosis

C Diabetes mellitus
Diabetes mellitus

D Anemia
Anemia

4 Maklumat berikut menunjukkan isu sosio-saintifik dalam satu sektor Teknologi Hijau.

The following information shows socio-scientific issues in a sector of Green Technology.

- Hujan asid
Acid rain
- Pembebasan gas rumah hijau
Emission of green house gases
- Penggunaan petroleum
Use of petroleum

Apakah sektor yang berkaitan dengan isu di atas?

What is the sector related to the issues above?

A Sektor pengangkutan
Transportation sector

B Sektor pertanian dan perhutanan
Agriculture and forestry sector

C Sektor pengurusan sisa dan air sisa
Waste and wastewater management sector

D Sektor teknologi maklumat dan komunikasi (TMK)
Information and communication technology sector (ICT)

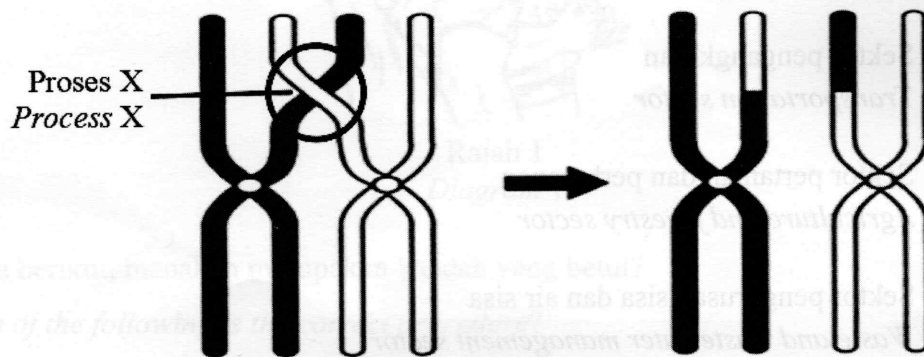
[Lihat halaman sebelah]

- 5 Pihak kerajaan kini menggalakkan aplikasi Teknologi Hijau dalam kehidupan. Antara berikut, yang manakah kesan aplikasi Teknologi Hijau ke atas jejak karbon?

The government is now encouraging the application of Green Technology in daily life. Which of the following is the effect of the application of Green Technology on carbon footprint?

- A Jejak karbon bertambah
Carbon footprint increases
- B Jejak karbon berkurang
Carbon footprint decreases
- C Jejak karbon berubah
Carbon footprint changes
- D Jejak karbon tidak berubah
Carbon footprint does not change
- 6 Rajah 2 menunjukkan satu proses semasa pembahagian sel.

Diagram 2 shows a process during cell division.



Rajah 2
Diagram 2

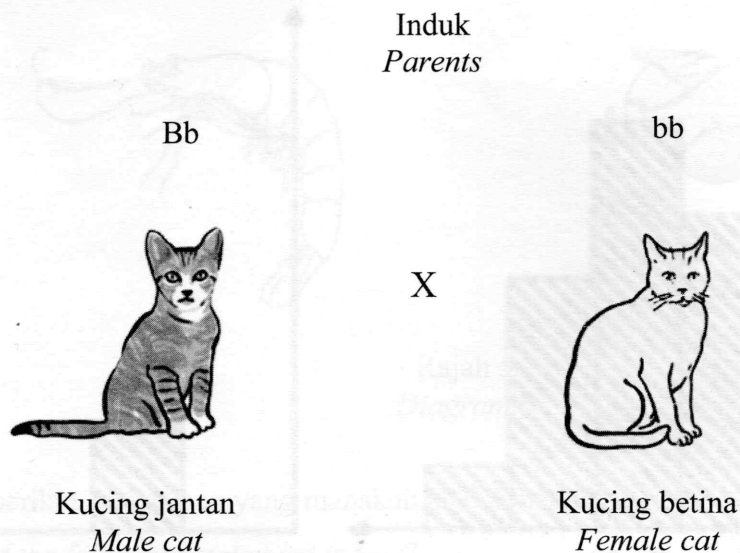
Apakah proses X?

What is process X?

- | | |
|--|---|
| A Replikasi kromosom
<i>Chromosomal replication</i> | B Sitokinesis
<i>Cytokinesis</i> |
| C Kromosom homolog
<i>Homologous chromosomes</i> | D Pindah silang
<i>Crossing over</i> |

- 7 Rajah 3 menunjukkan perwarisan warna bulu bagi kucing.

Diagram 3 shows the inheritance of hair colour in cats.



Nota : B : Gen dominan
Note Dominant gene
b : Gen resesif
Recessive gene

Rajah 3
Diagram 3

Gen dominan menghasilkan bulu hitam manakala gen resesif menghasilkan bulu putih.
Berapakah peratus kemungkinan mendapat anak bulu putih?

Dominant gene produces black fur while recessive gene produces white fur.

What is the percentage of having white fur offspring?

A 50 %

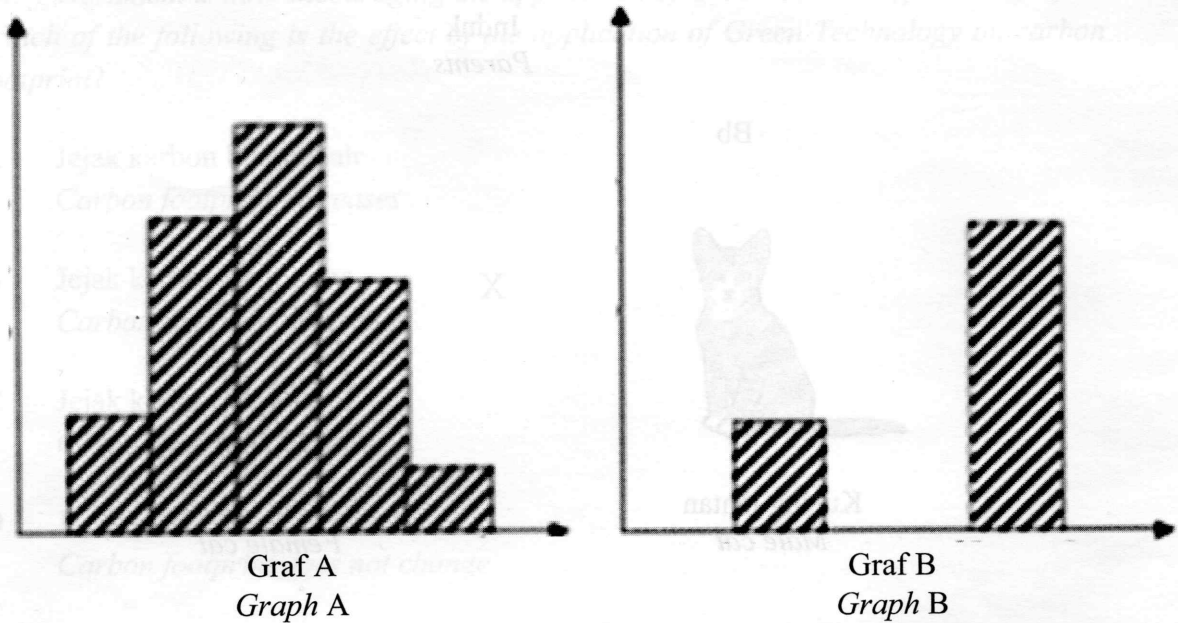
B 100 %

C 25 %

D 75 %

[Lihat halaman sebelah]

- 8 Rajah 4 menunjukkan dua jenis graf bagi variasi.
Diagram 4 shows two types of graph of variation.



Rajah 4
Diagram 4

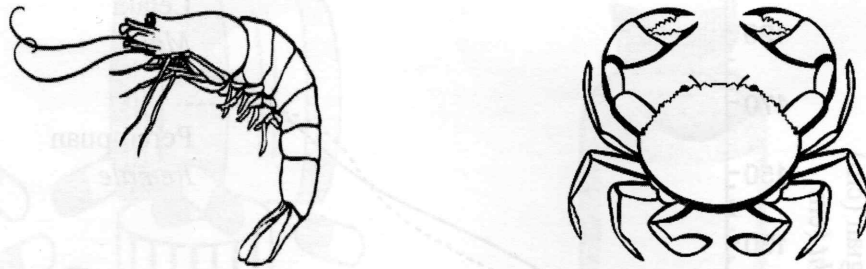
Antara berikut, yang manakah betul?

Which of the following is correct?

	Graf A Graph A	Graf B Graph B
A	Kualitatif <i>Qualitative</i>	Kuantitatif <i>Quantitative</i>
B	Perbezaan tidak ketara <i>Insignificant differences</i>	Perbezaan ketara <i>Significant differences</i>
C	Graf berbentuk diskrit <i>Graph is discrete</i>	Graf berbentuk normal <i>Graph is normal</i>
D	Boleh diwarisi <i>Can be inherited</i>	Tidak boleh diwarisi <i>Cannot be inherited</i>

- 9 Rajah 5 menunjukkan dua jenis haiwan yang mempunyai ciri sistem sokongan yang sama.

Diagram 5 shows two types of animals that has the same support system.



Rajah 5
Diagram 5

Antara berikut, pernyataan yang manakah adalah betul?

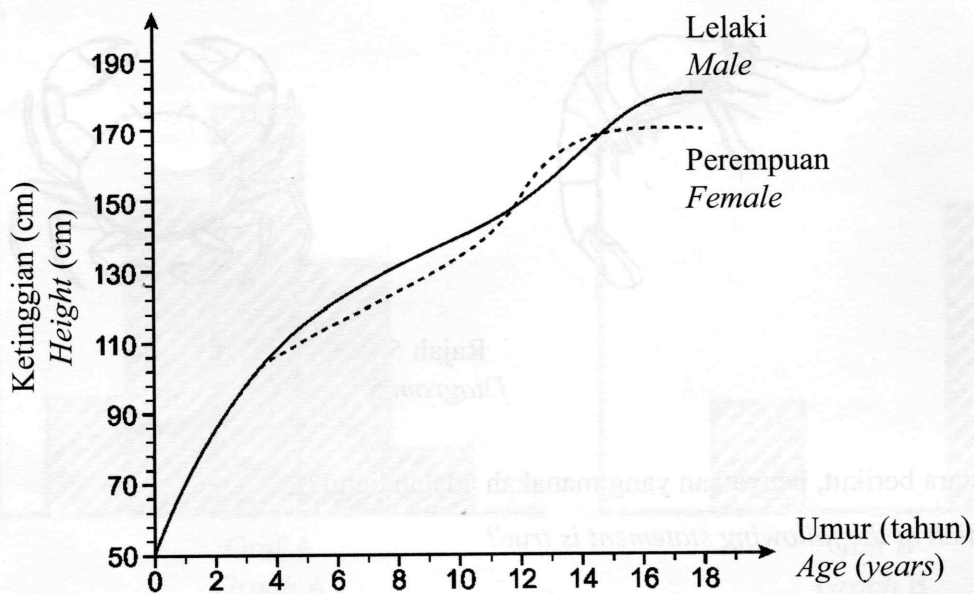
Which of the following statement is true?

- A** Rangka hidrostatik yang membantu pergerakan haiwan
Hidrostatic skeleton that assist the movement of the animal
- B** Rangka dalam berperanan untuk melindungi organ dalaman
Endoskeleton protects the internal organs
- C** Rangka hidrostatik menggunakan bendalir dalam badan bagi menyokong berat badan
Endoskeleton uses fluid inside the body to support the body weight
- D** Rangka luar yang terdiri daripada lapisan keras berkitin bagi melindungi organ dalaman
Exoskeleton consists of chitin to protect the internal organs

[Lihat halaman sebelah]

10 Rajah 6 menunjukkan graf lengkung pertumbuhan lelaki dan perempuan.

Diagram 6 shows curve graph on the growth of male and female.



Rajah 6
Diagram 6

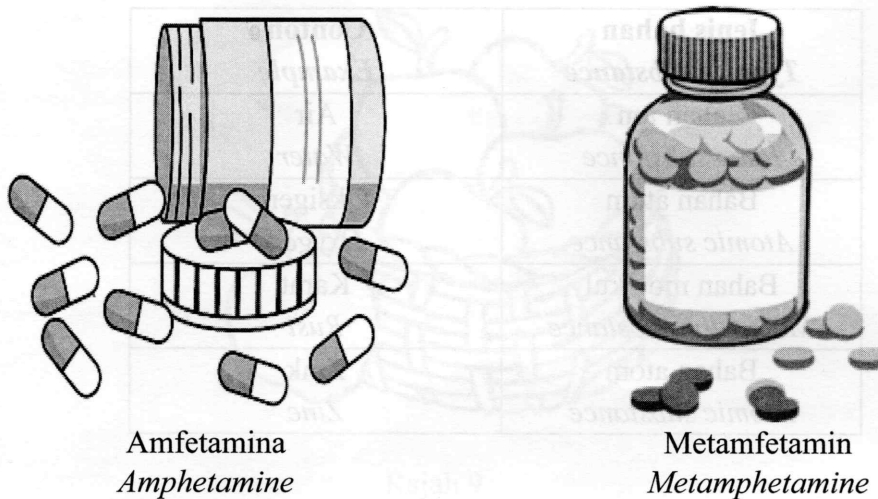
Pada umur 13 tahun, pernyataan yang manakah betul?

At the age of 13, which of the following statement is true?

- A Ketinggian lelaki tiada perubahan
Height of male has not changed
- B Perempuan sama tinggi dengan lelaki
Female is as same height as male
- C Perempuan lebih tinggi daripada lelaki
Female is taller than male
- D Lelaki lebih tinggi daripada perempuan
Male is taller than female

11 Rajah 11 menunjukkan beberapa jenis dadah.

Diagram 11 shows several types of drug.



Rajah 7
Diagram 7

Antara berikut, yang manakah kesan bagi dadah tersebut?

Which of the following is the effect of the drugs?

- A Menyebabkan halusinasi
Cause hallucination
- B Menjejaskan koordinasi otot
Affect the coordination of muscle
- C Mempercepat pergerakan impuls dalam koordinasi badan
Accelerate movement of impulse in body coordination
- D Menghalang atau melambatkan pergerakan impuls dalam koordinasi badan
Prevent or slow down movement of impulse in body coordination

[Lihat halaman sebelah]

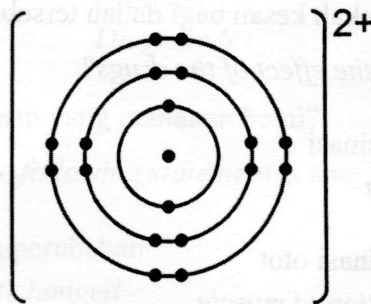
- 12 Antara berikut, bahan yang manakah dikelaskan dengan betul?

Which of the following substance is classified correctly?

	Jenis bahan <i>Type of substance</i>	Contoh <i>Example</i>
A	Bahan ion <i>Ionic substance</i>	Air <i>Water</i>
B	Bahan atom <i>Atomic substance</i>	Oksigen <i>Oxygen</i>
C	Bahan molekul <i>Molecular substance</i>	Karat <i>Rust</i>
D	Bahan atom <i>Atomic substance</i>	Zink <i>Zinc</i>

- 13 Rajah 12 menunjukkan susunan elektron bagi ion kalsium, Ca^{2+} .

Diagram 12 shows the electron arrangement for calcium ion, Ca^{2+} .



Rajah 8

Diagram 8

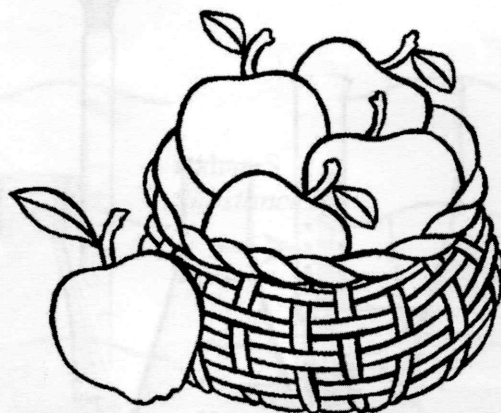
Antara berikut, pernyataan yang manakah betul?

Which of the following statement is true?

- A Unsur kalsium adalah bukan logam
Calcium element is a non-metal
- B Atom kalsium mempunyai 18 proton
Calcium atom has 18 protons
- C Atom kalsium mempunyai empat petala berisi elektron
Calcium atom has four shells filled with electrons
- D Unsur kalsium terletak dalam Kumpulan 12 dalam Jadual Berkala Unsur Moden
Calcium element is located in Group 12 in the Modern Periodic Table of Elements

14 Rajah 9 menunjukkan buah yang diimport dari luar negara.

Diagram 9 shows the fruit imported from abroad.



Rajah 9
Diagram 9

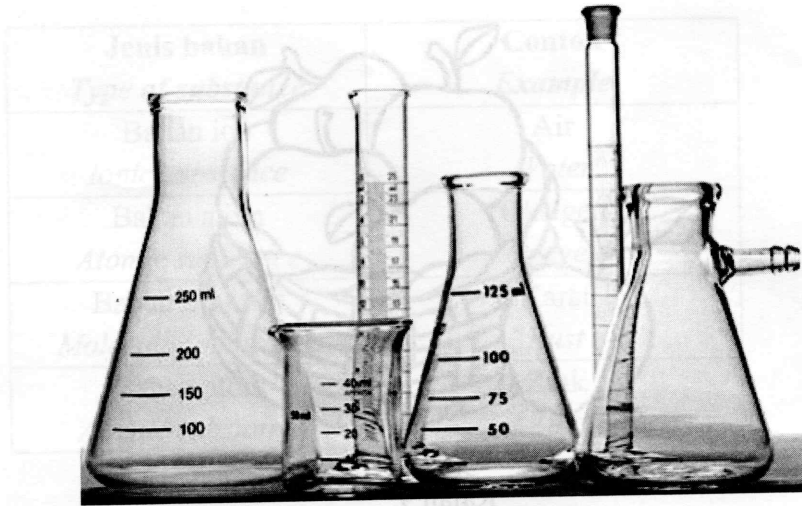
Antara berikut, kaedah manakah yang digunakan untuk menjadikan buah tahan lebih lama dan tidak mudah rosak?

Which of the following method is used to make fruit last longer and not rotten easily?

- A Disinari dengan sinar-X
Irradiated with X-rays
- B Disinari dengan sinar gama
Irradiated with gamma rays
- C Disuntik dengan Natrium-24
Injected with Sodium-24
- D Disuntik dengan Fosforus-32
Injected with Phosphorus-32

[Lihat halaman sebelah]

- 15 Rajah 10 menunjukkan bahan diperbuat daripada kaca.
Diagram 10 shows substances made of glass.



Rajah 10
Diagram 10

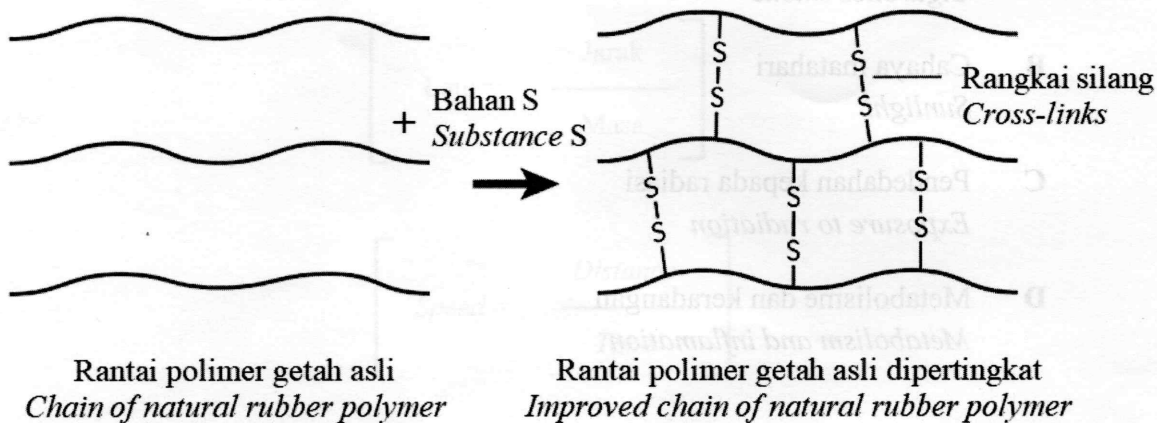
Antara berikut, yang manakah jenis kaca yang betul bagi bahan tersebut?

Which of the following is the correct type of glass for the substances?

- | | |
|--|--|
| A Kaca plumbum
Lead crystal glass | B Kaca soda kapur
Soda-lime glass |
| C Kaca borosilikat
Borosilicate glass | D Kaca silika terlakur
Fused silica glass |

- 16 Rajah 11 menunjukkan suatu proses mempertingkatkan sifat getah asli.

Diagram 11 shows a process to improve the properties of natural rubber.



Rajah 11
Diagram 11

Apakah kesan penambahan bahan S dalam proses tersebut?

What is the effect of adding substance S in the process?

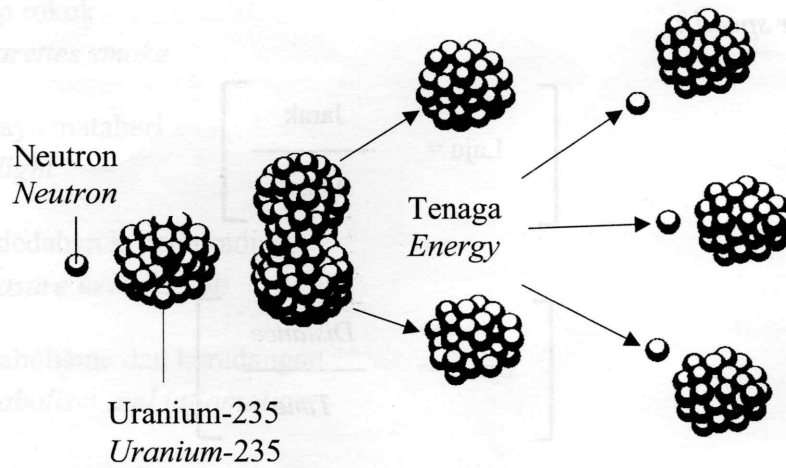
- A Tapak kasut mudah haus
Shoe soles worn out easily
- B Hos getah mudah digulung
Rubber hoses easy to roll up
- C Tayar kenderaan tahan lebih lama
Vehicle tyres last longer
- D Sarung tangan getah menjadi kurang elastik
Rubber gloves become less elastic

[Lihat halaman sebelah]

- 17 Apakah faktor dalaman yang menghasilkan radikal bebas?
What is the internal factor that produces free radicals?
- A Asap rokok
Cigarettes smoke
 - B Cahaya matahari
Sunlight
 - C Pendedahan kepada radiasi
Exposure to radiation
 - D Metabolisme dan keradangan
Metabolism and inflammation
- 18 Antara berikut, yang manakah betul tentang penambahan bahan aktif dalam produk kesihatan?
Which of the following is true about the addition of active ingredient in health product?
- A Produk lebih sedap
Product is tastier
 - B Product lebih tahan lama
Product last longer
 - C Produk boleh menyembuhkan penyakit
Product can cure illness
 - D Produk menjadi lebih berkualiti dengan bilangan bahan aktif yang banyak
Product becomes better quality with a large number of active ingredients

21 Rajah 13 menunjukkan proses penghasilan tenaga nuklear.

Diagram 13 shows a process of producing nuclear energy.



Rajah 13
Diagram 13

Antara berikut, yang manakah betul bagi proses tersebut?

Which of the following is true about the process?

A Pembelahan nukleus
Nuclear fission

B Pelakuran nukleus
Nuclear fusion

C Pereputan radioaktif
Radioactive decay

D Pembentukan isotop
Radioisotop forming

22 Seorang wanita telah didiagnos menghidapi kanser dan bayi di dalam kandungannya cacat.

Antara berikut, aktiviti manusia yang manakah boleh menyebabkan kesan tersebut?

A woman has been diagnosed with cancer and the baby in her womb is defective.

Which of the following human activity can cause the effects?

A Penebangan hutan simpan
Felling forest reserves

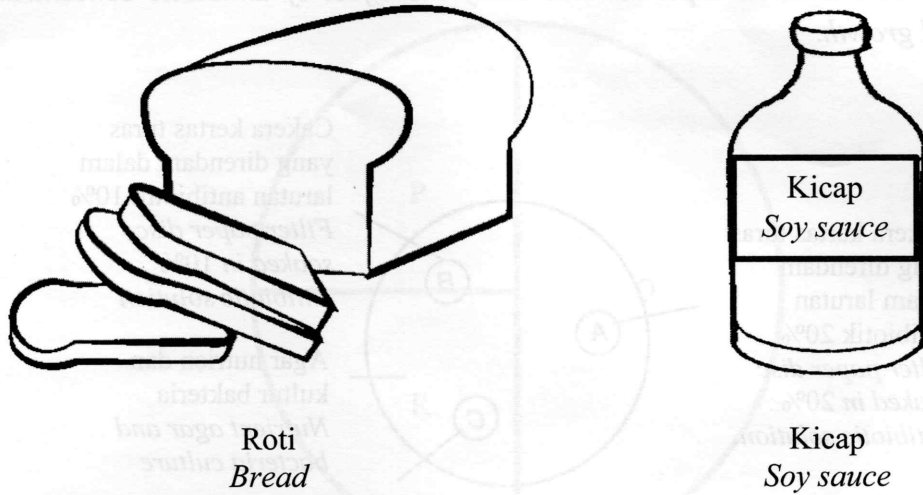
B Penyebaran radiasi daripada ujian nuklear
Spread of radiation from nuclear tests

C Pembuangan sisa daripada kilang papan ke dalam sungai
Waste disposal from the sawmill into the river

D Penggunaan baja kimia dan racun serangga di kawasan pertanian
Use of chemical fertilizers and pesticides in agricultural areas

23 Rajah 14 menunjukkan dua jenis makanan.

Diagram 14 shows two types of food.



Rajah 14
Diagram 14

Antara berikut, mikroorganisma yang manakah digunakan untuk menghasilkan makanan itu?

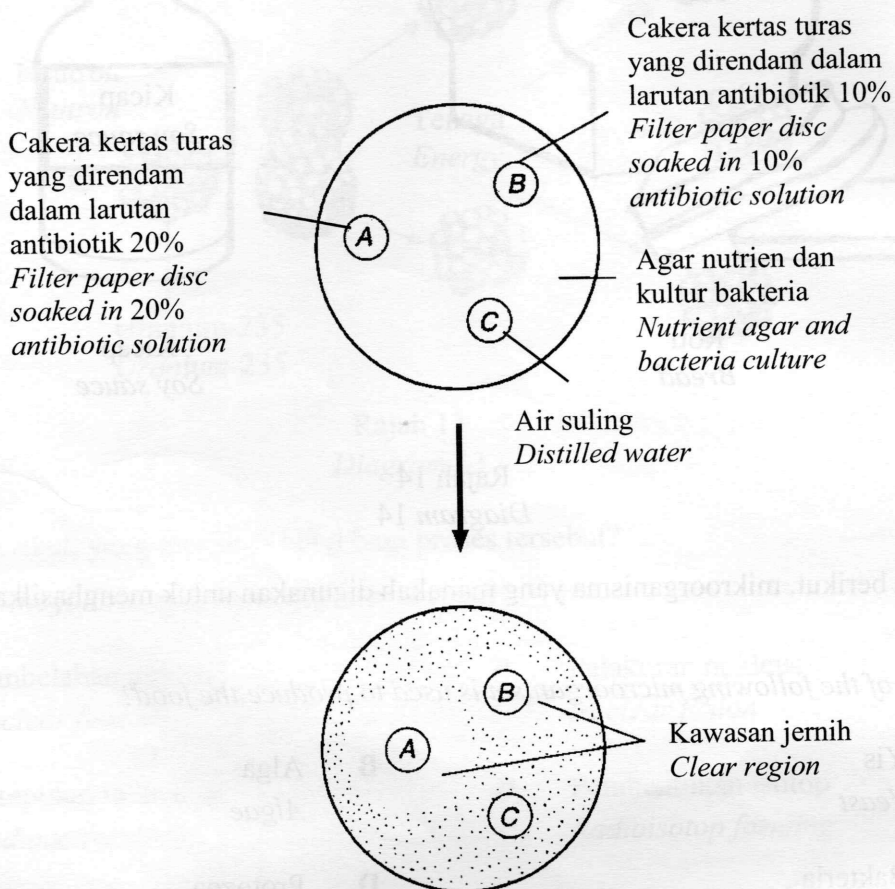
Which of the following microorganism is used to produce the food?

- | | | | |
|---|----------------------|---|----------------------|
| A | Yis
Yeast | B | Alga
Algae |
| C | Bakteria
Bacteria | D | Protozoa
Protozoa |

[Lihat halaman sebelah]

- 24 Rajah 15 menunjukkan eksperimen untuk mengkaji kesan kepekatan antibiotik terhadap pertumbuhan bakteria.

Diagram 15 shows an experiment to study the effect of antibiotic concentration on bacterial growth.



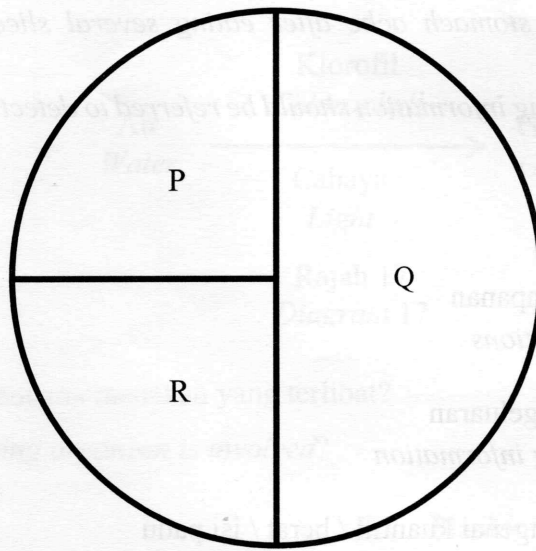
Rajah 15
Diagram 15

Antara pernyataan berikut, yang manakah betul tentang eksperimen ini?

Which of the following statements is true about the experiment?

- A** Kawasan jernih ialah kawasan tanpa nutrien
Clear region is region without nutrients
- B** Kawasan jernih ialah kawasan yang tidak diletakkan bakteria
Clear region is region where bacteria is not placed
- C** Kepekatan antibiotik adalah paling tinggi pada cakera kertas turas C
Concentration of antibiotic is highest on filter paper disc C
- D** Kepekatan antibiotik pada cakera kertas turas A lebih tinggi daripada B
Concentration of antibiotic on filter paper disc A is higher than B

- 25 Rajah 16 menunjukkan konsep Pinggan Sihat Malaysia.
Diagram 16 shows the concept of Pinggan Sihat Malaysia.



Rajah 16
Diagram 16

Antara berikut, yang manakah betul bagi P, Q dan R?

Which of the following is correct for P, Q and R?

	P	Q	R
A	Nasi <i>Rice</i>	Buah dan sayur <i>Fruit and vegetable</i>	Ikan <i>Fish</i>
B	Buah dan sayur <i>Fruit and vegetable</i>	Nasi <i>Rice</i>	Ikan <i>Fish</i>
C	Nasi <i>Rice</i>	Ikan <i>Fish</i>	Buah dan sayur <i>Fruit and vegetables</i>
D	Buah dan sayur <i>Fruit and vegetable</i>	Ikan <i>Fish</i>	Nasi <i>Rice</i>

[Lihat halaman sebelah]

- 26 Encik A mengalami sakit perut selepas makan beberapa keping roti yang baru dibeli. Antara berikut, maklumat yang manakah perlu dirujuk untuk mengesan punca masalahnya?

Mr. A experiences stomach ache after eating several slices of bread that he just purchased.

Which of the following information should be referred to detect the cause of his problem?

- A Tarikh luput
Expiry date
- B Arahan penyimpanan
Storing instructions
- C Maklumat pengeluaran
Manufacturing information
- D Penyataan mengenai kuantiti / berat / isi padu
Statement on quantity / weight / volume

- 27 Jadual 1 menunjukkan keputusan ujian bagi tiga sampel air.

Table 1 shows result of a test on three water samples.

Jenis sampel air <i>Type of water samples</i>	Masa diambil untuk warna larutan metilena biru luntur <i>Time taken for methylene blue solution to decolourise</i>
Air suling <i>Tap water</i>	3 jam <i>3 hours</i>
Air kolam <i>Pond water</i>	30 minit <i>30 minutes</i>

Jadual 1

Table 1

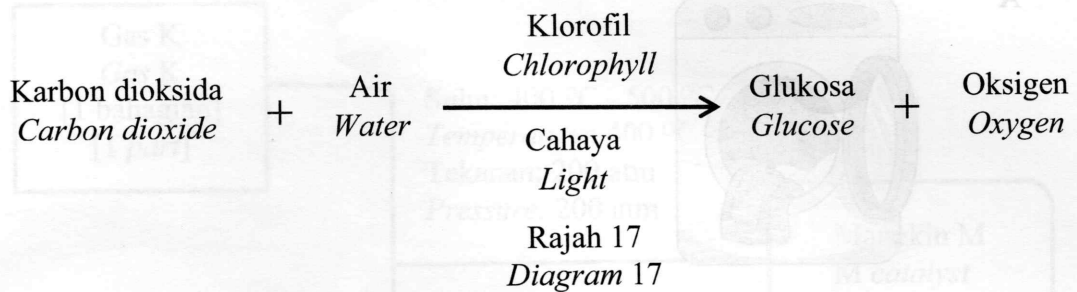
Berdasarkan Jadual 1, apakah fungsi larutan metilena biru?

Based on Table 1, what is the function of methylene blue solution?

- A Untuk menentukan nilai pH air
To determine the pH value of water
- B Untuk menentukan tahap pencemaran air
To determine the level of water pollution
- C Untuk menentukan jumlah mineral terlarut dalam air
To determine the amount of minerals dissolved in water
- D Untuk menentukan kepekatan karbon dioksida dalam air
To determine the concentration of carbon dioxide in water

- 28 Rajah 17 menunjukkan satu persamaan perkataan bagi proses yang diaplikasikan dalam Teknologi Emisi Negatif.

Diagram 17 shows a word equation for the process applied in Negative Emission Technology.



Antara berikut, organisma manakah yang terlibat?

Which of the following organism is involved?

- | | |
|-----------------------------------|----------------------------------|
| <p>A Mikroalga
Microalgae</p> | <p>B Plankton
Plankton</p> |
| <p>C Larva
Larvae</p> | <p>D Rumpai laut
Seaweed</p> |

- 29 Antara berikut, faktor manakah yang mempengaruhi kadar tindak balas?

Which of the following factors affect the rate of reaction?

- | |
|---|
| <p>A Suhu, jisim, saiz dan mangkin
Temperature, mass, size and catalyst</p> |
| <p>B Suhu, jisim, saiz dan kepekatan
Temperature, mass, size and concentration</p> |
| <p>C Suhu, mangkin, saiz dan kepekatan
Temperature, catalyst, size and concentration</p> |
| <p>D Suhu, mangkin, isipadu dan kepekatan
Temperature, catalyst, volume and concentration</p> |

[Lihat halaman sebelah]

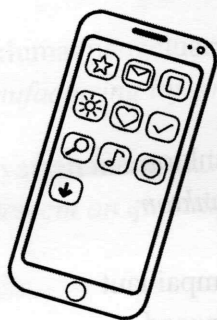
30 Antara berikut, alat manakah yang mengaplikasikan konsep kadar tindak balas dalam kehidupan seharian?

Which of the following is a tool that applies the concept of rate of reaction in daily life?

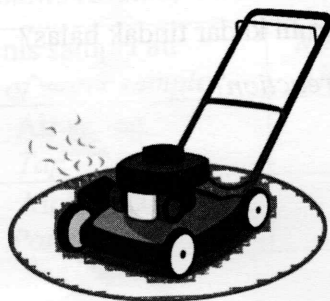
A



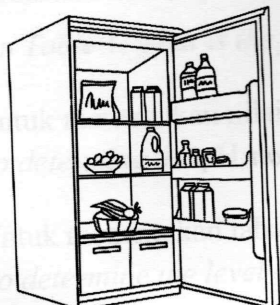
B



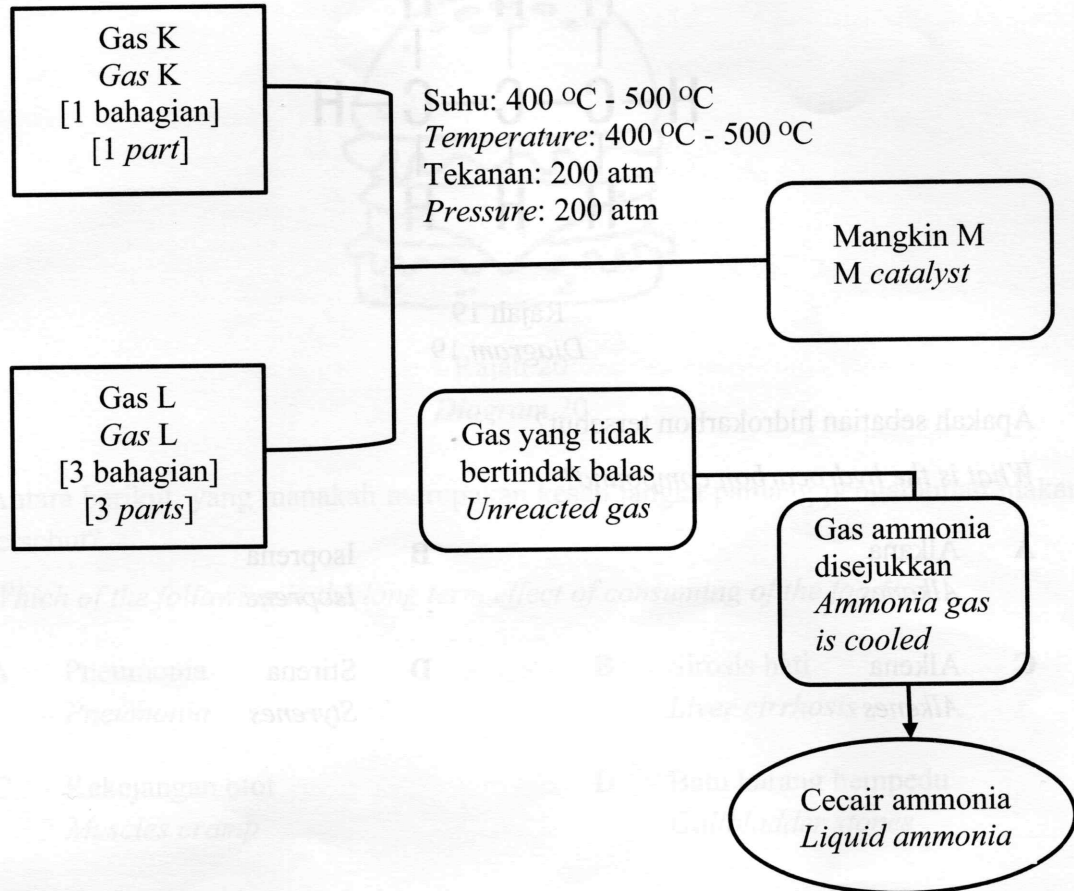
C



D



- 31 Rajah 18 menunjukkan kaedah penghasilan ammonia melalui Proses Haber.
Diagram 18 shows the method of producing ammonia through Haber Process.



Rajah 18
Diagram 18

Apakah K, L dan M?

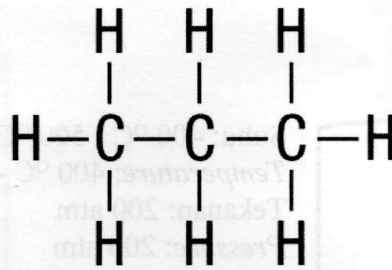
What are K, L and M?

	K	L	M
A	Hidrogen Hydrogen	Nitrogen Nitrogen	Besi Iron
B	Nitrogen Nitrogen	Hidrogen Hydrogen	Besi Iron
C	Hidrogen Hydrogen	Nitrogen Nitrogen	Vanadium(V) oksida Vanadium(V) oxide
D	Nitrogen Nitrogen	Hidrogen Hydrogen	Vanadium(V) oksida Vanadium(V) oxide

[Lihat halaman sebelah]

32 Rajah 19 menunjukkan struktur bagi satu siri homolog.

Diagram 19 shows the structure of a homologous series.



Rajah 19
Diagram 19

Apakah sebatian hidrokarbon tersebut?

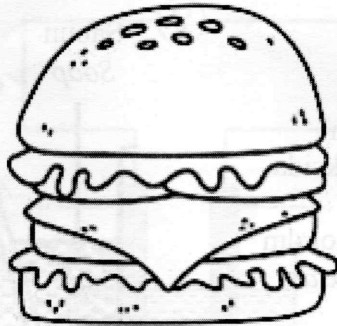
What is the hydrocarbon compound?

- A Alkana
Alkanes
- B Isoprena
Isoprene
- C Alkena
Alkenes
- D Stirena
Styrenes

	M	L	K
A	Nitrogen	Nitrogen	Nitrogen
B	Nitrogen	Nitrogen	Nitrogen
C	Nitrogen	Nitrogen	Nitrogen
D	Nitrogen	Nitrogen	Nitrogen

33 Rajah 20 menunjukkan sejenis makanan segera.

Diagram 20 shows a type of fast food.



Rajah 20
Diagram 20

Antara berikut, yang manakah merupakan kesan jangka panjang pengambilan makanan tersebut?

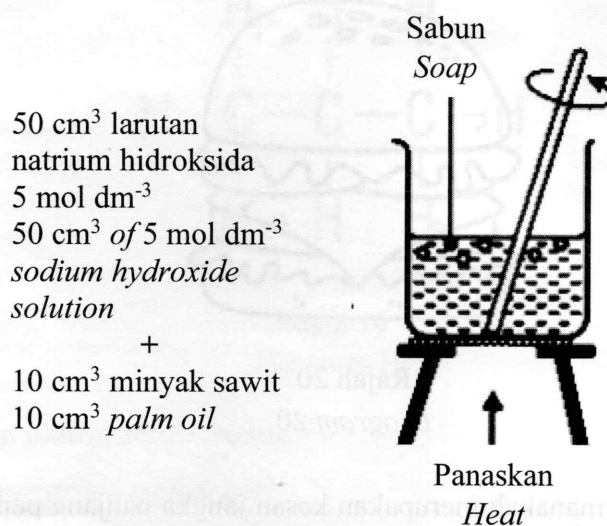
Which of the following is the long term effect of consuming of the food?

- | | | | |
|---|---|---|--|
| A | Pneumonia
<i>Pneumonia</i> | B | Sirosis hati
<i>Liver cirrhosis</i> |
| C | Kekejangan otot
<i>Muscles cramp</i> | D | Batu karang hempedu
<i>Gallbladder stones</i> |

[Lihat halaman sebelah]

- 34 Rajah 21 menunjukkan bahan digunakan untuk menghasilkan sabun.

Diagram 21 shows the substances used to produce soap.



Rajah 21
Diagram 21

Antara berikut, bahan manakah boleh menggantikan larutan natrium hidroksida?

Which of the following substance can replace sodium hydroxide solution?

- | | |
|--|--|
| A Jus nenas
<i>Pineapple juice</i> | B Jus peria
<i>Bittergourd juice</i> |
| C Jus tomato
<i>Tomato juice</i> | D Jus lemon
<i>Lemon juice</i> |

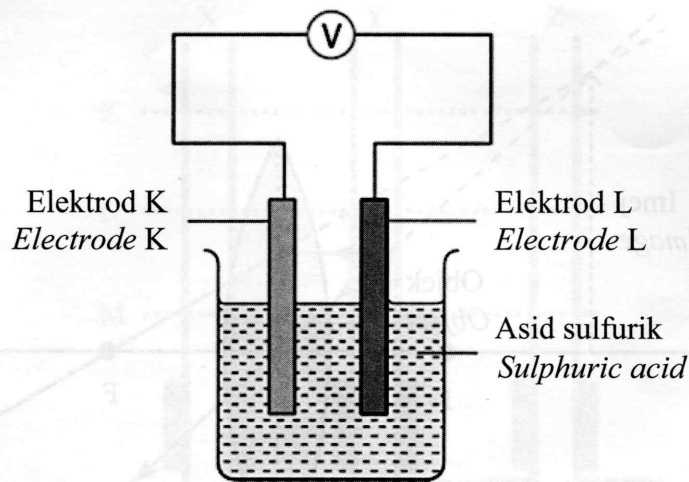
- 35 Antara berikut, faktor manakah yang mempengaruhi hasil elektrolisis?

Which of the following factors affect the products of electrolysis?

- A** Jisim elektrod
Mass of electrode
- B** Bilangan sel kering
Number of dry cells
- C** Isipadu elektrolit
Volume of electrolyte
- D** Kedudukan ion dalam siri elektrokimia
Position of ions in the electrochemical series

36 Rajah 22 menunjukkan susunan radas bagi satu sel kimia ringkas.

Diagram 22 shows the apparatus set-up of a simple chemical cell.



Rajah 22
Diagram 22

Antara berikut, pasangan logam yang manakah dapat menghasilkan bacaan voltmeter paling tinggi?

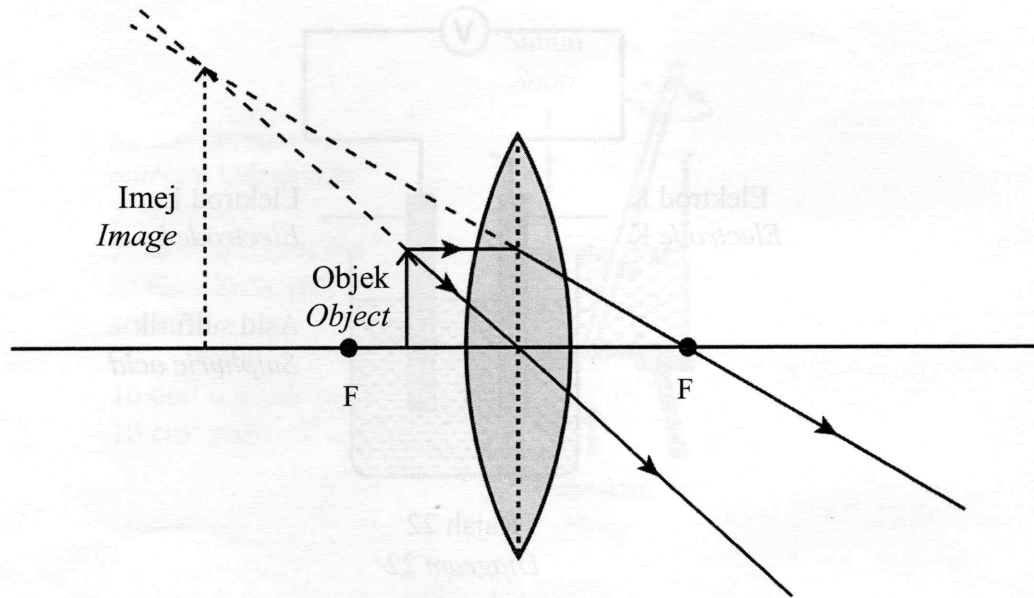
Which of the following metal pairs can produce the highest voltmeter reading?

	K	L
A	Zink Zinc	Besi Iron
B	Besi Iron	Kuprum Copper
C	Zink Zinc	Aluminium Aluminium
D	Kuprum Copper	Aluminium Aluminium

[Lihat halaman sebelah]

37 Rajah 23 menunjukkan gambar rajah sinar bagi suatu objek.

Diagram 23 shows ray diagram of an object.



Rajah 23
Diagram 23

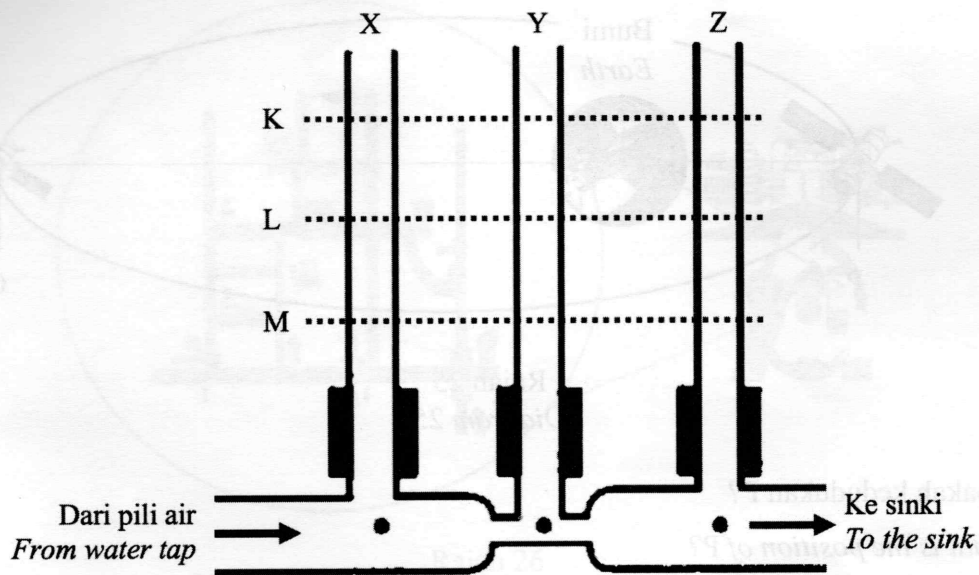
Antara berikut, ciri manakah yang betul bagi imej tersebut?

Which of the following is the correct characteristic of the image?

- | | | | |
|---|-------------------------------|---|--|
| A | Nyata
<i>Real</i> | B | Songsang
<i>Inverted</i> |
| C | Dibesarkan
<i>Enlarged</i> | D | Sama saiz dengan objek
<i>Same size as object</i> |

38 Rajah 24 menunjukkan tiub Venturi.

Diagram 24 shows a Venturi tube.



Rajah 24
Diagram 24

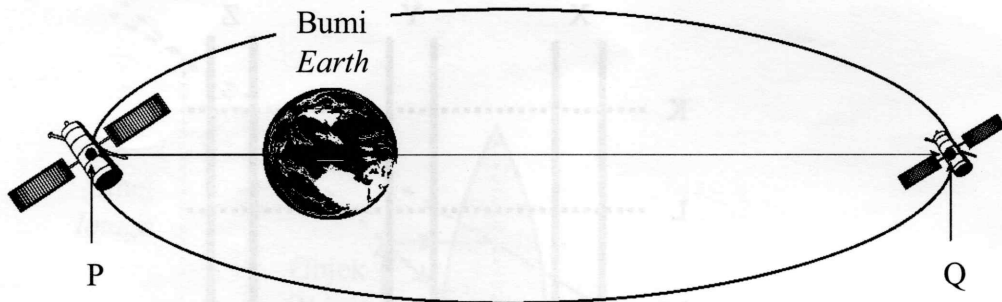
Antara berikut, manakah paras air yang betul di dalam tiub X dan tiub Z apabila pili air dibuka?

Which of the following is the correct fluid pressure in tube X and in tube Z when the tap is opened?

	X	Z
A	L	M
B	K	L
C	L	M
D	M	K

[Lihat halaman sebelah]

- 39 Rajah 25 menunjukkan dua kedudukan satelit yang membuat orbit elips.
 Diagram 25 shows two satellite positions that make elliptical orbit.



Rajah 25
 Diagram 25

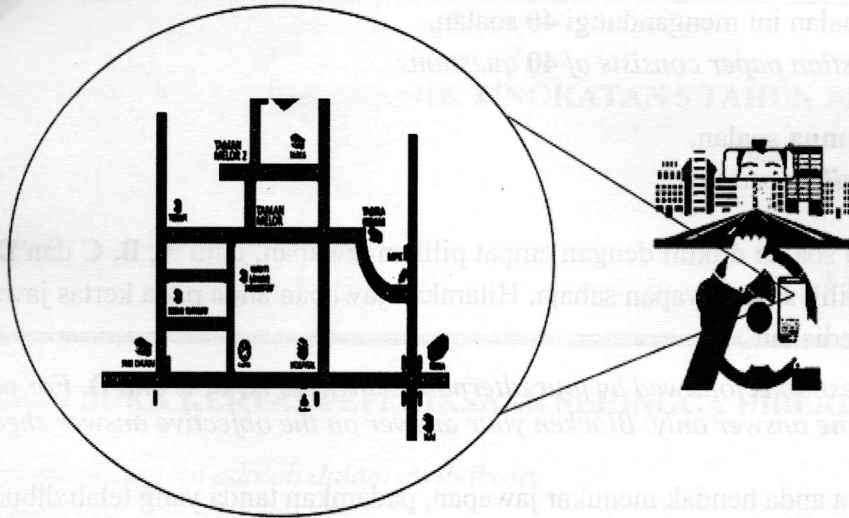
Apakah kedudukan P?
 What is the position of P?

- | | |
|---|---|
| <p>A Orbit Rendah Bumi
 <i>Low Earth Orbit (LEO)</i></p> | <p>B Orbit Sederhana Bumi
 <i>Medium Earth Orbit (MEO)</i></p> |
| <p>C Perigi
 <i>Perigee</i></p> | <p>D Apogi
 <i>Apogee</i></p> |

S	X	A
M	K	B
L	J	C
M	M	D

40 Rajah 26 menunjukkan satu aplikasi yang membantu pengguna jalan raya.

Diagram 26 shows an application that helps road users.



Rajah 26
Diagram 26

Antara berikut, yang manakah kelebihan penggunaan aplikasi navigasi tersebut?

Which of the following is the advantage of using the navigation application?

- A Meramal cuaca
Predict the weather
- B Menganggar waktu tiba ke lokasi
Estimate the time of arrival to the location
- C Mengesan lokasi sumber asli Bumi
Trace the location of Earth's natural resources
- D Mengawal dan menyelia kawasan pertanian
Control and supervise agricultural areas

KERTAS PEPERIKSAAN TAMAT

[Lihat halaman sebelah]