

FIZIK  
KERTAS 1

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$1\frac{1}{4}$  jam Nama Pelajar : .....

Tingkatan : .....



MAJLIS PENGETUA SEKOLAH MALAYSIA (MPSM)  
(CAWANGAN KELANTAN)

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MODUL KOLEKSI ITEM PEPERIKSAAN PERCUBAAN SPM  
TINGKATAN 5  
2020

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FIZIK  
KERTAS 1  
MASA : SATU JAM LIMA BELAS MINIT

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

**ARAHAN:**

1. Kertas soalan ini mengandungi 50 soalan objektif. Jawab **semua** soalan.
2. Tiap-tiap soalan diikuti oleh sama ada **tiga** atau **empat** pilihan jawapan. Pilih satu jawapan yang terbaik bagi setiap soalan dan hitamkan ruangan yang betul pada kertas jawapan objektif.
3. Hitamkan **satu** ruangan sahaja bagi setiap soalan.
4. Sekiranya anda hendak menukar jawapan, padamkan dan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baharu.
5. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
6. Anda dibenarkan menggunakan kalkulator saintifik.
7. Satu senarai formula disediakan di halaman 2.

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Kertas soalan ini mengandungi **36** halaman bercetak.

The following information may be useful. The symbols have their usual meaning  
 Maklumat berikut mungkin berfaedah. Simbol-simbol mempunyai makna yang biasa.

- |                                                                          |                                                                                                              |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. $a = \frac{v - u}{t}$                                                 | 18. Power , P = $\frac{\text{energy}}{\text{time}}$ / $\frac{\text{tenaga}}{\text{masa}}$                    |
| 2. $v^2 = u^2 + 2 as$                                                    | 19. $V = IR$                                                                                                 |
| 3. $s = ut + \frac{1}{2} at^2$                                           | 20. Power, P = IV<br>Kuasa                                                                                   |
| 4. Momentum = mv                                                         | 21. $\frac{N_s}{N_p} = \frac{V_s}{V_p}$                                                                      |
| 5. $F = ma$                                                              | 22. Efficiency = $\frac{I_s V_s}{I_p V_p} \times 100 \%$<br>Kecekapan                                        |
| 6. Kinetik Energy = $\frac{1}{2} mv^2$<br>Tenaga kinetik                 | 23. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$                                                                |
| 7. Gravitational potential energy= mgh<br>Tenaga keupayaan graviti       | 24. $n = \frac{\sin i}{\sin r}$                                                                              |
| 8. Elastic potential energy= $\frac{1}{2} Fx$<br>Tenaga keupayaan kenyal | 25. $n = \frac{\text{Real depth}}{\text{Apparent depth}}$ / $\frac{\text{Dalam Nyata}}{\text{Dalam Ketara}}$ |
| 9. $\rho = \frac{m}{V}$                                                  | 26. $\lambda = \frac{ax}{D}$                                                                                 |
| 10. Pressure, P = hpg.<br>Tekanan                                        | 27. $Q = It$                                                                                                 |
| 11. Pressure, P = $\frac{F}{A}$<br>Tekanan                               | 28. $E = I (R + r)$                                                                                          |
| 12. Heat, Q = mcθ<br>Haba                                                | 29. $eV = \frac{1}{2} mv^2$                                                                                  |
| 13. PV = constant / pemalar                                              | 30. $g = 10 \text{ ms}^{-2}$                                                                                 |
| 14. $E = m c^2$                                                          | 31. $m = \frac{h_i}{h_o} = \frac{v}{u}$                                                                      |
| 15. $v = f \lambda$                                                      | 32. 1 u.j.a. = $1.66 \times 10^{-27} \text{ kg}$                                                             |
| 16. $Q = mI$                                                             | 33. Speed of light, c = $3.0 \times 10^8 \text{ ms}^{-1}$<br>Laju cahaya                                     |
| 17. $n = \frac{c \text{ (dalam udara)}}{v \text{ (dalam medium)}}$       |                                                                                                              |

1 Which of the following is a derived quantity?  
*Antara yang berikut, yang manakah kuantiti terbitan?*

- A Time  
*Masa*
- B Force  
*Daya*
- C Mass  
*Jisim*
- D Electric current  
*Aruselektrik*

2 Which of the following pair is correct?  
*Pasangan yang manakah adalah betul?*

	<b>Quantity</b> <i>Kuantiti</i>	<b>Type of quatity</b> <i>Jenis kuantiti</i>
A	Force <i>Daya</i>	Scalar <i>Skalar</i>
B	Weight <i>Berat</i>	Scalar <i>Skalar</i>
C	Pressure <i>Tekanan</i>	Vector <i>Vektor</i>
D	Momentum <i>Momentum</i>	Vector <i>Vektor</i>

- 3 Table 1 shows the measurements of the diameter of an object.  
*Jadual 1 menunjukkan bacaan ukuran diameter suatu objek.*

Measurement (cm) <i>Pengukuran (cm)</i>		
5.50	5.49	5.50

Table 1  
*Jadual 1*

The actual value of the diameter is 5.30 cm.  
*Nilai sebenar bagi diameter itu adalah 5.30 cm.*

Which of the following is correct?  
*Antara yang berikut, yang manakah betul?*

- A Consistent and accurate  
*Konsisten dan jitu*
- B Consistent but not accurate  
*Konsistentetapidakjitu*
- C Not consistent but accurate  
*Tidakkonsistentetapijitu*
- D Not consistent and not accurate  
*Tidak konsisten dan tidak jitu*

- 4 Diagram 1 shows a tape chart.  
*Rajah 1 menunjukkan satu carta pita.*

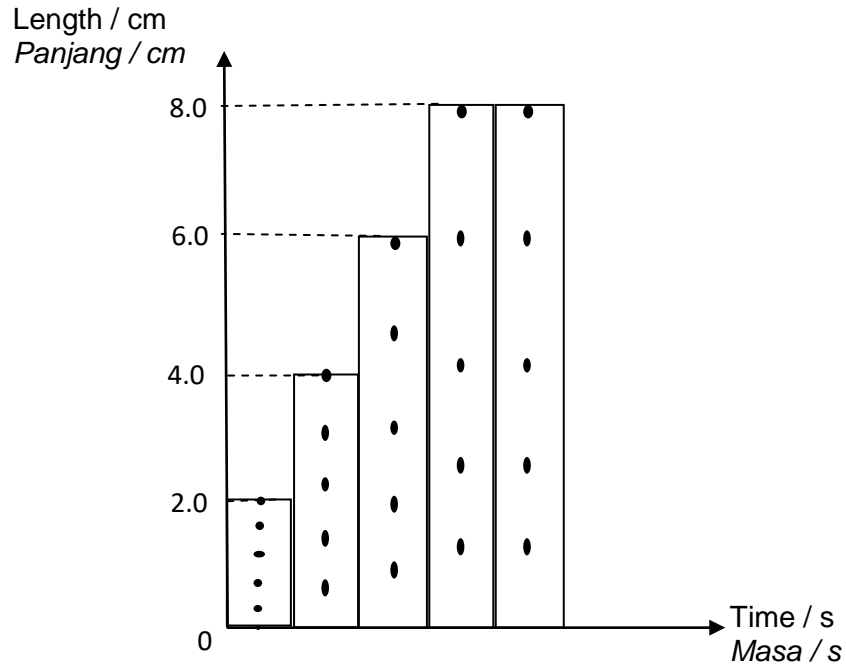


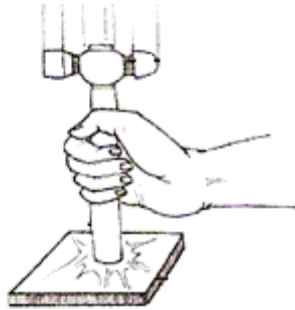
Diagram 1  
*Rajah 1*

What is the total displacement?  
*Berapakah jumlah sesaran?*

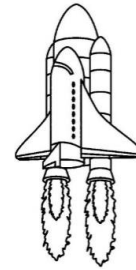
- A 8 cm
- B 12 cm
- C 20 cm
- D 28 cm

5 Which situation shows the effect of inertia?  
*Situasi yang manakah menunjukkan kesan inersia?*

A



B



C



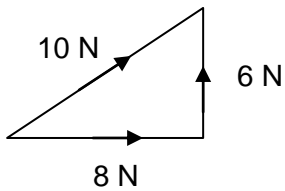
D



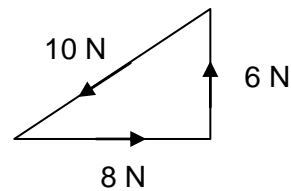
6 The diagram below shows the sum of forces 6 N and 8 N?  
*Rajah di bawah menunjukkan hasil tambah daya 6 N dan daya 8 N?*

Which of the following diagram is correct about the vector sum of forces 6N and 8N?  
*Yang manakah antara rajah berikut adalah betul mengenai hasil tambah secara vektor daya-daya 6N dan 8N?*

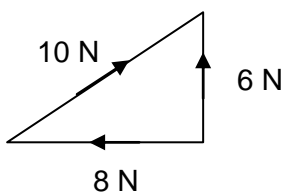
A



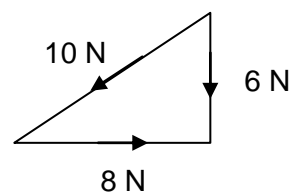
C



B



D



- 7 Diagram 2 shows a test of air bags in a car.  
*Rajah 2 menunjukkan ujian beg udara di dalam sebuah kereta.*



Diagram 2  
*Rajah 2*

What is the function of the air bag?  
*Apakah fungsi beg udara itu?*

- A To increase friction  
*Untuk menambah geseran*
  - B To increase momentum  
*Untuk menambah momentum*
  - C To decrease impulse  
*Untuk mengurangkan impuls*
  - D To decrease impulsive force  
*Untuk mengurangkan daya impuls*
- 8 A durian is falling from a tree.  
Which physical quantity remains constant?  
*Sebiji buah durian sedang jatuh dari pokok.  
Kuantiti fizik yang manakah yang kekal malar?*
- A Final velocity  
*Halaju akhir*
  - B Time of released  
*Masa jatuhan*
  - C Rate of change of velocity  
*Kadar perubahan halaju*
  - D Rate of change of displacement  
*Kadar perubahan sesaran*

- 9 Diagram 3 shows the forces acting on an aeroplane which is moving forward with an acceleration.

*Rajah 3 menunjukkan daya-daya yang bertindak ke atas sebuah kapal terbang yang bergerak ke hadapan dengan satu pecutan.*



Diagram 3  
*Rajah 3*

Which statement is correct to explain the forces acting on the aeroplane?

*Pernyataan yang manakah betul untuk menerangkan daya-daya yang bertindak ke atas kapal terbang itu?*

- A Lift force < weight  
*Daya angkat < berat*
- B Lift force > weight  
*Daya angkat > berat*
- C Forward thrust > drag force  
*Tujah ke hadapan > daya seretan*
- D Drag force > forward thrust  
*Daya seretan > tujah ke hadapan*



- 10 Diagram 4 shows three spring arrangements R, S and T. All springs used are identical. *Rajah 4 menunjukkan tiga susunan spring, R, S dan T. Semua spring yang digunakan adalah serupa.*

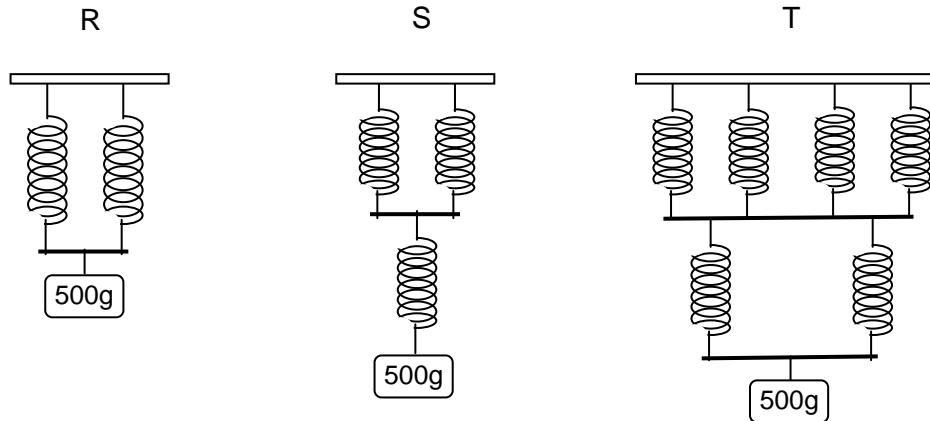


Diagram 4  
*Rajah 4*

Which comparison of the total extension of the spring arrangement R, S and T is correct when weight of 500 g is hung?

*Perbandingan bagi jumlah pemanjangan susunan spring, R, S dan T, manakah yang betul apabila beban 500 g digantung?*

- A**  $S > T > R$
- B**  $T > R > S$
- C**  $R > S > T$
- D**  $R > T > S$
- 11 Which of the following statement is a basic assumption of the Kinetic Theory of matter?  
*Manakah antara kenyataan berikut merupakan anggapan asas bagi Teori Kinetik Jirim?*
- A** Molecules will stop vibrating at 0 °C.  
*Molekul-molekul akan berhenti bergetar pada 0 °C.*
- B** The collision between molecules are inelastic.  
*Perlanggaran antara molekul-molekul adalah perlanggaran tak kenyal.*
- C** In liquid, the molecules are very far apart from each other.  
*Di dalam cecair, molekul-molekul adalah sangat berjauhan antara satu sama lain.*
- D** The average kinetic energy of molecules increases as temperature increases.  
*Tenaga kinetik purata molekul-molekul bertambah apabila suhu bertambah.*

- 12 Diagram 5 shows force  $F_1$  exerted on a small piston, Q producing pressure through the liquid. The pressure is transferred to the large piston, R to produce force,  $F_2$ .

Rajah 5 menunjukkan daya  $F_1$  dikenakan ke atas omboh kecil, Q menghasilkan tekanan di dalam cecair. Tekanan itu dipindahkan ke omboh besar, R untuk menghasilkan daya,  $F_2$ .

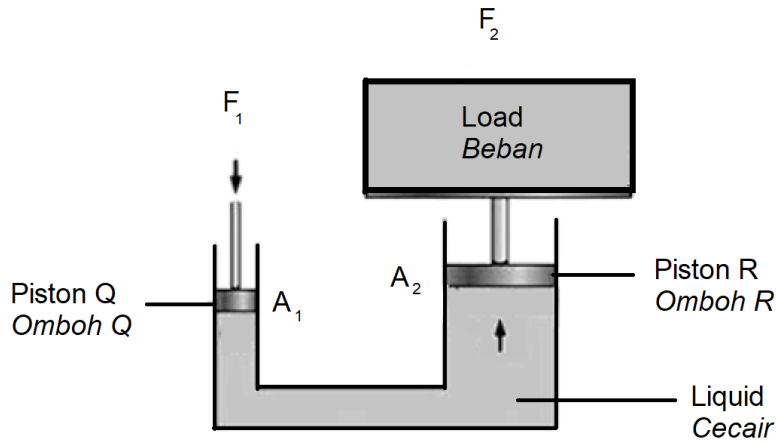


Diagram 5  
Rajah 5

Which of following statement is **correct**?

Manakah antara pernyataan berikut adalah **benar**?

- A** Pressure in liquid at piston R is greater than the pressure in liquid at piston Q.  
*Tekanan pada cecair pada omboh R adalah lebih besar daripada tekanan cecair pada omboh Q.*
- B** Force is transmitted equally through liquid from piston Q to piston R  
*Daya dipindahkan secara seragam melalui cecair dari omboh Q ke omboh R.*
- C** Volume of liquid displaced at piston Q is greater than piston R  
*Isipadu cecair tersesar pada omboh Q lebih daripada omboh R*
- D**  $F_2$  is greater than  $F_1$   
 *$F_2$  lebih besar dari  $F_1$*

- 13 Diagram 6 shows the readings of weighing scale when the metal block is hung in air and immersed in water.

Rajah 6 menunjukkan bacaan penimbang berat apabila bongkah logam digantung di udara dan ditenggelamkan ke dalam air.

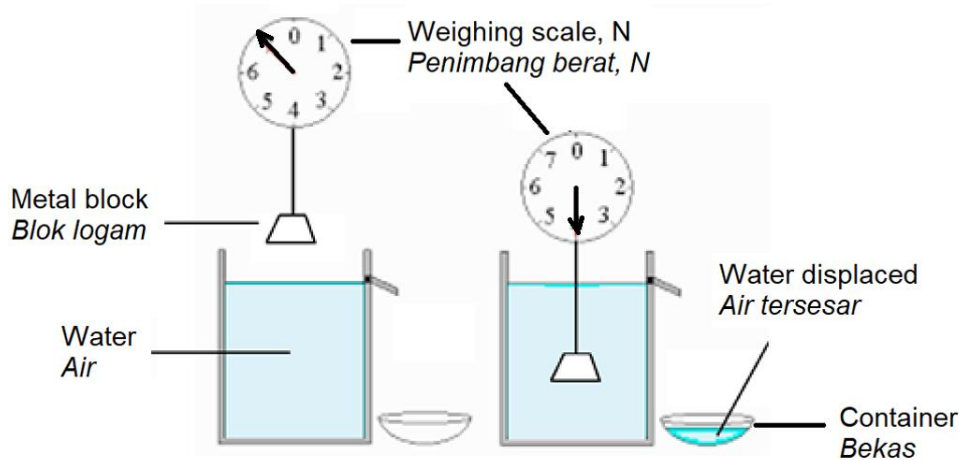


Diagram 6  
Rajah 6

Which of following statement is correct?

Yang manakah antara pernyataan berikut adalah **betul**?

- A** Weight of water displaced is equal to 4N  
*Berat air yang disesarkan bersamaan 4N*
- B** Buoyant force is equal to volume of water displaced.  
*Daya apungan adalah bersamaan dengan isipadu air yang disesarkan*
- C** Buoyant force = weight of metal block in air – weight of metal block in water  
*Daya apungan = berat bongkah logam di udara – berat bongkah logam di dalam air*
- D** When the metal block is completely immersed in water, the weight of object increased  
*Apabila bongkah logam itu direndam sepenuhnya di dalam air, berat objek itu meningkat*

- 14 Diagram 7 shows a manometer used for measuring the pressure of a gas supply.  
*Rajah 7 menunjukkan sebuah manometer yang digunakan untuk mengukur tekanan suatu bekalan gas.*

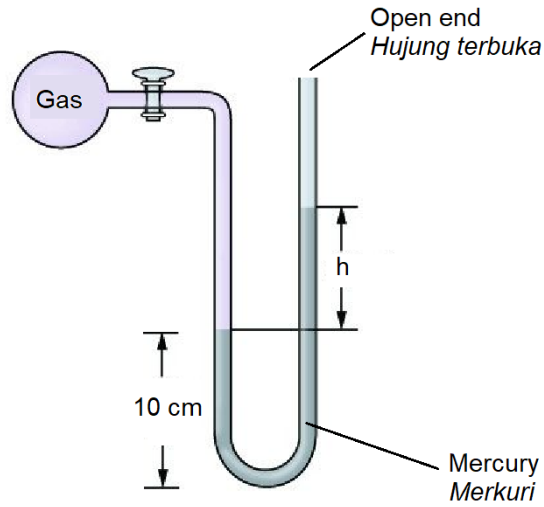


Diagram 7  
*Rajah 7*

If the gas pressure is 91 cm Hg, calculate  $h$ ?  
*Jika tekanan gas itu 91 cm Hg, hitungkan  $h$ ?*  
 (Atmospheric pressure = 76 cm Hg)  
 (Tekanan atmosfera = 76 cm Hg)

- A 10 cm Hg  
 B 15 cm Hg  
 C 81 cm Hg  
 D 86 cm Hg
- 15 Diagram 8 shows a ventury tube which attached to three glass tubes at A, B and C.  
*Rajah 8 menunjukkan satu tiub venturi yang disambungkan dengan tiga tiub kaca pada A, B dan C.*

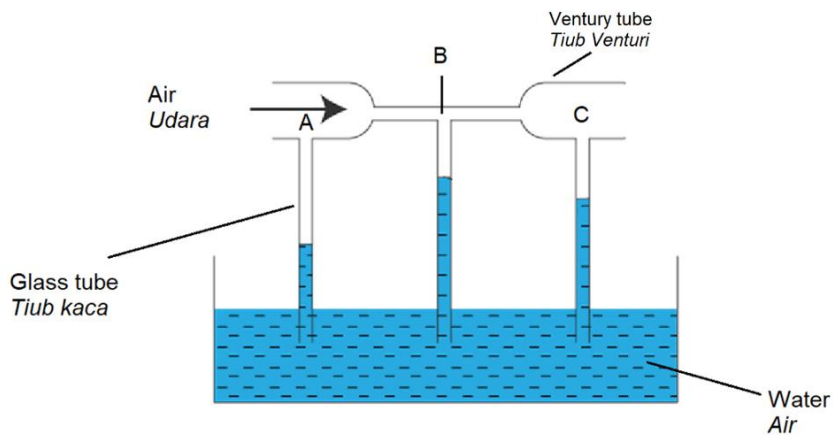


Diagram 8  
*Rajah 8*

When a stream of air passes through the ventury tube, the rising of water levels are different because

Apabila aliran udara melalui tiub venturi itu, peningkatan aras air adalah berbeza kerana

	Speed of air, $v$ <i>Kelajuan udara, <math>v</math></i>	Pressure, $P$ <i>Tekanan, <math>P</math></i>
<b>A</b>	$v_A > v_B > v_C$	$P_A > P_B > P_C$
<b>B</b>	$v_A < v_B > v_C$	$P_A > P_B < P_C$
<b>C</b>	$v_C > v_B > v_A$	$P_A > P_B > P_C$

- 16 Diagram 9 shows a simple mercury barometer.  
*Rajah 9 menunjukkan sebuah barometer ringkas.*

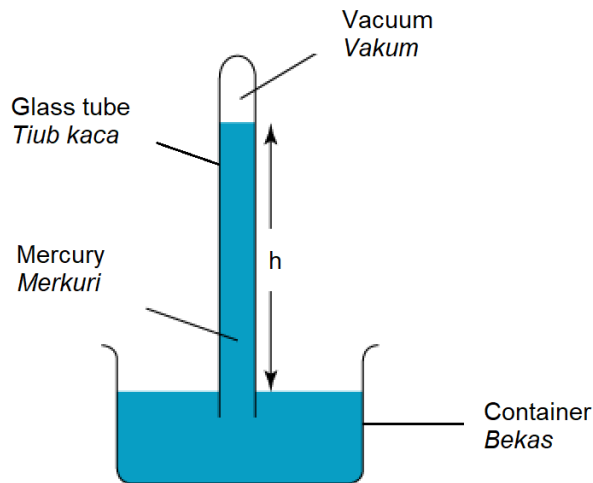


Diagram 9  
*Rajah 9*

The height,  $h$  of the mercury column will decrease if  
*Ketinggian,  $h$  bagi turus merkuri itu akan berkurang jika*

- A** the glass tube is slightly lifted up  
*tiub kaca itu diangkat sedikit ke atas*
- B** the glass tube is tilted slightly to the right  
*tiub kaca itu dicondongkan sedikit ke kanan*
- C** more mercury is added into the container  
*lebih banyak merkuri ditambah ke dalam bekas*
- D** measurements are taken on top of the mountain  
*pengukuran di lakukan di puncak gunung*

- 17 Diagram 10 shows the water jet from the different holes.  
*Rajah 10 menunjukkan pancutan air dari beberapa lubang berlainan.*

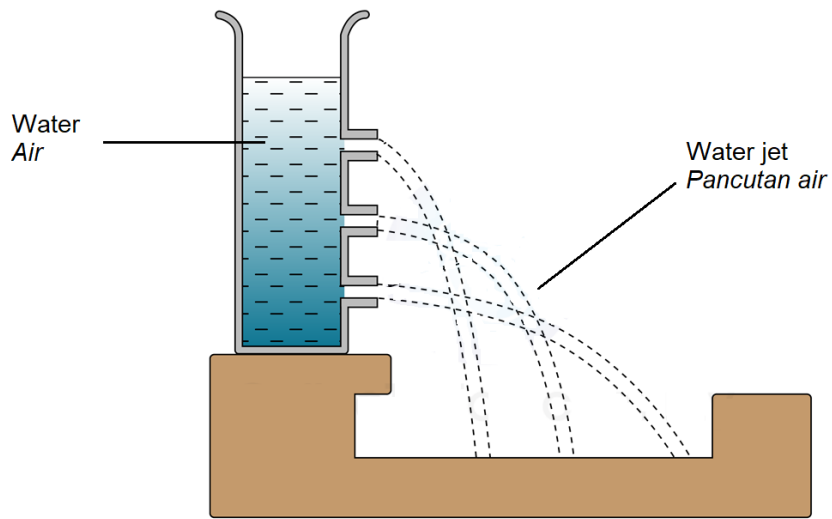
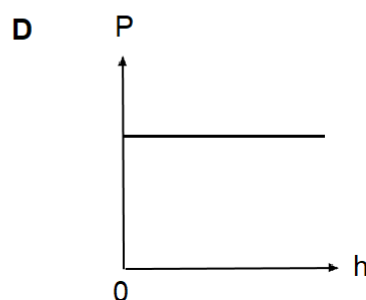
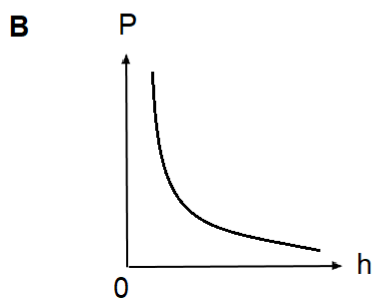
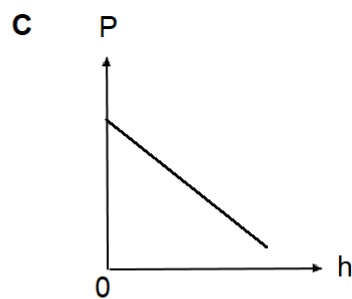
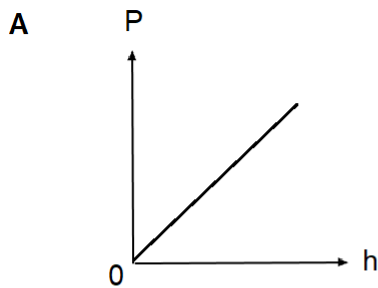


Diagram 10  
*Rajah 10*

Which of the following graph represents the relationship between the water pressure,  $P$  and the depth of water,  $h$ ?  
*Graf yang manakah mewakili hubungan antara tekanan air,  $P$  dan kedalaman air,  $h$ ?*



- 18 Specific heat capacity of water is  $4200 \text{ J kg}^{-1} \text{ }^\circ\text{C}^{-1}$ .  
*Muatan haba tentu air ialah  $4200 \text{ J kg}^{-1} \text{ }^\circ\text{C}^{-1}$ .*

This means that 4200 J heat energy is required to  
*Ini bermaksud 4200 J tenaga haba diperlukan untuk*

- A change the temperature of 1kg of water by  $1^\circ\text{C}$   
*mengubah suhu 1 kg air sebanyak  $1^\circ\text{C}$*
- B change the temperature of 1 kg of ice by  $1^\circ\text{C}$   
*Mengubah suhu 1kg ais sebanyak  $1^\circ\text{C}$*
- C change 1 kg of water to steam at  $100^\circ\text{C}$   
*mengubah 1 kg air kepada stim pada  $100^\circ\text{C}$*
- D change 1 kg of ice into water at  $0^\circ\text{C}$   
*mengubah 1 kg ais kepada air pada  $0^\circ\text{C}$*
- 19 Diagram 11 shows how a body temperature of a baby is measured by a doctor.  
*Rajah 11 menunjukkan bagaimana suhu badan seorang bayi diukur oleh seorang doktor.*

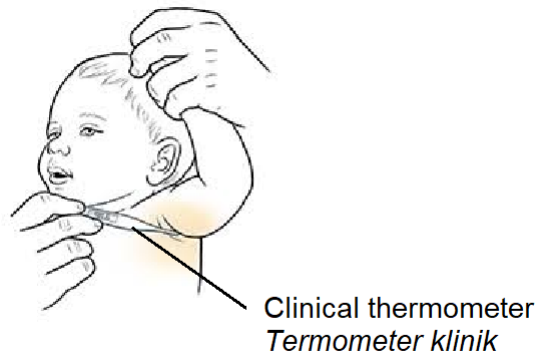


Diagram 11  
*Rajah 11*

The reading of clinical thermometer is taken after a few minutes to ensure  
*Bacaan suhu badan bayi hanya diambil selepas beberapa minit untuk memastikan*

- A the net rate of heat flow is zero  
*kadar pemindahan haba bersih adalah sifar*
- B thermal equilibrium is not occur  
*tidak berlaku keseimbangan terma*
- C amount of heat transfer from baby to clinical thermometer and vice versa is not equal  
*jumlah haba yang dipindahkan dari bayi ke termometer klinik dan sebaliknya adalah tidak sama*

- 20 Calculate the time taken by a 800 W immersion heater to change 1 kg of ice at 0 °C to water at 60 °C.

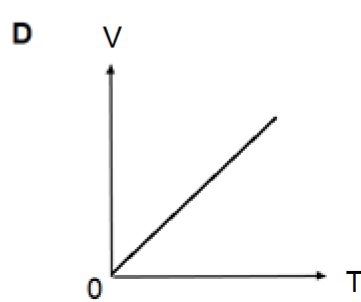
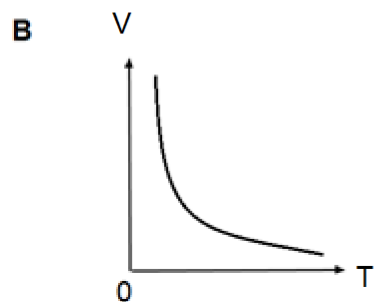
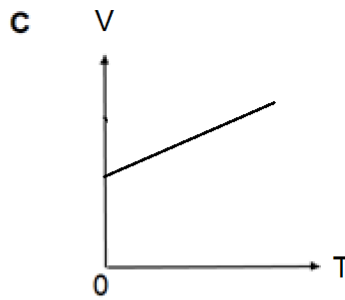
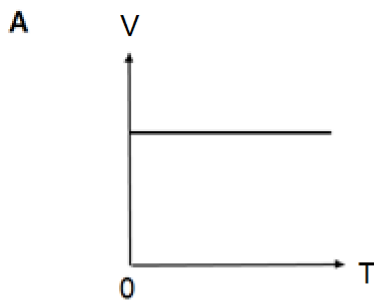
*Hitungkan masa yang diambil oleh suatu pemanas rendam berkuasa 800 W untuk menukarkan 1 kg ais pada suhu 0 °C kepada air pada 60 °C.*

(Specific heat capacity of water = 4200 J kg<sup>-1</sup> °C<sup>-1</sup>.  
 Specific latent heat of fusion of ice = 3.4 x 10<sup>5</sup> J kg<sup>-1</sup>)  
 (Muatan haba tentu air 4200 J kg<sup>-1</sup> °C<sup>-1</sup>,  
 Haba pendam tentu pelakuran ais = 3.4 x 10<sup>5</sup> J kg<sup>-1</sup>)

- A 315 s
- B 425 s
- C 740 s
- D 1080 s

- 21 Which of the following graph shows the relationship between the volume and absolute temperature of a fixed mass of gas at constant pressure?

*Antara graf berikut, yang manakah menunjukkan hubungan antara isipadu dan suhu mutlak bagi is suatu gas berjisim tetap pada tekanan tetap?*





- 22 Diagram 12 shows the cooling curve of naphthalene.  
*Rajah 12 menunjukkan lengkung penyejukan bagi naftalena.*

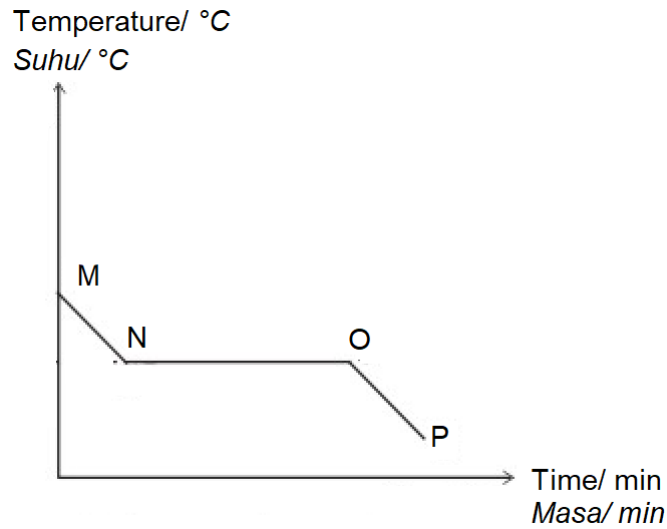


Diagram 12  
*Rajah12*

At which stage the substance is in solid state and liquid simultaneously?  
*Pada peringkat manakah bahan itu berada dalam keadaan pepejal dan cecair serentak?*

- A MN
  - B NO
  - C OP
  - D MN and OP
- 23 Diagram 13 shows an image in mirror X.  
*Rajah 13 menunjukkan imej dalam cermin X.*

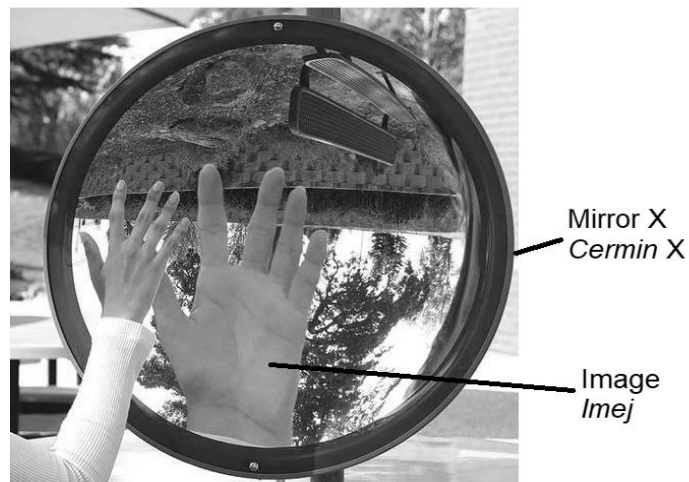


Diagram 13  
*Rajah13*

What is the type of mirror X?  
*Apakah jenis cermin X?*

- A Plane mirror  
*Cermin satah*
- B Convex mirror  
*Cermin cembung*
- C Concave mirror  
*Cermin cekung*

- 24 Diagram 14 shows an object placed in front of a convex mirror.  
*Rajah 14 menunjukkan objek diletakkan di hadapan sebuah cermin cembung.*

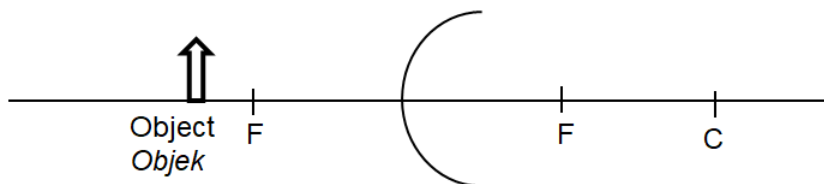


Diagram 14  
*Rajah14*

Which of the following is correct about the characteristics of the image produced?  
*Yang manakah antara berikut adalah betul mengenai ciri-ciri imej yang dihasilkan?*

- A Magnified, inverted and real  
*Diperbesarkan, songsang dan nyata*
- B Magnified, upright and virtual  
*Diperbesarkan, tegak dan maya*
- C Diminished, upright and virtual  
*Diperkecilkan, tegak dan maya*
- D Diminished, inverted and real  
*Diperkecilkan, songsang dan nyata*

- 25 Diagram 15 shows a light ray is travelling from air to water.  
*Rajah 15 menunjukkan satu sinar cahaya bergerak daripada udara ke air.*

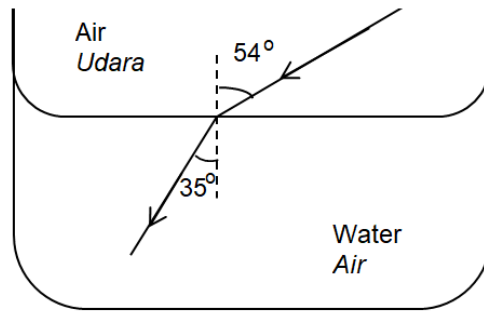


Diagram 15  
*Rajah15*

What is the speed of air in water?  
*Berapakah laju cahaya dalam air?*

(Given speed of light in air is  $3.0 \times 10^8 \text{ ms}^{-1}$ )  
 (Diberi laju cahaya di udara adalah  $3.0 \times 10^8 \text{ ms}^{-1}$ )

- A  $4.23 \times 10^8 \text{ ms}^{-1}$
  - B  $2.13 \times 10^8 \text{ ms}^{-1}$
  - C  $4.70 \times 10^7 \text{ ms}^{-1}$
  - D  $2.36 \times 10^7 \text{ ms}^{-1}$
- 26 Diagram 16 shows a light ray travels through three mediums P, Q and R of different optical densities.  
*Rajah 16 menunjukkan satu sinar cahaya bergerak melalui tiga medium P, Q dan R yang berbeza ketumpatan optik.*

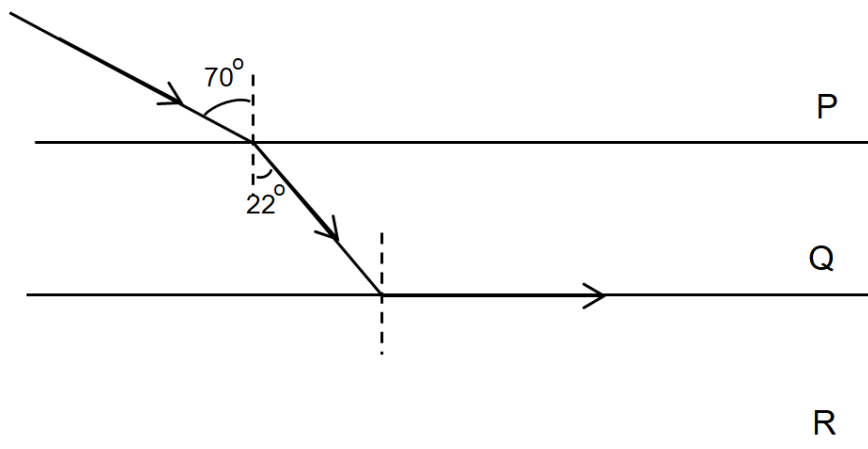


Diagram 16  
*Rajah16*

Which of the following is correct?

*Yang manakah antara berikut adalah betul?*

	Optical density <i>Ketumpatan Optik</i>	The magnitude of critical angle <i>Magnitud sudut genting</i>
<b>A</b>	$P < Q < R$	$70^\circ$
<b>B</b>	$P > Q > R$	$22^\circ$
<b>C</b>	$P > Q < R$	$70^\circ$
<b>D</b>	$P < Q > R$	$22^\circ$

- 27** Diagram 17 shows the optometrist chart view through a spectacle.  
*Rajah 17 menunjukkan carta optometris dilihat melalui cermin mata.*

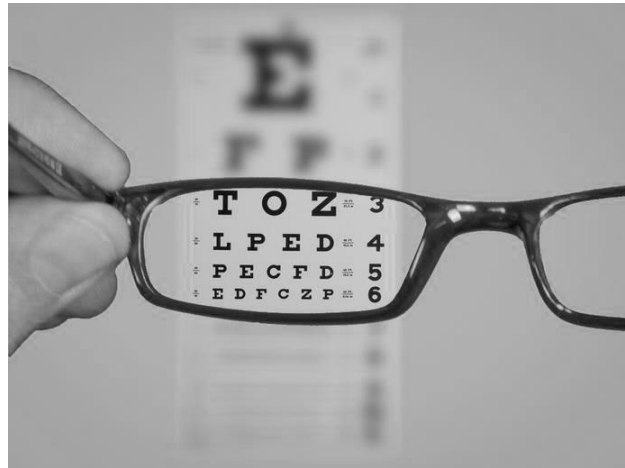


Diagram 17  
*Rajah17*

Which type of lens is used for the spectacle and at which position the object is placed?

*Apakah jenis kanta yang digunakan untuk cermin mata itu dan pada kedudukan manakah objek itu diletakkan?*

	Type of lens <i>Jenis Kanta</i>	Position of object <i>Kedudukan objek</i>
<b>A</b>	Convex <i>Cembung</i>	$2f > u > f$
<b>B</b>	Concave <i>Cekung</i>	$2f > u > f$
<b>C</b>	Convex <i>Cembung</i>	$u < f$
<b>D</b>	Concave <i>Cekung</i>	$u < f$

28 Ahmad's house is located near a train station. At night the train's siren can be heard clearer compare to the day due to  
*Rumah Ahmad berada berhampiran dengan stesyen keretaapi. Pada waktu malam bunyi siren keretaapi boleh didengar lebih jelas berbanding dengan sianghari disebabkan oleh*

- A Sound wave is reflected to the earth surface  
*Gelombang bunyi dipantulkan ke permukaan bumi*
- B Sound wave is diffracted to the earth surface  
*Gelombang bunyi dibelaukan ke permukaan bumi*
- C Sound wave is refracted to the earth surface  
*Gelombang bunyi dibiaskan ke permukaan bumi*

29 Diagram 18 shows the interference patterns of three monochromatic light sources of P, Q and R.  
*Rajah 18 menunjukkan corak interferens bagi tiga sumber cahaya monokromatik P, Q dan R.*

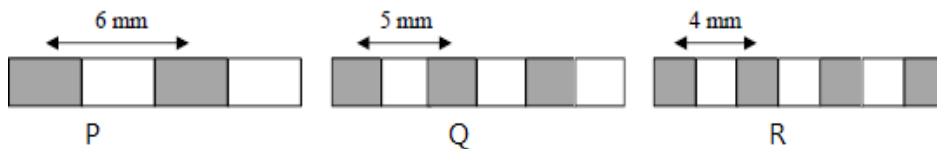


Diagram 18  
*Rajah 18*

What are the spectrum colours of light sources P, Q and R?  
*Apakah warna spektrum bagi sumber cahaya P, Q dan R?*

	P	Q	R
A	Blue <i>Biru</i>	Yellow <i>Kuning</i>	Red <i>Merah</i>
B	Yellow <i>Kuning</i>	Blue <i>Biru</i>	Red <i>Merah</i>
C	Blue <i>Biru</i>	Yellow <i>Kuning</i>	Red <i>Merah</i>
D	Red <i>Merah</i>	Yellow <i>Kuning</i>	Blue <i>Biru</i>

- 30 Diagram 19 shows a water waves passing through a gap between concrete barriers near the beach.

*Rajah 19 menunjukkan gelombang air melepasi celah di antara penghalang konkrit berhampiran pantai.*

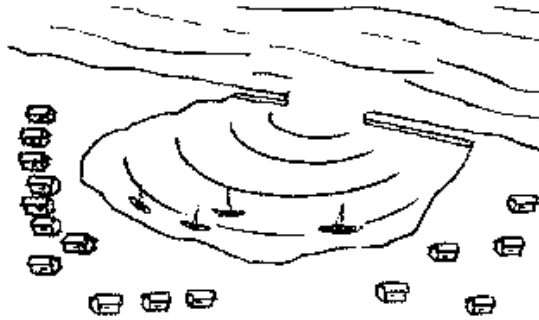


Diagram 19

*Rajah 19*

The wave's phenomenon occurs is

*Fenomena gelombang yang berlaku adalah*

- A Reflection  
*Pantulan*
- B Refraction  
*Pembiasan*
- C Diffraction  
*Pembelauan*
- D Interference  
*Interferens*

- 31 Diagram 20 shows an interference pattern of a water wave produced by two coherent sources,  $S_1$  and  $S_2$   
*Rajah 20 menunjukkan corak interferens gelombang air yang dihasilkan oleh dua sumber yang koheren  $S_1$  dan  $S_2$ .*

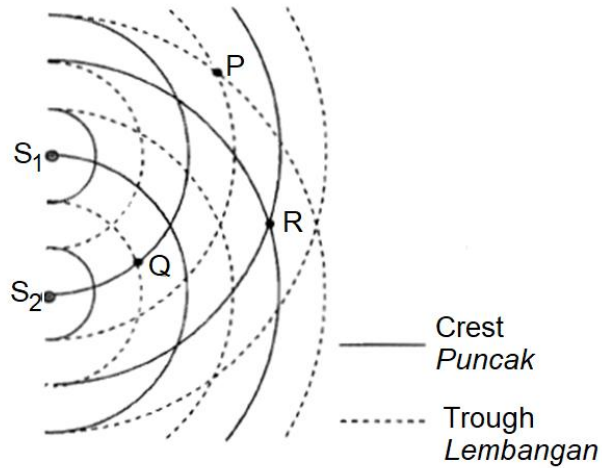


Diagram 20  
*Rajah 20*

At which points, the constructive interference occur?  
*Pada titik manakah, interferens membina berlaku?*

- A P and Q  
*P dan Q*
  - B Q and R  
*Q dan R*
  - C P and R  
*P dan R*
  - D P, Q and R  
*P, Q dan R*
- 32 A radar transmit a signal towards an aeroplane. The velocity of the signal is  $3.0 \times 10^8 \text{ms}^{-1}$ . After  $4.0 \times 10^{-3}$  s the radar detects the reflected signal.  
*Sebuah radar memancarkan isyarat ke arah sebuah kapal terbang. Halaju isyarat itu ialah  $3.0 \times 10^8 \text{ m s}^{-1}$ . Selepas  $4.0 \times 10^{-3}$  s, radar itu mengesan isyarat yang dipantulkan.*
- What is the distance of the aeroplane from the radar?  
*Berapakah jarak kapal terbang itu daripada radar?*

- A  $6.0 \times 10^5$  m
- B  $1.2 \times 10^6$  m
- C  $2.4 \times 10^6$  m
- D  $1.5 \times 10^{11}$  m

33 Diagram 21 shows a stretched steel wire produces a loud sound when the wire is plucked.

*Rajah 21 menunjukkan suatu wayar keluli yang tegang menghasilkan bunyi yang kuat apabila wayar itu dipetik.*

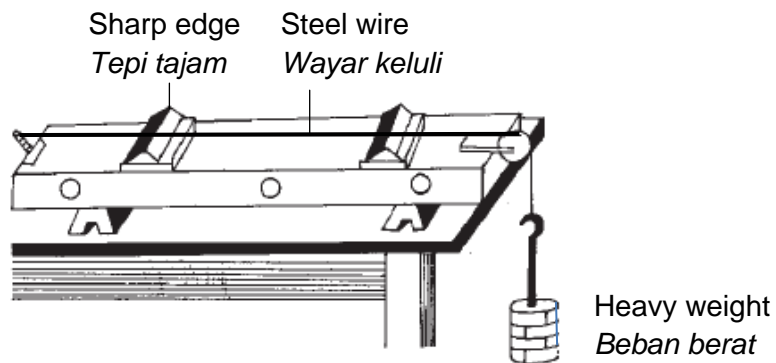


Diagram 21  
*Rajah 21*

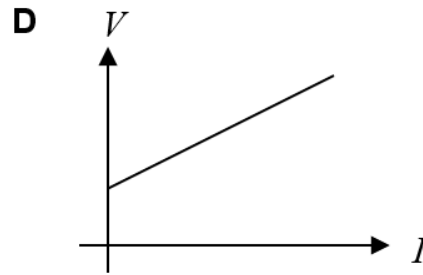
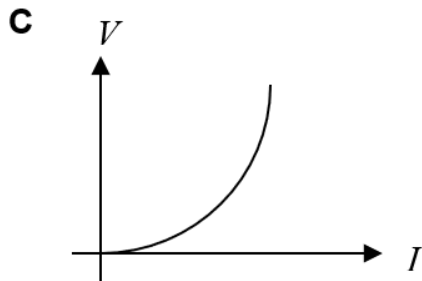
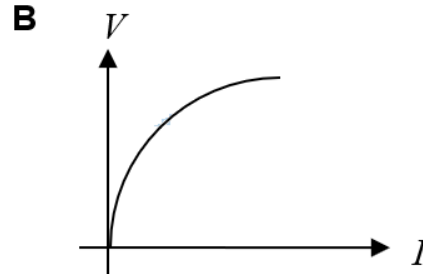
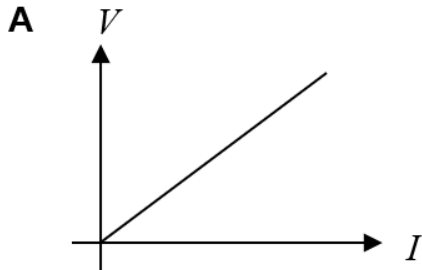
A loud sound indicates  
*Bunyi yang kuat menunjukkan*

- A a high speed  
*laju tinggi*
- B a large amplitude  
*amplitud besar*
- C a high frequency  
*frekuensi tinggi*
- D a large wavelength  
*panjang gelombang besar*



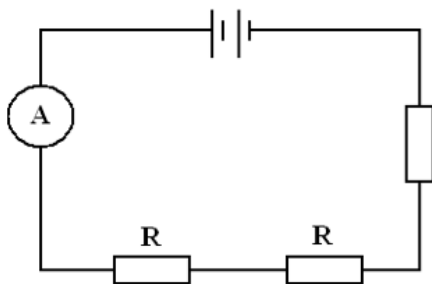
- 34 Which of the following graph shows the relationship between the potential difference,  $V$ , and the current,  $I$ , for a conductor that obeys Ohm's Law?

*Yang manakah antara graf berikut menunjukkan hubungan antara beza upaya,  $V$ , dengan arus,  $I$ , untuk konduktor yang mematuhi Hukum Ohm?*

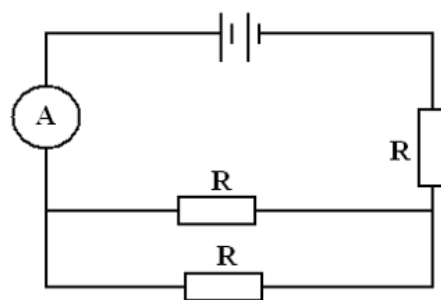


- 35 Which circuit produces the highest ammeter reading?  
*Litar manakah yang menghasilkan bacaan ammeter yang paling tinggi?*

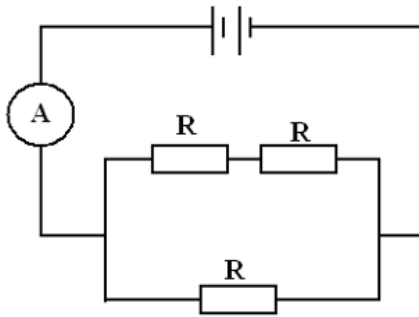
A.



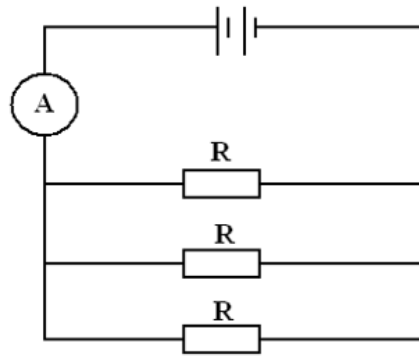
B.



C.



D.



- 36 Diagram 22 shows an electric circuit that contains three similar resistors.  
*Rajah 22 menunjukkan satu litar elektrik yang mengandungi tiga perintang yang serupa.*

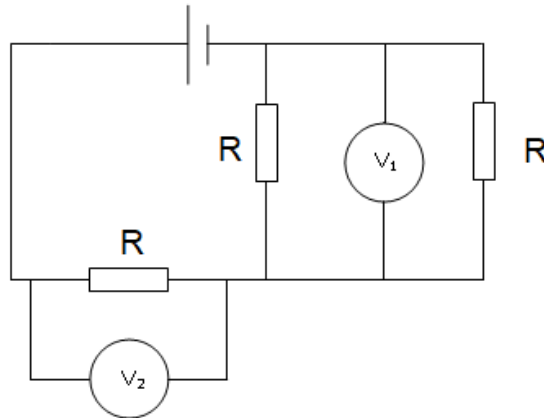


Diagram 22  
*Rajah 22*

Which of the following is **correct**?  
*Antara berikut manakah yang **betul**?*

- A**  $V_1 > V_2$
- B**  $V_1 < V_2$
- C**  $V_1 = V_2$

- 37 Diagram 23 shows an electric circuit.  
*Rajah 23 menunjukkan satu litar elektrik.*

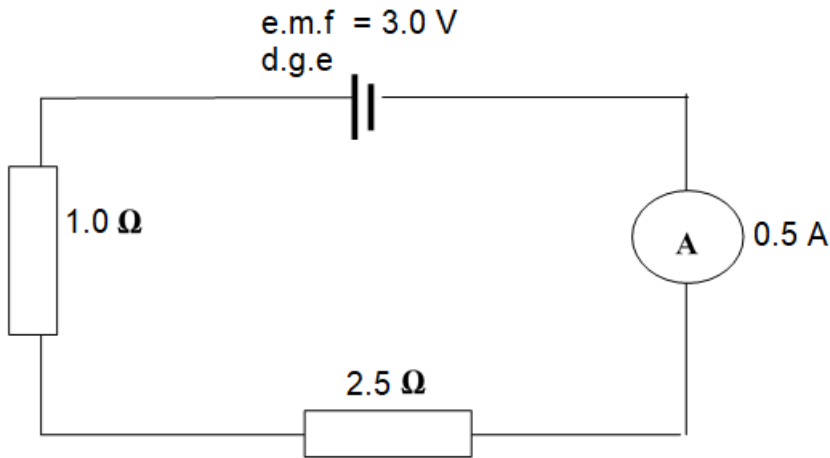


Diagram 23  
*Rajah 23*

Calculate the internal resistance of the battery in this circuit.  
*Hitung rintangan dalam bagi bateri dalam litar ini.*

- |          |       |          |       |
|----------|-------|----------|-------|
| <b>A</b> | 1.5 Ω | <b>C</b> | 3.0 Ω |
| <b>B</b> | 2.5 Ω | <b>D</b> | 3.5 Ω |
- 38 Diagram 24 shows a right hand which represents the Fleming's Right-Hand Rule.  
*Rajah 24 menunjukkan tangan kanan yang mewakili Petua Tangan Kanan Fleming.*

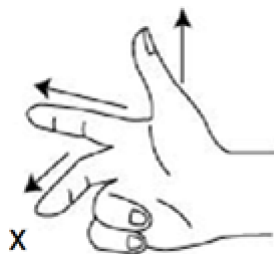


Diagram 24  
*Rajah 24*

X represent the  
X mewakili

- A Current  
Arus
- B Motion  
Gerakan
- C Magnetic field  
Medan magnet
- D Potential difference  
Beza keupayaan

- 39 Diagram 25 shows the setup of the apparatus to study the pattern of the magnetic field produced by the current in a straight conductor wire.

Rajah 25 menunjukkan susunan radas bagi mengkaji corak medan magnet yang dihasilkan oleh arus yang mengalir dalam satu dawai konduktor lurus.

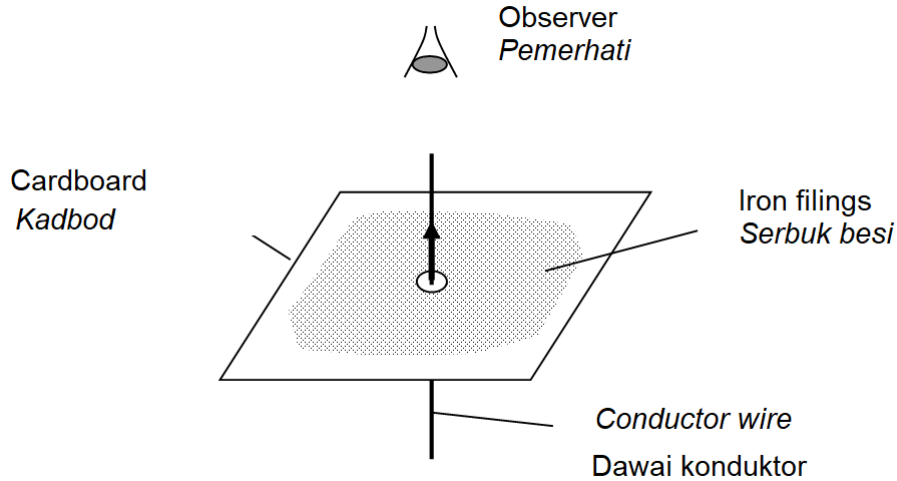
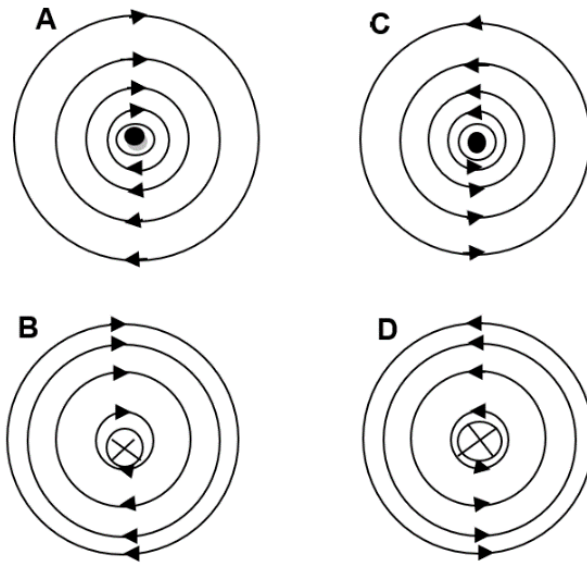


Diagram 25  
Rajah 25

Which diagram shows the correct pattern and direction of the magnetic field observed by the observer?

Rajah manakah menunjukkan corak serta arah yang betul bagi medan magnet yang diperhatikan oleh pemerhati itu?



- 40 Diagram 26 shows a bar magnet is moving towards a solenoid.  
*Rajah 26 menunjukkan satu magnet bar digerakkan mendekati gegelung.*

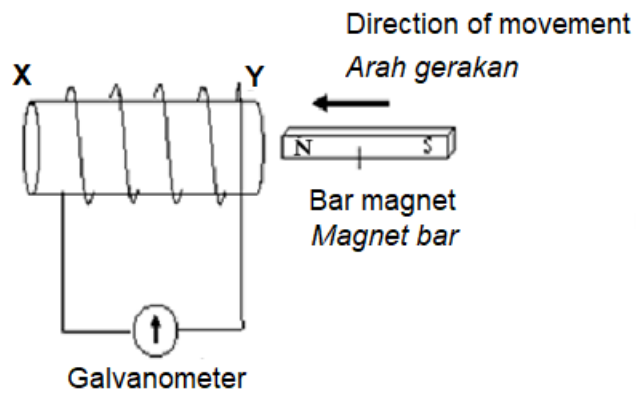


Diagram 26  
*Rajah 26*

What is the magnetic pole at both ends of the solenoid, X and Y?  
*Apakah kutub medan magnet pada kedua-dua hujung solenoid, X dan Y?*

- |          | X                       | Y                       |
|----------|-------------------------|-------------------------|
| <b>A</b> | South<br><i>Selatan</i> | South<br><i>Selatan</i> |
| <b>B</b> | South<br><i>Selatan</i> | North<br><i>Utara</i>   |
| <b>C</b> | North<br><i>Utara</i>   | North<br><i>Utara</i>   |
| <b>D</b> | North<br><i>Utara</i>   | South<br><i>Selatan</i> |

- 41 Diagram 27 shows a transformer that has efficiency of 80%.  
*Rajah 27 menunjukkan sebuah transformer yang mempunyai kecekapan 80%.*

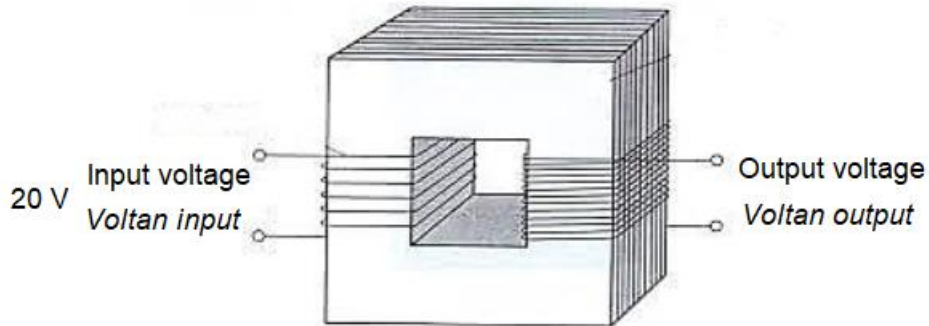


Diagram 27  
*Rajah 27*

If it produces an output power of 100 W, what is the amount of current flowing in the primary coil?  
*Jika ia menghasilkan kuasa output 100 W, berapakah arus yang mengalir dalam gegelung primer?*

- A 6.25 A
  - B 5.15 A
  - C 4.00 A
  - D 3.75 A
- 42 Diagram 28 below shows a system of the transmission of electricity.  
*Rajah 28 di bawah menunjukkan satu sistem bagi penghantaran elektrik.*

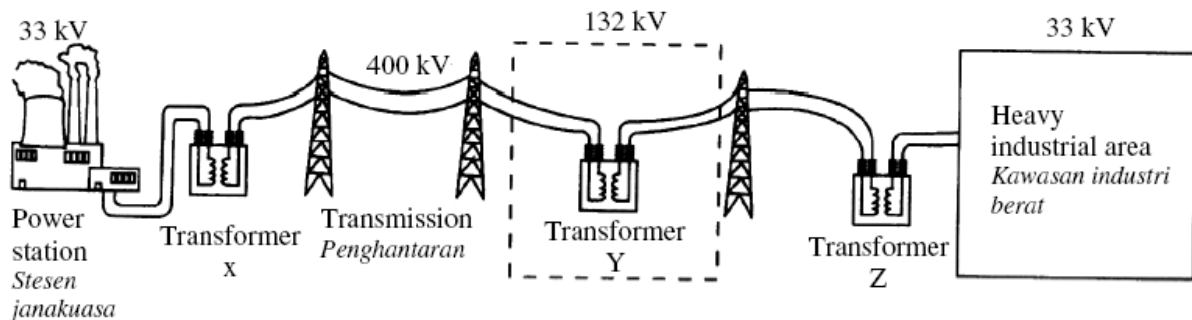


Diagram 28  
*Rajah 28*

Which arrangement of the transformers are correct?

*Susunan transformer manakah yang betul?*

	Transformer X	Transformer Y	Transformer Z
<b>A</b>	Step down <i>Injak turun</i>	Step down <i>Injak turun</i>	Step down <i>Injak turun</i>
<b>B</b>	Step up <i>Injak naik</i>	Step down <i>Injak turun</i>	Step up <i>Injak naik</i>
<b>C</b>	Step up <i>Injak naik</i>	Step down <i>Injak turun</i>	Step down <i>Injak turun</i>
<b>D</b>	Step down <i>Injak turun</i>	Step up <i>Injak naik</i>	Step up <i>Injak naik</i>

- 43** The rate of the thermionic emission increases when  
*Kadar pancaran termion bertambah apabila*
- A the melting point of the metal is lower  
*takat lebur logam lebih rendah*
  - B the temperature of the metal increases  
*suhu logam bertambah*
  - C surface area of the metal decreases  
*luas permukaan logam berkurang*
  - D the metal is connected to a low voltage power supply  
*logam itu disambungkan ke suatu bekalan kuasa bervoltan rendah*

- 44 Diagram 29 shows a symbol of an electronic component.  
*Rajah 29 menunjukkan simbol bagi komponen elektronik.*

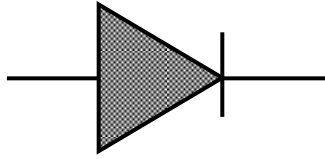
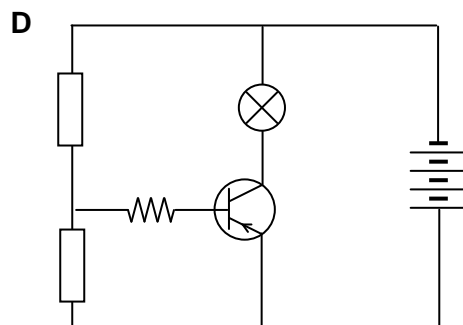
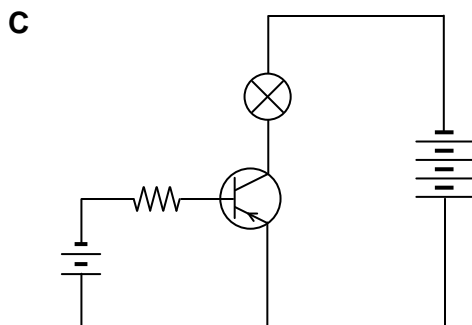
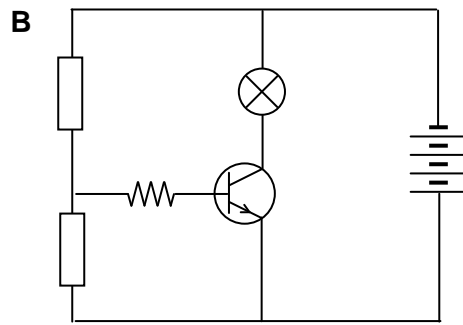
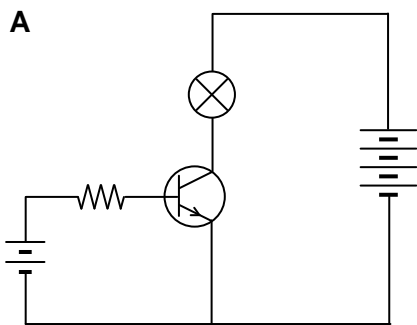


Diagram 29  
*Rajah 29*

What is the function of the electronic component shown in Diagram 29?  
*Apakah fungsi komponen elektronik yang ditunjukkan dalam Rajah 29?*

- A Acts as an automatic switch.  
*Bertindak sebagai suis automatik.*
  - B Store electric charge.  
*Menyimpan cas elektrik.*
  - C Allows the current to flow in one direction only.  
*Membenarkan arus mengalir dalam satu arah sahaja.*
  - D Switch off the circuit when excess current flow  
*Memutuskan litar bila arus berlebihan mengalir*
45. Which circuit will **not** light up the bulb?  
*Litar yang manakah **tidak** akan menyalakan mentol?*





46 Diagram 30.1 shows the combination of three logic gates.  
*Rajah 30.1 menunjukkan kombinasi tiga get logik.*

Diagram 30.2 shows the input signals P and Q.  
*Rajah 30.2 menunjukkan isyarat input P dan Q.*

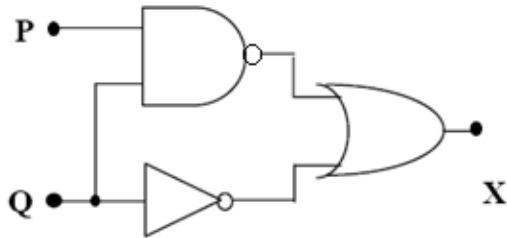


Diagram 30.1  
*Rajah 30.1*

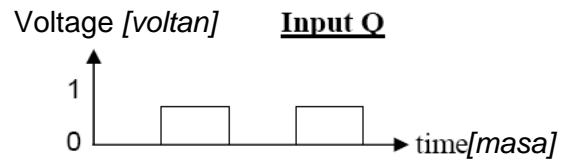
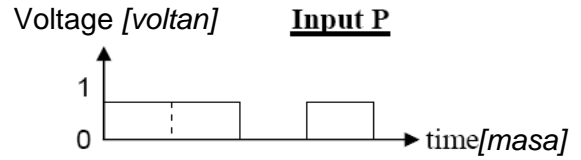
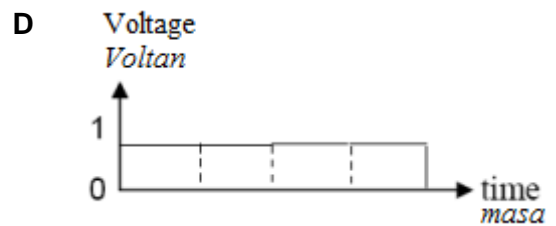
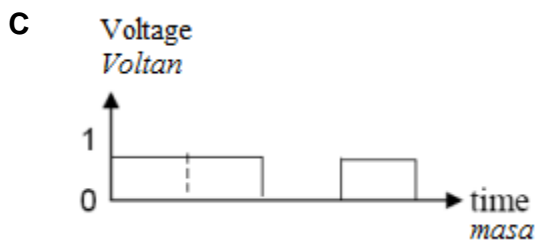
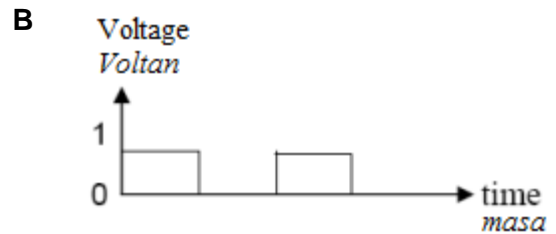
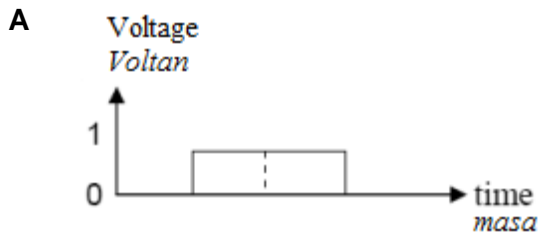


Diagram 30.2  
*Rajah 30.2*

Which of the following shows the output signal X?  
*Antara berikut yang manakah menunjukkan isyarat output X?*



47 Which of the following statement is a characteristic of beta radiation?  
*Antara pernyataan berikut yang manakah merupakan ciri bagi sinar beta?*

- A It has a positive charge  
*Zarah bercas positif*
- B It is an electromagnetic wave  
*Ianya adalah satu gelombang elektromagnet*
- C It has a higher ionizing power than alpha  
*Mempunyai kuasa pengionan lebih tinggi daripada alfa*
- D It has a lower penetrating power than gamma ray  
*Mempunyai kuasa menembusan lebih rendah daripada sinar gama.*

48 Diagram 31 shows three types of radioactive rays, P, Q and R, directed towards a sheet of paper, a sheet of aluminium and a sheet of lead.  
*Rajah 31 menunjukkan tiga jenis sinaran radioaktif, P, Q dan R, dihalakan kepada kepingan kertas, kepingan aluminium dan kepingan plumbum.*

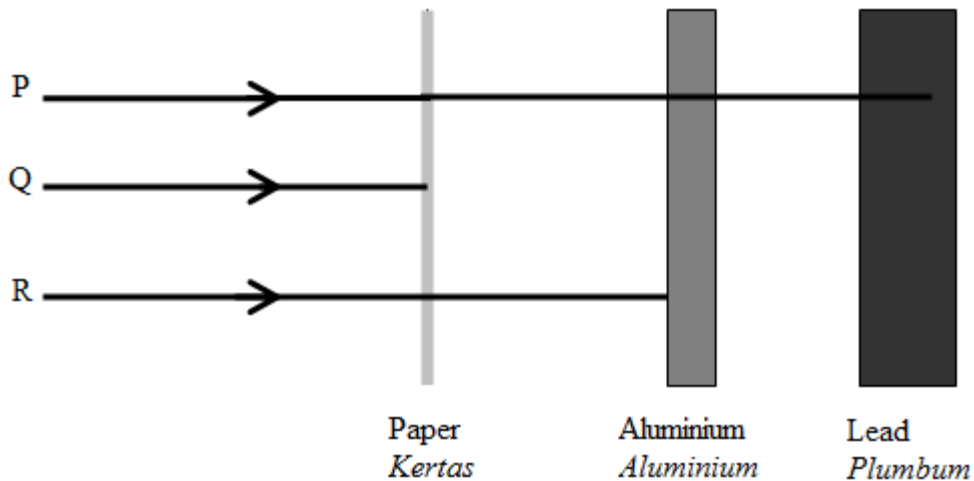


Diagram 31  
*Rajah 31*

Which of the following rays are represented by P, Q and R?  
*Antara sinaran berikut, yang manakah diwakili oleh P, Q dan R?*

	<u>P</u>	<u>Q</u>	<u>R</u>
<b>A</b>	Alpha <i>Alfa</i>	Gamma <i>Gama</i>	Beta <i>Beta</i>
<b>B</b>	Beta <i>Beta</i>	Alpha <i>Alfa</i>	Gamma <i>Gama</i>
<b>C</b>	Gamma <i>Gama</i>	Alpha <i>Alfa</i>	Beta <i>Beta</i>
<b>D</b>	Gamma <i>Gama</i>	Beta <i>Beta</i>	Alpha <i>Alfa</i>

- 49** Table 2 shows the half-life of four types of liquid isotopes which radiate gamma ray.

*Jadual 2 menunjukkan separuh hayat bagi empat jenis cecair isotop yang memancarkan sinar gama.*

Isotope <i>Isotop</i>	Half-life <i>Separuh hayat</i>
P	10 seconds <i>10 saat</i>
Q	2 hours <i>2 jam</i>
R	5 months <i>5 bulan</i>
S	10 years <i>10 tahun</i>

Table 2  
*Jadual 2*

Which liquid isotope is suitable to detect blood clotting?  
*Isotop cecair yang manakah sesuai digunakan untuk mengesan pembekuan darah?*

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

- 50 Diagram 32 shows a series of radioactive decays for the nucleus of uranium-238 to that of radium-226.  
*Rajah 32 menunjukkan siri pereputan radioaktif bagi nukles uranium-238 kepada nukleus radium-226.*

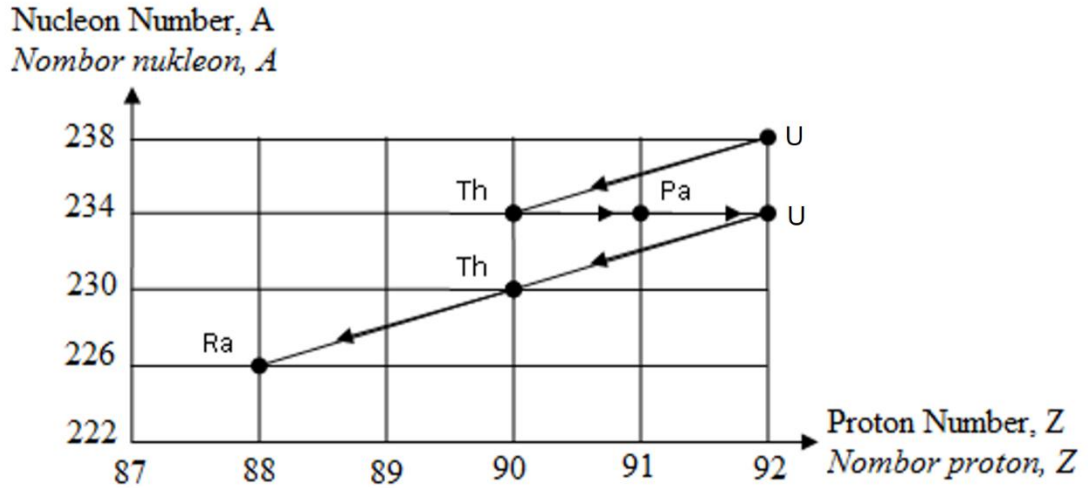


Diagram 32  
*Rajah 32*

What is the number of the alpha particles and beta particles emitted during this process?  
*Berapakah bilangan zarah alfa dan zarah beta yang dipancarkan dalam proses ini?*

	The number of alpha particles <i>Bilangan zarah alfa</i>	The number of beta particles <i>Bilangan zarah beta</i>
A	2	3
B	3	2
C	4	1
D	1	1

**END OF QUESTION PAPER**  
**KERTAS PEPERIKSAANTAMAT**