BAHAGIAN PENGURUSAN SEKOLAH BERASRAMA PENUH
DAN SEKOLAH KECEMERLANGAN
KEMENTERIAN PELAJARAN MALAYSIA

PENTAKSIRAN DIAGNOSTIK SBP
SIJIL PELAJARAN MALAYSIA 2012 4531/1

PHYSICS

Kertas 1
OGOS
2012
1 ¼ jam **Satu jam lima belas minit**

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.*

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consist of 50 questions.
   Kertas soalan ini mengandungi 50 soalan.

2. Answer all questions.
   Jawab semua soalan.

3. The diagrams in the questions provided are not drawn to scale unless stated.
   Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.

4. You may use non-programmable scientific calculator.
   Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.

Kertas ini mengandungi 32 halaman bercetak

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

1. $a = \frac{v - u}{t}$

2. $v^2 = u^2 + 2as$

3. $s = ut + \frac{1}{2} at^2$

4. momentum $= mv$

5. $F = ma$

6. Kinetic energy $= \frac{1}{2} mv^2$
Tenaga kinetik

7. Potential energy $= mgh$
Tenaga keupayaan

8. Elastic potential energy $= 1/2\ Fx$
Tenaga keupayaan kenyal

9. $\rho = \frac{m}{V}$

10. Pressure, $P = h\rho g$
Tekanan, P

11. Pressure, $P = \frac{F}{A}$
Tekanan, P $= \frac{F}{A}$

12. Heat, $Q = mc\Theta$

13. Heat, $Q = ml$

14 $\frac{PV}{T} = constant$

15 $E = mc^2$

16 $v = f\lambda$

17 Power, $P = \frac{\text{energy}}{\text{time}}$
Kuasa, P $= \frac{tenaga}{masa}$

18. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$

19. $\lambda = \frac{ax}{D}$

20. $n = \frac{\sin i}{\sin r}$

21. $n = \frac{real\ depth}{apparent\ depth}$

$n = \frac{dalam\ nyata}{dalam\ ketara}$

22. $Q = It$

23. $V = IR$

24. Power, $P = IV$
Kuasa,

25. $\frac{N_s}{N_p} = \frac{V_s}{V_p}$

26. Efficiency $= \frac{I_s V_s}{I_p V_p} \times 100\%$
Kecekapan

27. $g = 10\ m\ s^{-2}$

28. $c = 3 \times 10^8\ m\ s^{-1}$

1 Which of the following is a derived SI unit?
Yang manakah berikut adalah unit SI terbitan?

A Newton
Newton

B Kilogram
Kilogram

C Celcius
Celcius

D Second
Saat

2 Which of the following is a vector quantity?
Antara berikut yang manakah kuantiti vektor?

A Energy
Tenaga

B Electric current
Arus elektrik

C Momentum
Momentum

D Volume of gas
Isipadu gas

3 Diagram 1 shows the scale of a micrometer screw gauge.
Rajah 1 menunjukkan skala pada satu tolok skru mikrometer.

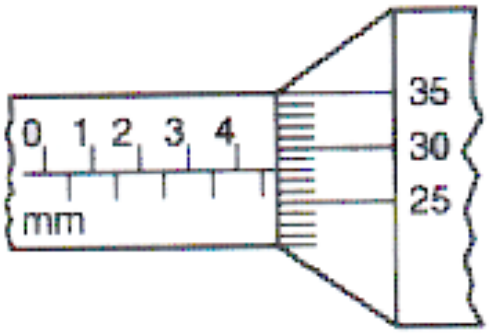


Diagram 1
Rajah 1

What is the reading of the micrometer?
Berapakah bacaan mikrometer itu?

A 4.28 mm

B 4.32 mm

C 4.78 mm

D 4.82 mm

4 Diagram 2 shows a tape chart of a moving object.
Rajah 2 menunjukkan sebuah carta pita bagi suatu objek yang bergerak.

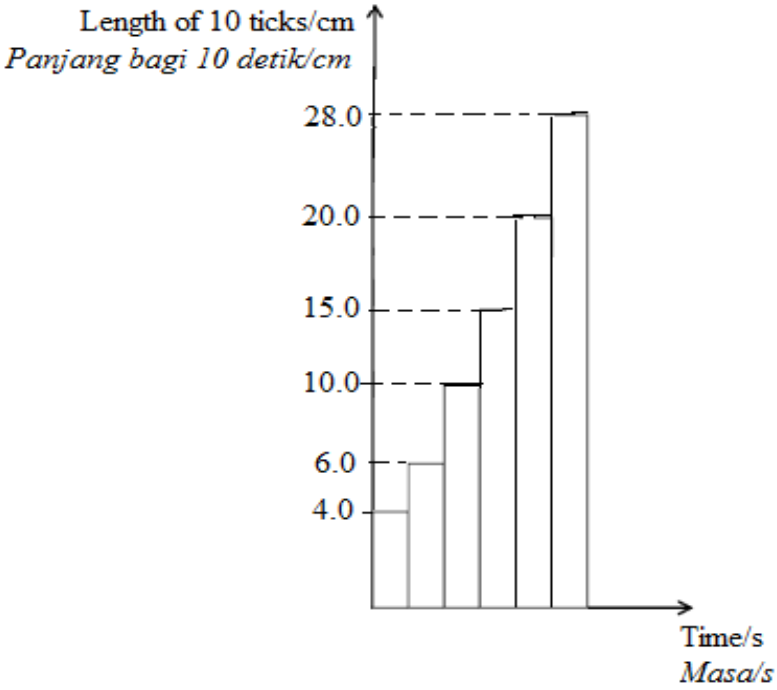


Diagram 2
Rajah 2

What is the acceleration of the object?
Berapakah pecutan bagi objek itu?

A 100 cm s^{-2} **B** 120 cm s^{-2}

C 1 000 cm s^{-2} **D** 1 200 cm s^{-2}

5 Diagram 3(a) shows an empty bottle rolling when a train started to move forward.
Diagram 3(b) shows the same empty bottle rolling in the opposite direction when the train stopped suddenly.
Rajah 3(a) menunjukkan sebiji botol kosong bergolek apabila keretapi mula bergerak kehadapan.
Rajah 3(b) menunjukkan keadaan botol kosong yang sama bergolek dalam arah bertentangan apabila keretapi itu berhenti secara tiba-tiba.

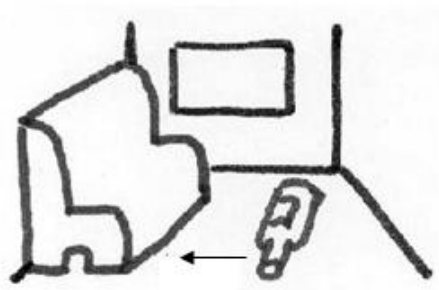


Diagram 3(a)
Rajah 3(a)

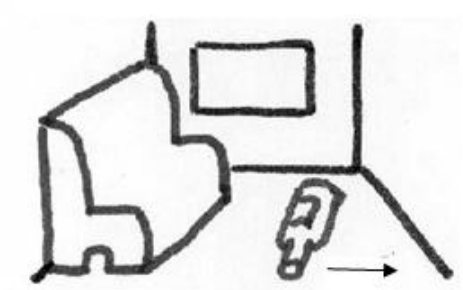


Diagram 3(b)
Rajah 3 (b)

This situation is due to
Situasi ini adalah disebabkan oleh

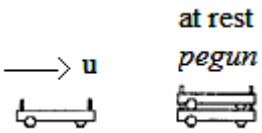
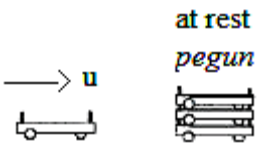
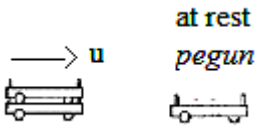
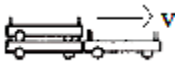
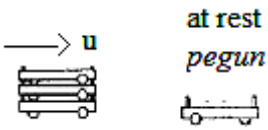
A Inertia
Inersia

B Impulse
Impuls

C Acceleration
Pecutan

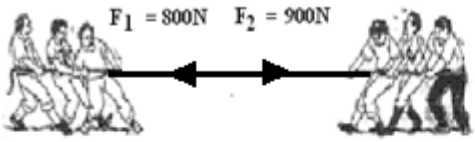
D Impulsive force
Daya impuls

6 Which of the following will produce the highest common velocity, *v*, after collision? The trolleys are identical and of the same initial velocity.
Yang manakah antara berikut akan menghasilkan halaju sepunya yang paling tinggi selepas perlanggaran? Trolo-troli adalah serupa dan mempunyai halaju awal yang serupa.

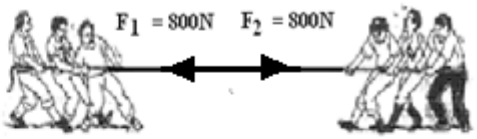
	Before collision *Sebelum perlanggaran*	After collision *Selepas perlanggaran*
A		
B		
C		
D		

7 Which situation produced zero net force?
Situasi yang manakah menghasilkan daya bersih sifar?

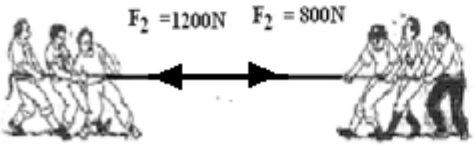
A



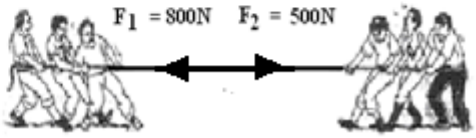
C



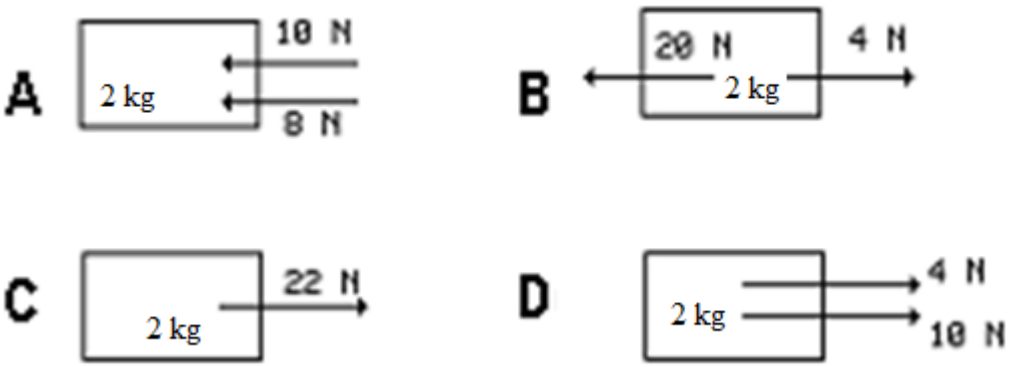
B



D



8 Which of the following produces the largest acceleration when forces are applied on a block?
Antara berikut yang manakah menghasilkan pecutan yang paling besar apabila daya-daya dikenakan ke atas sebuah blok?



9 Diagram 4 shows a ball is rolling down a smooth slope
Rajah 4 menunjukkan satu bola menuruni suatu cerun yang licin.

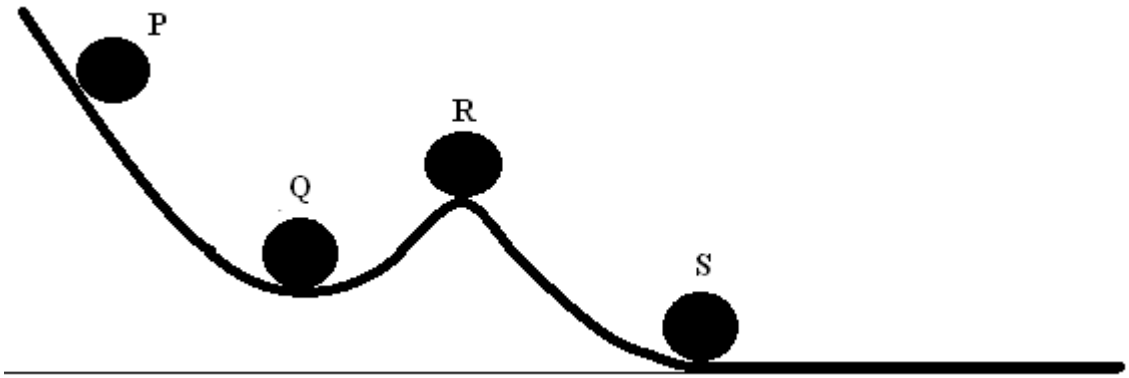


Diagram 4
Rajah 4

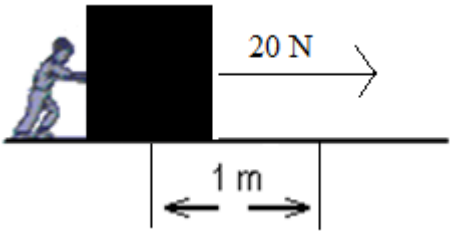
At which point P, Q, R or S the kinetic energy is the highest?
Pada tititk manakah P, Q, R *atau* S *tenaga kinetik adalah paling tinggi?*

A P **B** Q

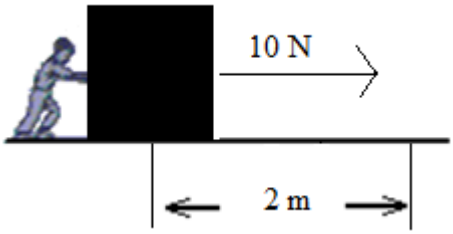
C R **D** S

10 A student is pushing an identical block on a smooth floor? Which diagram shows the student is doing the maximum work?
Seorang pelajar sedang menolak sebuah blok yang serupa di atas lantai yang licin. Rajah manakah menunjukkan pelajar melakukan kerja yang paling maksimum?

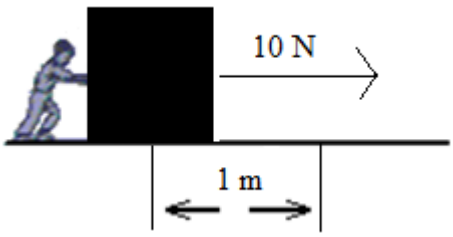
A



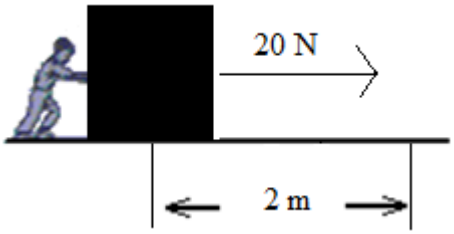
B



C



D



11 Diagram 5 shows a toy car is pushed to compress a spring that attached to a wall.
Rajah 5 menunjukkan sebuah kereta mainan ditolak ke belakang untuk memampatkan sebuah spring yang dilekatkan pada dinding.

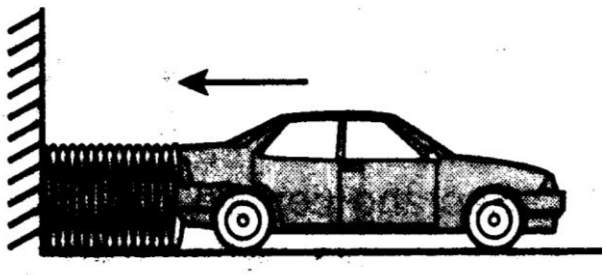


Diagram 5
Diagram 5

What is the transformation of energy when the toy car is released?
Apakah perubahan tenaga yang berlaku apabila kereta mainan itu dilepaskan?

A Kinetic energy to elastic potential energy
Tenaga kinetik kepada tenaga keupayaan kenyal

B Elastic potential energy to kinetic energy
Tenaga keupayaan kenyal kepada tenaga kinetik

C Gravitational potential energy to kinetic energy
Tenaga keupayaan graviti kepada tenaga kinetic

D Elastic potential energy to gravitational potential energy
Tenaga keupayaan kenyal kepada tenaga keupayaan graviti

12 Diagram 6 shows two types of shoes which has different size of soles.
Rajah 6 menunjukkan dua jenis kasut yang mempunyai saiz tapak yang berbeza.

Shoe P
Kasut P

Shoe Q
Kasut Q

Diagram 6
Rajah 6

Which shoe, P or Q sinks more into the soft ground when worn by the same lady?
Kasut yang manakah, P atau Q yang akan tenggelam lebih ke dalam tanah yang lembut apabila dipakai oleh wanita yang sama?

A P because less pressure on the ground
P kerana tekanan yang kurang ke atas tanah

B P because more pressure on the ground
P kerana tekanan yang lebih keatas tanah

C Q because less pressure on the ground
Q kerana tekanan yang kecil ke atas tanah

D Q because more pressure on the ground
Q kerana tekanan yang lebih ke atas tanah

13 Diagram 7 shows a fish in sea water at depth, *h*. The water pressure, *P* is acting on the fish.
Rajah 7 menunjukkan seekor ikan di dalam laut pada kedalaman, h. Tekanan air, P bertindak ke atas ikan itu.

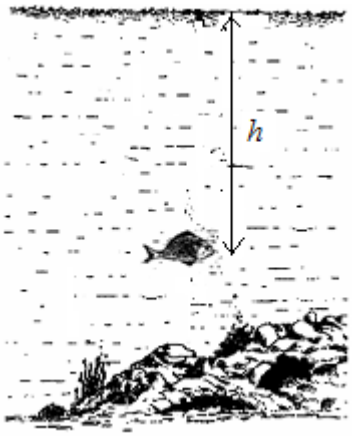
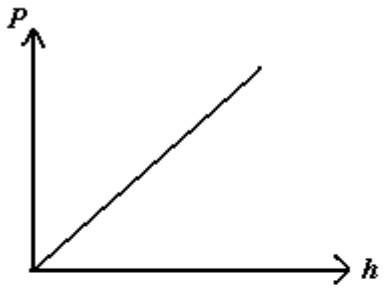


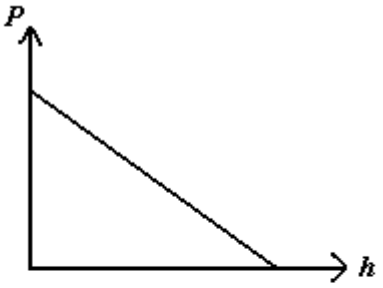
Diagram 7
Rajah 7

Which graph shows the correct relationship between *P* and *h*?
Graf yang manakah menunjukkan hubungan yang betul antara P dengan h?

A

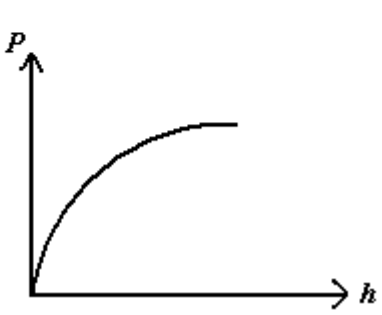


B



C

D



14 Diagram 8 shows a water tank that supplies water to a three storey building.
Rajah 8 menunjukkan sebuah tangki air yang membekalkan air ke sebuah bangunan tiga tingkat.

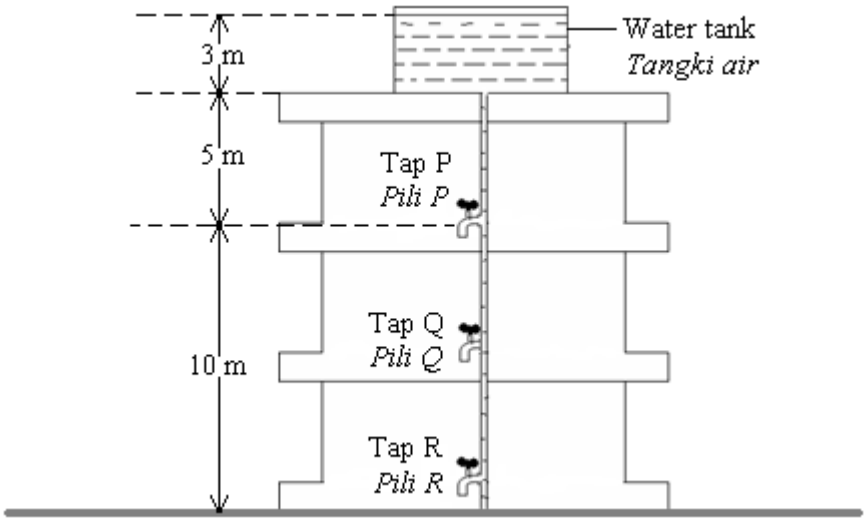


Diagram 8
Rajah 8

What is the total pressure at tap P?
(Density of water = 1000 kg m^{-3} , atmospheric pressure = 1.0 X 10^5 Pa)
Berapakah jumlah tekanan pada pili P?
(Ketumpatan air = 1000 kg m^{-3} , tekanan atmosfera = 1.0 X 10^5 Pa)

A 1.5 x 10^5 Pa

B 1.8 x 10^5 Pa

C 2.0 x 10^5 Pa

D 2.8 x 10^5 Pa

15 Diagram 9 shows a rubber sucker is attached to a wall to hang a toy.
Rajah 9 menunjukkan sebuah penyedut getah dilekatkan pada dinding untuk menggantungkan sebuah patung permainan.

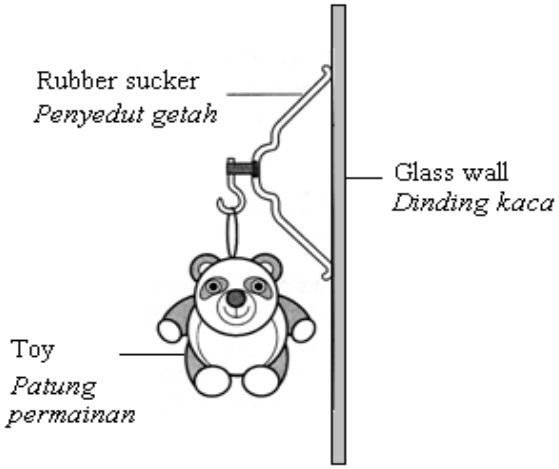


Diagram 9
Rajah 9

The rubber sucker sticks to the wall because
Penyedut getah melekat pada dinding kerana

A the atmospheric pressure is equal to the pressure inside the rubber sucker
tekanan atmosfera sama dengan tekanan di dalam penyedut getah

B the atmospheric pressure is less than the pressure inside the rubber sucker
tekanan atmosfera lebih rendah daripada tekanan di dalam penyedut getah

C the atmospheric pressure is more than the pressure inside the rubber sucker
tekanan atmosfera lebih tinggi daripada tekanan di dalam penyedut getah

16 Diagram 10 shows two identical test tubes, X and Y containing ball bearings P and Q which have the same size but of different densities. The upthrust, F_X and F_Y are exerted on the test tube X and Y respectively.
Rajah 10 menunjukkan dua tabung uji yang serupa, X dan Y yang mengandungi alas bebola P dan Q yang mempunyai saiz yang sama tetapi berbeza ketumpatan. Tujah ke atas, F_X dan F_Y bertindak ke atas tabung uji X dan Y masing-masing.

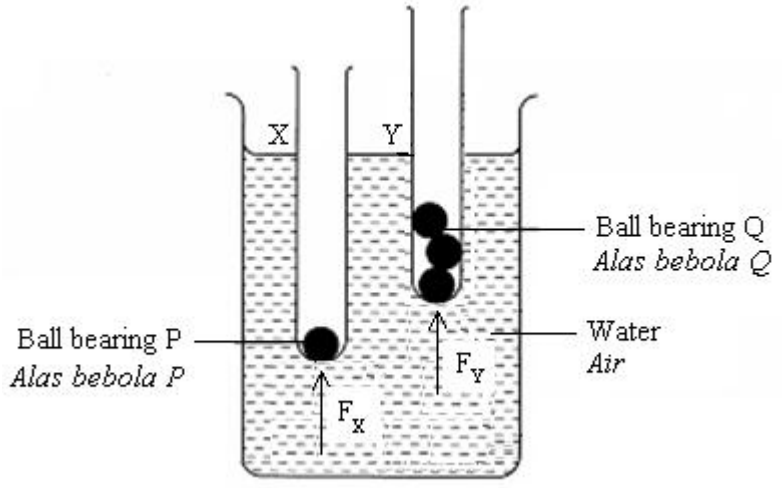


Diagram 10
Rajah 10

Which comparison of upthrust is correct?
Perbandingan tujah ke atas manakah yang betul?

A $F_X < F_Y$

B $F_X = F_Y$

C $F_X > F_Y$

17 Diagram 11 shows the roof of a house being lifted during a storm.
Rajah 11 menunjukkan bumbung sebuah rumah terangkat semasa ribut taufan.

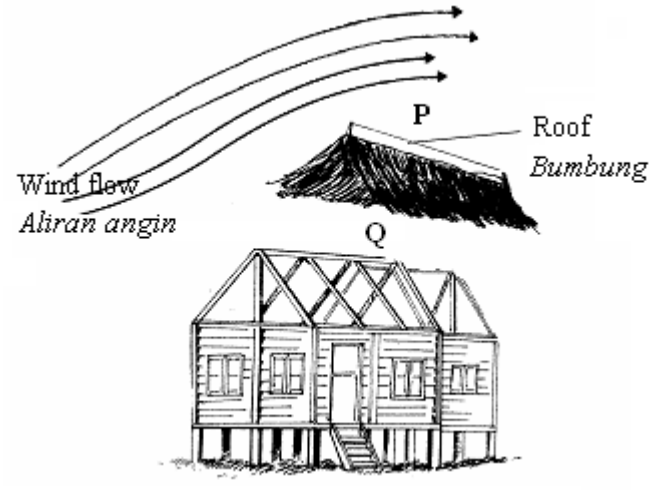


Diagram 11
Rajah 11

Which statement is correct to explain the phenomenon?
Pernyataan manakah yang betul untuk menerangkan fenomena itu?

A Speed of air at Q is lower, causing lower air pressure
Laju udara di Q lebih rendah, menyebabkan tekanannya udara lebih rendah

B Speed of air at Q is higher, causing higher air pressure
Laju udara di Q lebih tinggi, menyebabkan tekanan udara lebih tinggi

C Speed of air at P is higher, causing lower air pressure
Laju udara di P lebih tinggi, menyebabkan tekanan udara lebih rendah

D Speed of air at P is lower, causing lower air pressure
Laju udara di P lebih rendah, menyebabkan tekanan udara lebih rendah

18 Diagram 12 shows a brake system of a car.
Rajah 12 menunjukkan system brek sebuah kereta.

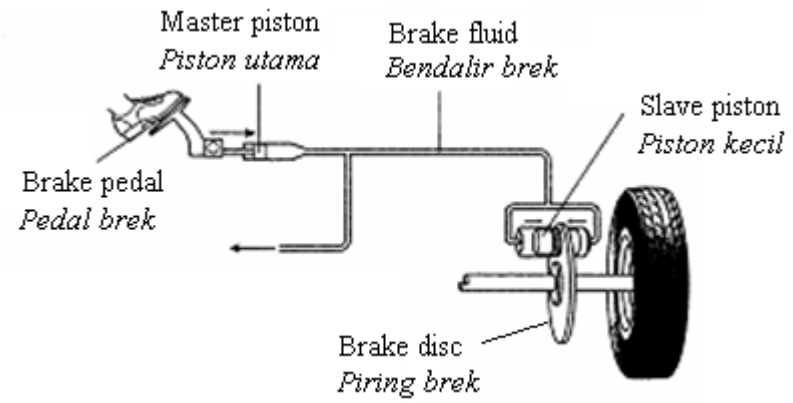


Diagram 12

Rajah 12

Which principle is used in this system?
Prinsip yang manakah digunakan dalam sistem ini?

A Pascal's Principle
Prinsip Pascal

B Bernoulli's Principle
Prinsip Bernoulli

C Archimedes' Principle
Prinsip Archimedes

D Principle of conservation of momentum
Prinsip keabadian momentum

19 Diagram 13 shows an oven is used to bake a cake.
After 40 minutes, the cake reaches thermal equilibrium.
Rajah 13 menunjukkan sebuah ketuhar yang digunakan untuk memasak kek.
Selepas 40 minit, kek itu mencapai keseimbangan termal.

Diagram 13
Rajah 13

When is thermal equilibrium reached?
Bilakah keseimbangan terma dicapai?

A When the oven has reached its maximum temperature.
Bila ketuhar telah mencapai suhu maksimum.

B When all the heat from the oven has transferred to the cake.
Bila semua haba dari ketuhar telah dipindahkan kepada kek.

C When the temperature of the cake is equal to the temperature of the oven.
Bila suhu kek sama dengan suhu ketuhar.

D When the net rate of heat transfer between the cake and the oven is equal.
Bila kadar pemindahan haba bersih antara kek dan ketuhar adalah sama.

20 Diagram 14 shows the air current of land breeze.
Rajah 14 menunjukkan aliran udara dalam bayu laut.

Diagram 14
Rajah 14

This phenomenon is due to
Fenomena ini disebabkan

A sea is as warm as land
laut sama panas dengan daratan

B sea is warmer than land
laut lebih panas daripada daratan

C land is warmer than sea
daratan lebih panas daripada laut

21 Diagrams 15 shows three beakers P,Q and R contain 100 g of water , 200 g of water and 100 g of ethanol respectively at the same initial temperature. The heat is supplied at the same rate. After 5 minutes the temperature of liquid in beakers P,Q, and R are recorded.
Rajah 15 menunjukkan tiga bikar P,Q dan R yang berisi 100 g air, 200 g air dan 100 g etanol masing-masing pada suhu awal yang sama. Haba dibekalkan pada kadar yang sama. Selepas 5 minit suhu cecair dalam bikar P,Q, dan R di rekodkan.

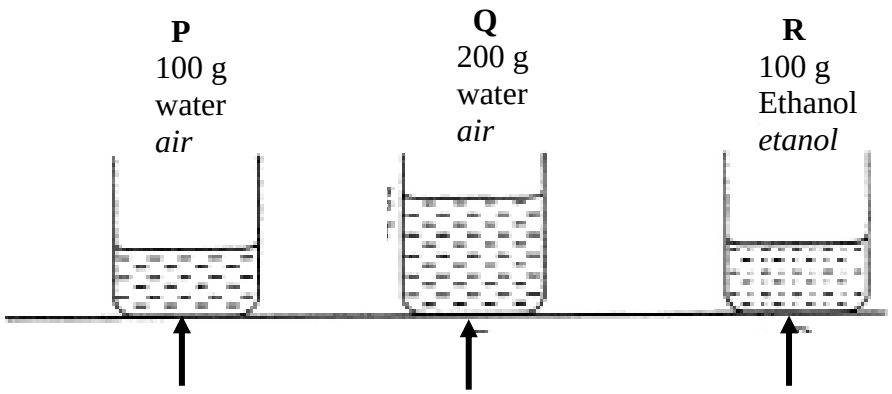


Diagram 15
Rajah 15

Which comparison is correct about the temperature of liquid in beaker P,Q, and R, if the specific heat of water is greater than the specific heat of ethanol?.
Perbandingan yang manakah betul tentang suhu bagi cecair di dalam bikar P,Q, dan R, jika muatan haba tentu air lebih besar dari muatan haba tentu ethanol?

A $\theta_P > \theta_Q > \theta_R$

B $\theta_Q > \theta_P > \theta_R$

C $\theta_R > \theta_P > \theta_Q$

22 Diagram 16 shows a cylinder containing gas. The piston is held fixed and the cylinder is heated.
Rajah 16 menunjukkan sebuah bekas silinder yang mengandungi gas. Kedudukan piston ditetapkan dan bekas silinder itu dipanaskan.

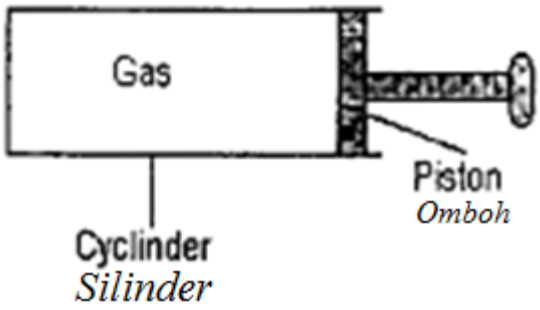


Diagram 16
Rajah 16

Why does the pressure of the gas in the cylinder increase?
Mengapakah tekanan gas di dalam bekas silinder meningkat

A The molecules gas expand
Molekul gas mengembang

B The number of molecules of gas increases
Bilangan molekul gas bertambah

C The molecules move faster and hit the walls more often
Molekul gas bergerak dengan laju dan menghentam dinding bekas dengan lebih kerap

D The molecules move at the same speed, but hit the walls more often
Molekul gas bergerak dengan kelajuan yang sama tetapi menghentam dinding bekas dengan kerap

23 Diagram 17 shows a capillary tube containing some trapped air inside it. At 27° C , the vertical column of trapped air is 10 cm.
Rajah 17 menunjukkan satu tiub kapilari mengandungi udara terperangkap. Pada suhu 27^0 C, panjang turus udara terperangkap itu adalah 10 cm.

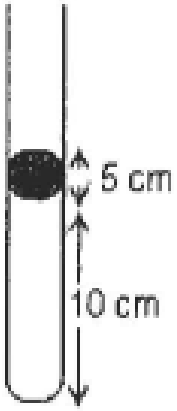


Diagram 17
Rajah 17

The capillary tube is heated until the vertical column of trapped air expands to 10.9 cm. What is the final temperature of the trapped air?
Tiub kapilari itu dipanaskan sehingga turus udara udara yang terperangkap mengembang kepada 10.9 cm. Berapakah suhu akhir bagi turus udara terperangkap itu?

A 42°C **B** 48°C

C 54°C **D** 57°C

24 Diagram 18 shows student A and student B standing in front of a plane mirror at a distance of 2 m and 5 m respectively.
Rajah 18 menunjukkan pelajar A *dan pelajar* B *berdiri di hadapan sebuah cermin satah pada jarak* 2 m *dan* 5 m *masing-masing.*

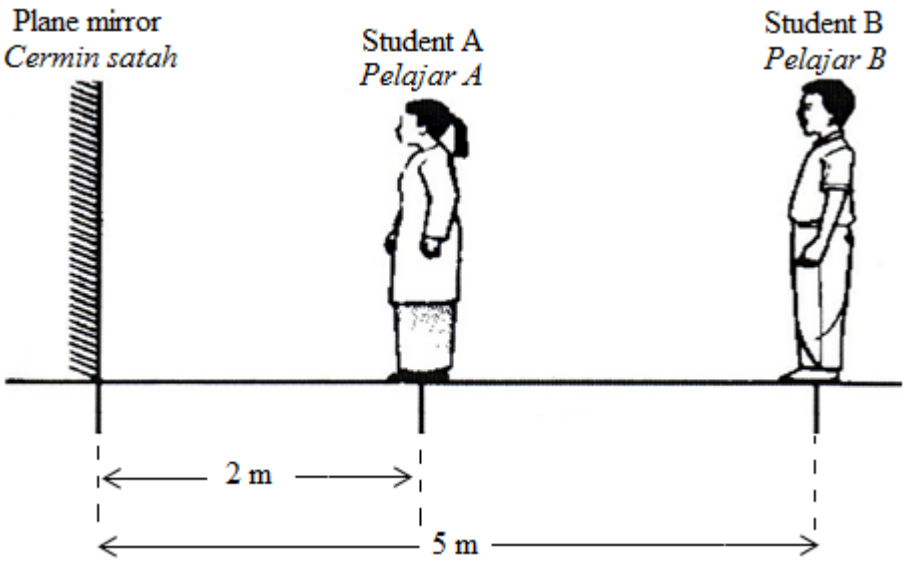


Diagram 18
Rajah 18

What is the distance between student B to the image of student A?
Berapakah jarak antara pelajar B ke imej pelajar A?

A 3 m **B** 4 m

C 7 m **D** 10 m

25 Diagram 19(a) shows a ray of light propagates from medium Q to medium P .
Diagram 19(b) shows a ray of light propagates from medium R to medium P .
Rajah 19(a) menunjukkan sinar cahaya merambat dari medium Q ke medium P .
Rajah 19(b) menunjukkan sinar cahaya merambat dari medium R ke medium P.

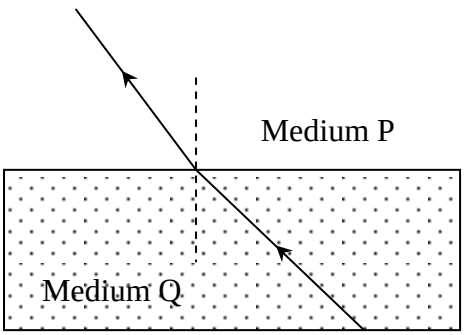


Diagram 19(a)
Rajah 19(a)

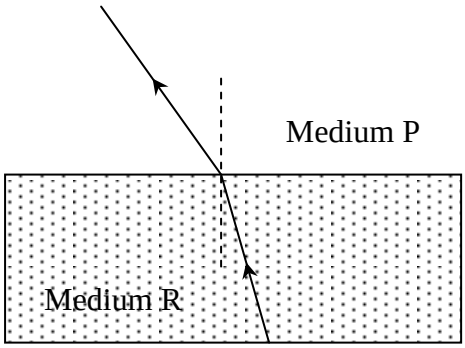


Diagram 19(b)
Rajah 19(b)

Arrange the optical density of the mediums, in ascending order.
Susunkan ketumpatan optik bagi medium-medium, mengikut tertib menaik.

A P , Q , R **B** Q , R , P

C Q , P , R **D** R , P , Q

26 Diagram 20 shows a light ray passing through a glass prism.
Rajah 20 menunjukkan cahaya bergerak melalui satu prisma kaca.

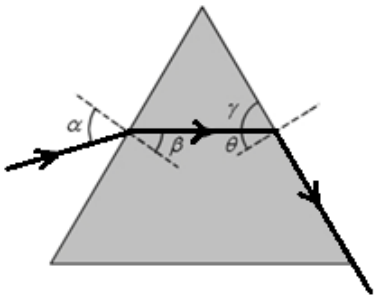


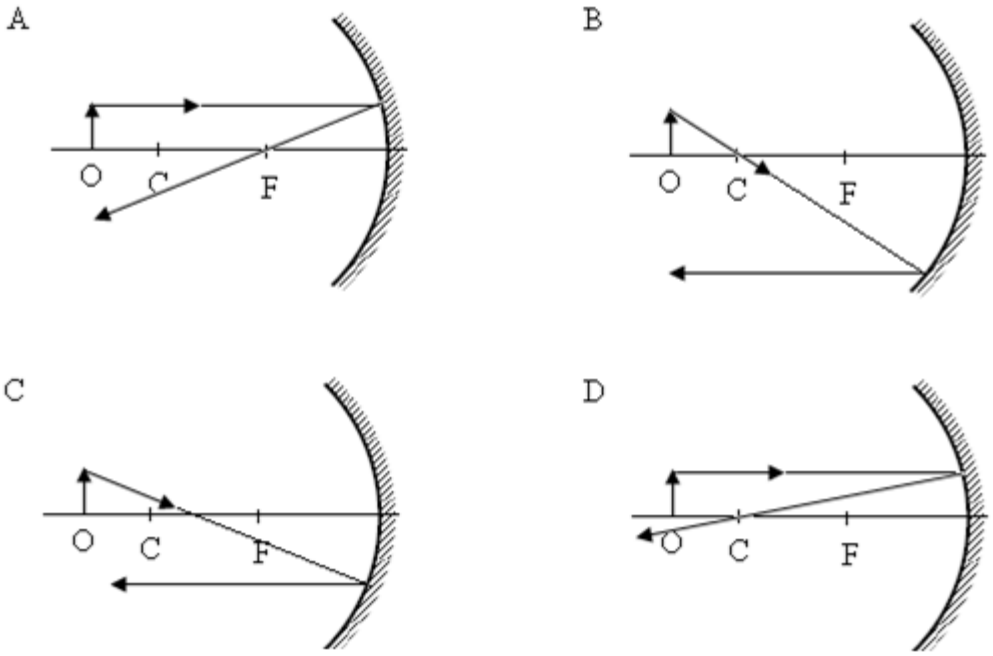
Diagram 20
Rajah 20

Which angle is known as the critical angle of the prism?
Sudut manakah dinamakan sebagai sudut genting prisma itu?

A α **B** β

C γ **D** θ

27 Which ray diagram shows the correct reflection of light by a concave mirror?
Rajah sinar yang manakah menunjukkan pantulan cahaya yang betul oleh sebuah cermin cekung?



28 Diagram 21 shows the arrangement of two convex lenses P and Q of an astronomical telescope at normal adjustment. The power of lens P is 5 D and lens Q is 25 D.
Rajah 21 menunjukkan susunan dua buah kanta cembung P dan Q pada pelarasan normal dalam sebuah teleskop astronomi. Kuasa kanta P ialah 5 D dan kanta Q ialah 25 D.]

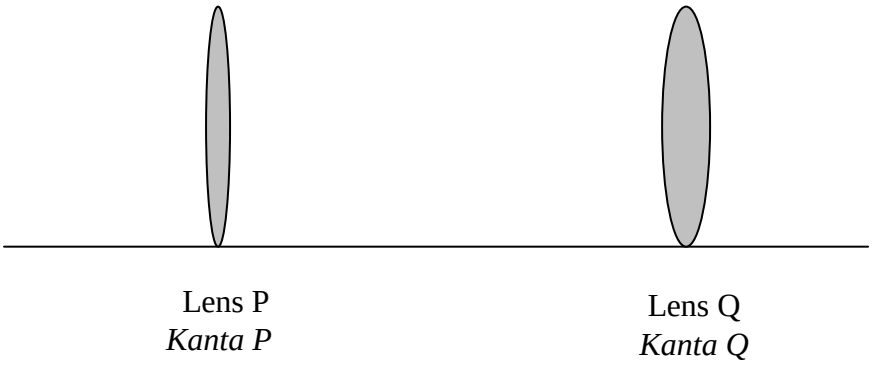


Diagram 21
Rajah 21

Calculate the distance between lenses P and Q.
Hitungkan jarak antara dua kanta P dan Q itu.

A 5 cm **B** 20 cm

C 24 cm **D** 30 cm

29 Diagram 22 shows a sound wave is reflected by a barrier. Which statement is true about the reflected wave?
Rajah 22 *menunjukkan satu gelombang bunyi dipantulkan oleh satu penghalang. Pernyataan yang manakah betul berkenaan gelombang terpantul itu?*

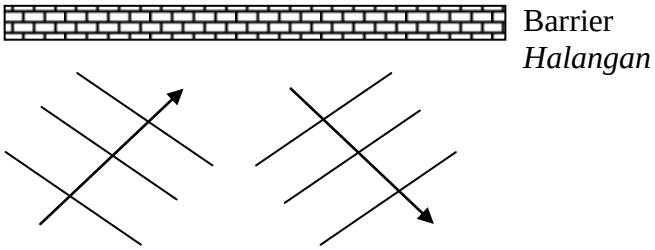


Diagram22
Rajah 22

The reflected wave has

A a smaller velocity
halaju yang lebih kecil

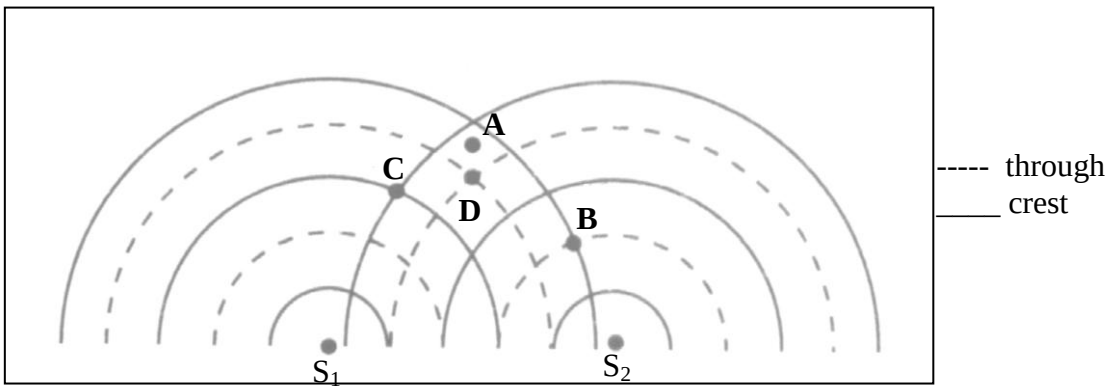
B the same frequency
frekuensi yang sama

C a bigger amplitude
amplitud yang lebih besar

D a shorter wavelength
jarak gelombang yang lebih pendek

30 Diagram 23 shows the interference pattern of water waves from two coherent sources S_1 and S_2 in a ripple tank.
Rajah 23 *menunjukkan corak interferen gelombang air dari dua sumber koheren* S_1 *dan* S_2 *dalam sebuah tangki riak.*

Which point has zero amplitude?
Titik yang manakah mempunyai amplitud sifar?



Rajah 23
Rajah 23

31 Diagram 24 shows a graph of wave motion.
Rajah 24 menunjukkan satu graf perambatan gelombang.

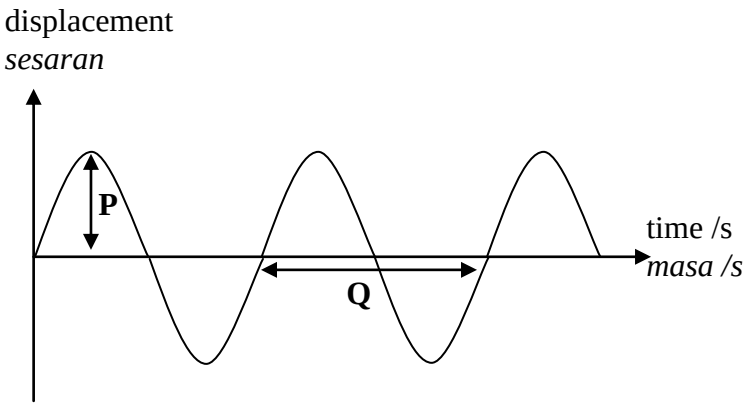
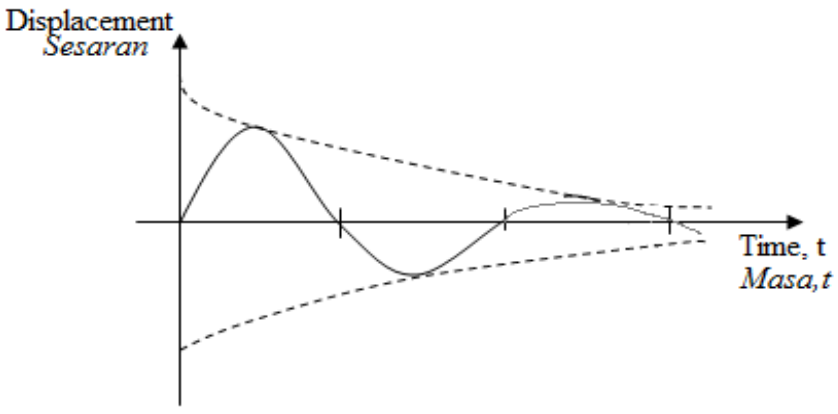


Diagram 24
Rajah 24

What quantities are shown by P and Q?
Apakah kuantiti yang ditunjukkan oleh P *dan* Q*?*

	P	Q
A	amplitude *amplitud*	period *tempoh*
B	amplitude *amplitud*	wavelength *jarak gelombang*
C	wavelength *jarak gelombang*	period *tempoh*
D	wavelength *jarak gelombang*	frequency *frekuensi*

32 Diagram 25 shows a graph of an oscillation system experiences damping.
Rajah 25 menunjukkan satu graf suatu sistem ayunan yang mengalami pelembapan.



Rajah 25
Rajah 25

Which of the following quantity does not change?
Yang mana di antara berikut tidak berubah?

A Size of oscillation
Saiz ayunan

B Period of oscillation
Tempoh ayunan

C Energy of oscillation
Tenaga ayunan

D Amplitude of oscillation
Amplitud ayunan

33 Diagram 26 shows radio waves being received at a house at the bottom of a hill.
Rajah 26 *menunjukkan gelombang radio sedang diterima oleh sebuah rumah di kaki bukit.*

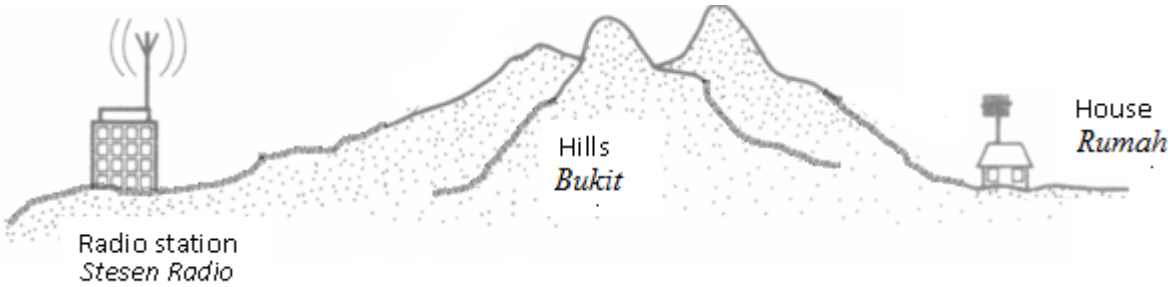


Diagram 26
Rajah 26

This phenomenon is due to
Fenomena ini disebabkan oleh

A reflection
pantulan

B refraction
pembiasan

C diffraction
pembelauan

D interference
interferens

34 Which of the following factors affecting the pitch of a sound?
Faktor yang manakah berikut mempengaruhi kelangsingan bunyi?

A Amplitude
Amplitud

B Frequency
Frekuensi

C Speed
Kelajuan

D Distance
Jarak

35 Diagram 27 shows a circuit that consist of 3 bulbs P, Q and R. Which of the following is true about the brightness of the lamps, when the rheostat is changed?
(Neglect internal resistance of the cell)
Rajah menunjukkan satu litar yang mempunyai 3 mentol P, Q dan R. Di antara berikut, yang manakah benar tentang kecerahan mentol apabila nilai rintangan reostat itu diubah?

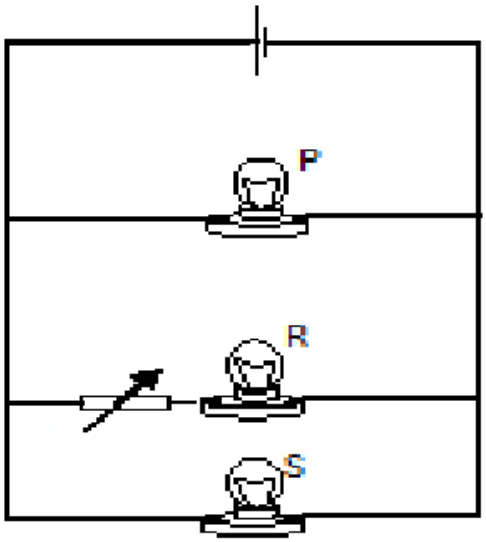


Diagram 27
Diagram 27

	Brightness Unchanged *Kecerahan tidak berubah*	Brightness Changed *Kecerahan berubah*
A	P only P *sahaja*	R and S R *and* S
B	P and R P dan R	S only S *sahaja*
C	P and S P *dan* S	R only R *sahaja*
D	S only S *sahaja*	P, R and S P, R *dan* S

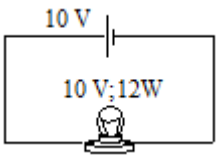
36 The unit for potential difference, V can also be written as…
Unit bagi beza keupayaan, V juga boleh ditulis sebagai…

A $Q\ s^{-1}$ **B** $\Omega\ m$

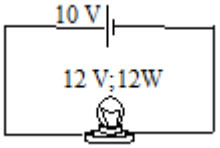
C $J\ A^{-1}$ **D** $J\ C^{-1}$

37 In the following circuits, which lamp lights up with normal brightness?
Dalam litar-litar berikut, lampu yang manakah menyala dengan kecerahan biasa?

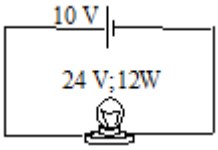
A



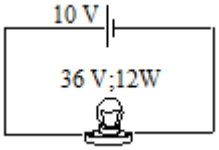
B



C



D



38 Diagram 28 shows a squirrel perched on a high voltage cable.
Gambarajah 28 menunjukkan seekor tupai bertenggek pada kabel bervoltan tinggi.

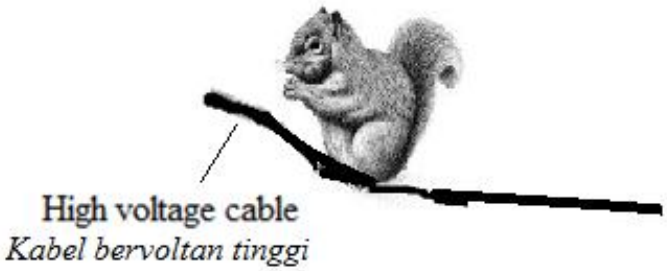


Diagram 28
Rajah 28

The squirrel does not experience an electric shock because
Tupai itu tidak mengalami renjatan elektrik kerana

A the potential difference across X and Y is high
beza keupayaan merentasi X dan Y tinggi

B the resistance of the cable across X and Y is very high
rintangan kabel antara X dan Y sangat tinggi

C the body of the bird has a low resistance
badan burung mempunyai rintangan yang kecil

D the current flowing through its body is very small.
arus yang mengalir melalui badan burung sangat kecil

39 Diagram 29 shows a bar magnet is moving towards a solenoid.
Rajah 29 menunjukkan satu magnet bar digerakkan mendekati gegelung.

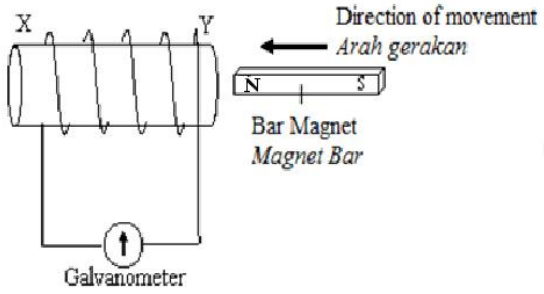


Diagram 29
Rajah 29

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

	X	Y
A	South *Selatan*	South *Selatan*
B	South *Selatan*	North *Utara*
C	North *Utara*	North *Utara*
D	North *Utara*	South *Selatan*

40 Diagram 30 shows two coils are wounded on an iron ring. When the switch is closed, what will happen to the bulb connected to the secondary coil?
Rajah 30 menunjukkan dua gegelung dililitkan pada satu gelang besi. Apabila suis dipasang, apakah yang berlaku kepada mentol yang disambung kepada gegelung sekunder?

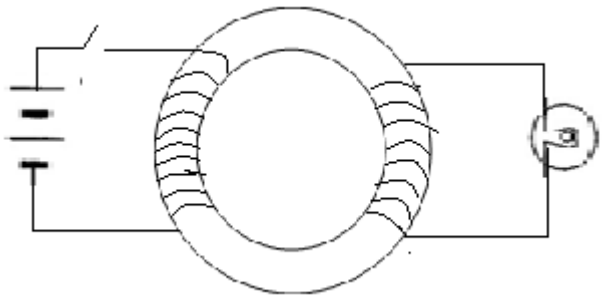


Diagram 30
Rajah 30

A Lighted up with increasing brightness.
Menyala dengan kecerahan yang semakin meningkat

B Flashed at a constant frequency
Berkelip pada frekuensi yang tetap

C Flashed only ones
Berkelip hanya sekali

D Not lighted up
Tidak menyala.

41 Diagram 31 shows the number of turns between each pair of output terminals of a transformer. Between which pair of output terminals, the output voltage is 12 V?
Gambarajah 31 menunjukkan bilangan lilitan pada pasangan terminal output suatu transformer. Pasangan terminal output yang manakah, voltan output adalah 12 V?

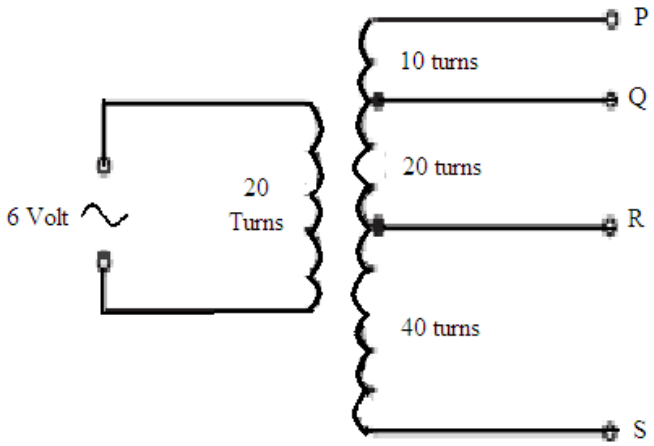


Diagram 31
Diagram 31

A R and S **B** P and Q

C Q and R **D** P and R

42 Which of the following can be used to determine the direction of magnetic field produced by a current-carrying conductor?
Antara berikut yang manakah boleh digunakan untuk menentukan arah medan magnet bagi suatu konduktor yang mengalirkan arus?

A Lenz's law
Hukum Lenz

B Faraday's law
Hukum Faraday

C Fleming's Left-hand rule
Peraturan Tangan Kiri Fleming

D Right-hand Grip rule
Peraturan Gengaman Tangan Kanan

43 Diagram 32 shows an electric dynamo. Which graph describe the variation of the current displayed on the CRO screen.
Rajah 32 menunjukkan satu dinamo elektrik. Graf yang manakah menunjukkan variasi arus yang dipaparkan pada skrin OSK.

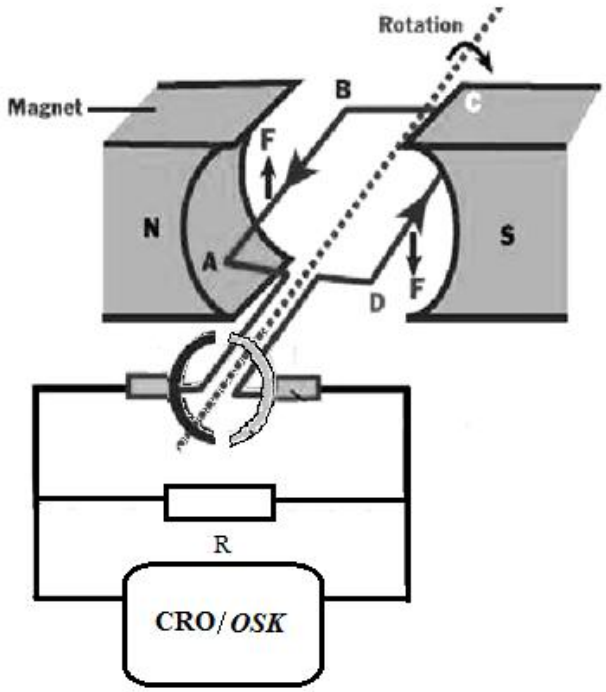
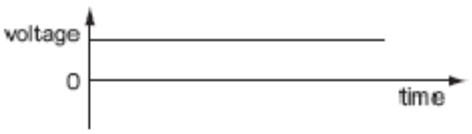
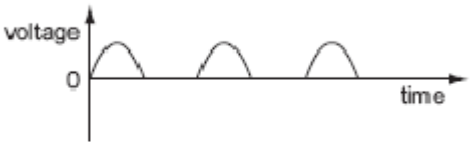
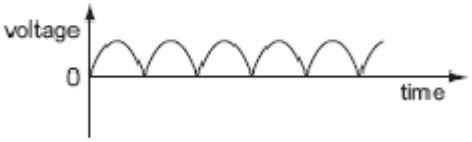
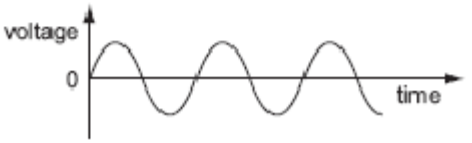


Diagram 32
Rajah 32

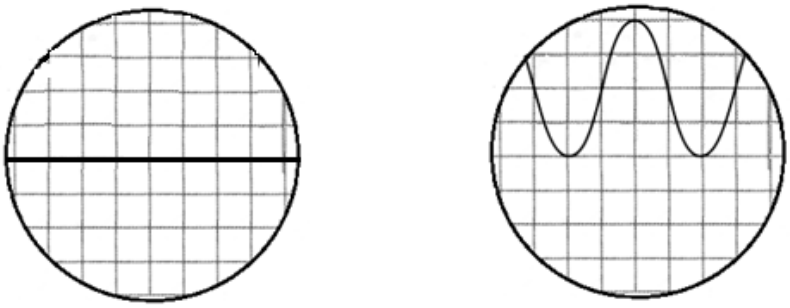
A.


B.


C.


D.


44 Diagram 33 shows the output waveform on cathode ray oscilloscope (CRO) screen.
Rajah 33 menunjukkan bentuk gelombang output pada skrin osiloskop sinar katod (OSK)



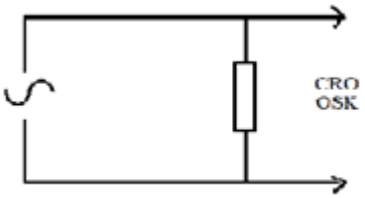
When switch is off
Apabila suis dimatikan

When switch is on
Apabila suis dihidupkan

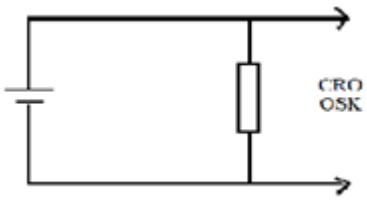
Diagram 33
Rajah 33

Which circuit will display the output waveform shown in Diagram 33?
Litar yang manakah akan mempamerkan bentuk gelombang output Rajah 33?

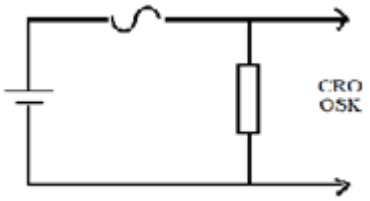
A



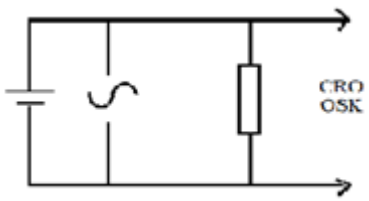
B



C

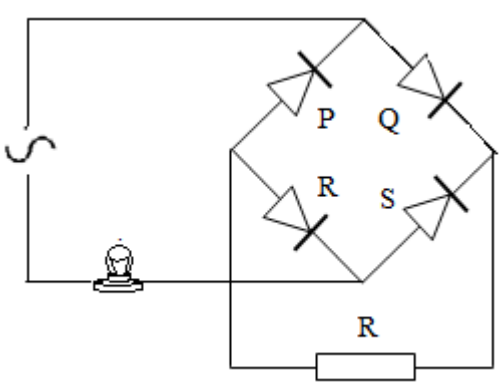


D

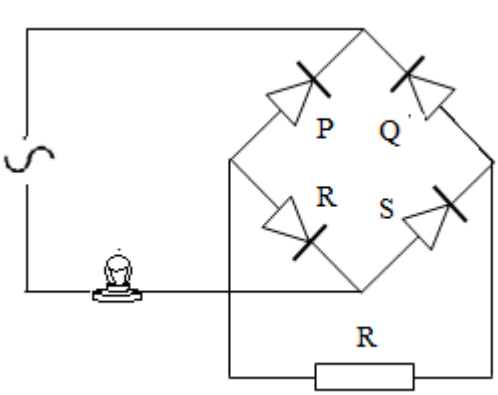


45 The following circuit diagrams show four diodes connected to an ac power supply. Which circuit will make the bulb lights up with maximum brightness?
Rajah litar berikut menunjukkan empat diod yang disambung kepada bekalan kuasa au. Litar yang manakah akan menyebabkan mentol menyala dengan kecerahan yang maksimum?

A



B



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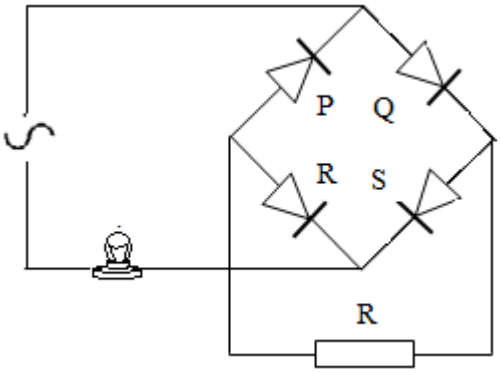
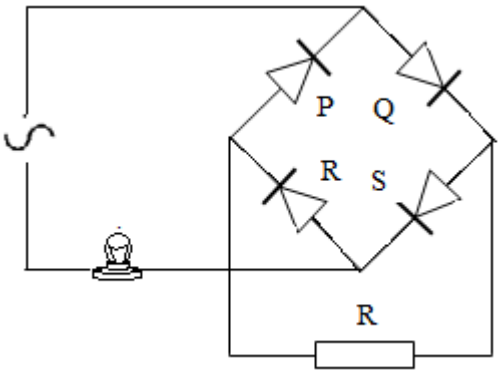
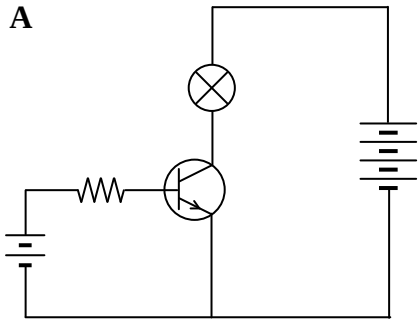


D

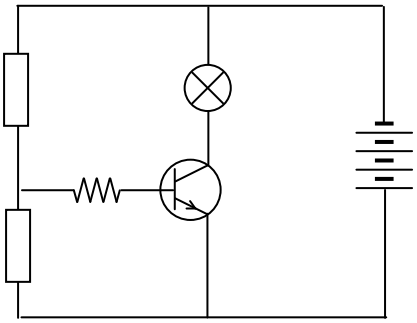


46 Which circuit will **not** light up the bulb?
*Litar yang manakah **tidak** akan menyalakan mentol?*

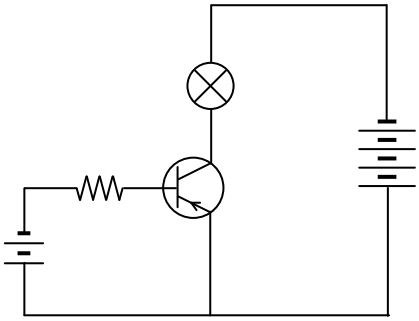
A



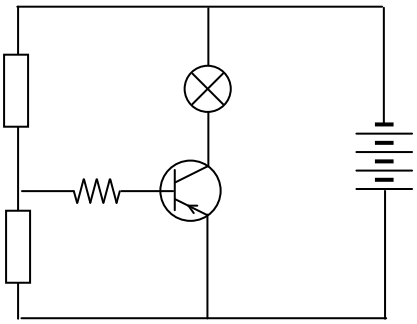
B



C



D



47 Diagram 34.1 shows the combination of three logic gates.
Rajah 34.1 menunjukkan kombinasi tiga get logik.

Diagram 34.2 shows the input signals P and Q.
Rajah 34.2 menunjukkan isyarat input P dan Q.

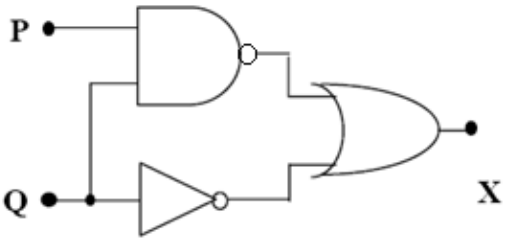


Diagram 34.1
Rajah 34.1

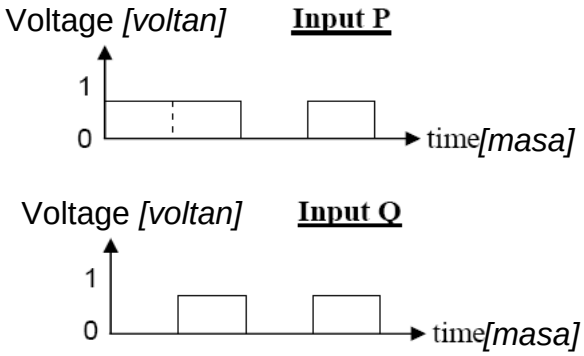
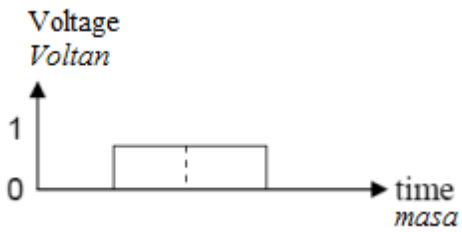


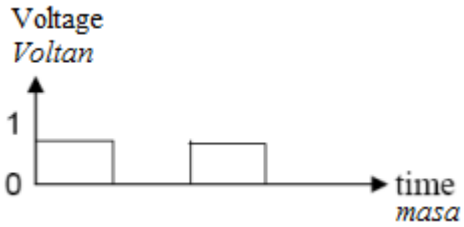
Diagram 34.2
Rajah 34.2

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

A



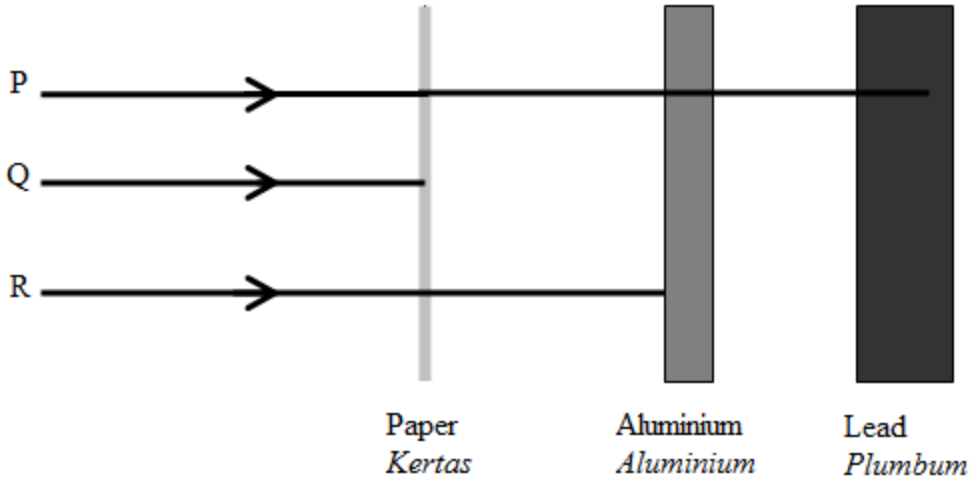
B



C

D

48 Diagram 35 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 35 menunjukkan tiga jenis sinaran radioaktif, P,Q dan R, dihalakan kepada kepingan kertas, kepingan aluminium dan kepingan plumbum.



Rajah 35
Rajah 35

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

	P	Q	R
A	Alpha *Alfa*	Gamma *Gama*	Beta *Beta*
B	Beta *Beta*	Alpha *Alfa*	Gamma *Gama*
C	Gamma *Gama*	Alpha *Alfa*	Beta *Beta*
D	Gamma *Gama*	Beta *Beta*	Alpha *Alfa*

49 Table 1 shows the half-life of four types of liquid isotopes which radiate gamma ray.
Jadual 1 menunjukkan saparuh hayat bagi empat jenis cecair isotop yang memancarkan sinar gamma.

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

Table 1
Jadual 1

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 36 shows a series of radioactive decays for the nucleus of uranium-238 to that of radium-226.
Rajah 36 menunjukkan siri pereputan radioaktif bagi nukles uranium-238 kepada nukleus radium-226.

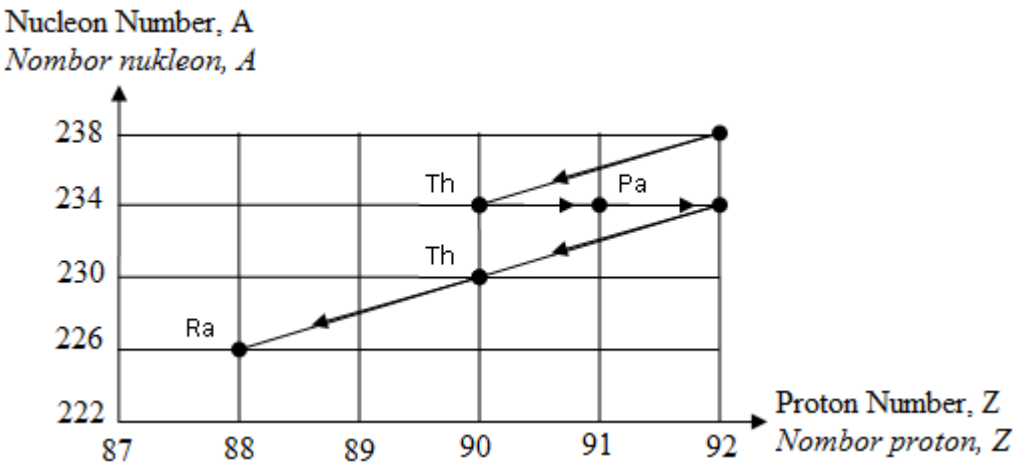


Diagram 36
Diagram 36

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 *Bilangan zarah alfa*	The number of beta particles *Bilangan zarah beta*
A	2	3
B	3	2
C	4	1
D	1	1

END OF QUESTION PAPER
KERTAS SOALAN TAMAT