SULIT

PROGRAM PENINGKATAN PRESTASI AKADEMIK SPM
TAHUN 2011

MATA PELAJARAN
PHYSICS 1

MAJLIS PENGETUA
SEKOLAH MENENGAH KEDAH

PEPERIKSAAN PERCUBAAN SPM 2011 4531/1

PHYSICS

Kertas 1

$1\frac{1}{4}$ 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.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Kertas soalan ini mengandungi **29** 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. $a = \frac{v-u}{t}$
2. $v^2 = u^2 + 2as$
3. $s = ut + \frac{1}{2}at^2$
4. Momentum = mv
5. $F = ma$
6. Kinetic energy / *Tenaga kinetik* = $\frac{1}{2}mv^2$
7. Gravitational potential energy / *Tenaga keupayaan graviti* = mgh
8. Elastic potential energy / *Tenaga keupayaan kenyal* = $\frac{1}{2}Fx$
9. Power, $P = \frac{\text{energy}}{\text{time}}$ *Kuasa*, $P = \frac{tenaga}{masa}$
10. Density / *Ketumpatan*, $\rho = \frac{m}{V}$
11. Pressure / *Tekanan*, $p = h\rho g$
12. Pressure / *Tekanan*, $p = \frac{F}{A}$
13. Heat / *Haba*, $Q = mc\theta$
14. Heat / *Haba*, $Q = ml$
15. $\frac{pV}{T}$ = constant / *pemalar*
16. $n = \frac{\sin i}{\sin r}$
17. $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
18. Magnifying power / *Kuasa pembesaran* = $\frac{f_O}{f_E}$
19. $v = f\lambda$
20. $\lambda = \frac{ax}{D}$
21. $Q = It$
22. $E = VQ$
23. $V = IR$
24. Power / *Kuasa*, $P = IV$
25. $\frac{V_S}{V_P} = \frac{N_S}{N_P}$
26. Efficiency / *Kecekapan* = $\frac{I_S V_S}{I_P V_P} \times 100\ \%$
27. $E = mc^2$
28. $g = 10\ \text{m s}^{-2}$
29. $c = 3.0 \times 10^8\ \text{m s}^{-1}$

1 The radius of the orbit of a satellite is 7 500 km. What is this radius in Mm?

Jejari orbit sebuah satellit adalah 7 500 km. *Berapakah nilai jejari ini dalam* Mm?

A 7.5
B 75
C 750
D 7500

2 Diagram 1 shows the marks made by five shots on a target board.

Rajah 1 *menunjukkan tanda yang dibuat oleh lima tembakan pada sebuah papan sasar.*

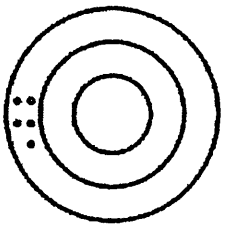


Diagram 1 / *Rajah* 1

Which statement is correct about the accuracy and consistency of the shots?

Pernyataan manakah yang betul mengenai kejituan dan kepersisan tembakan itu?

A Accurate but not consistent
Jitu tetapi tidak konsisten

B Consistent but not accurate
Konsisten tetapi tidak jitu

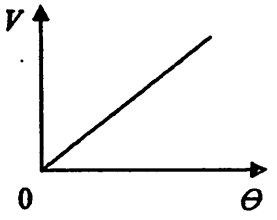
C Accurate and consistent
Jitu dan konsisten

D Not accurate and not consistent
Tidak jitu dan tidak konsisten

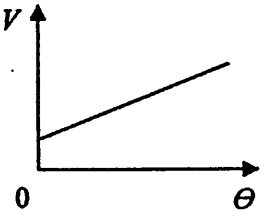
3 Which graph shows a relationship of V increasing linearly with θ?

Graf manakah menunjukkan hubungan V bertambah secara linear dengan θ?

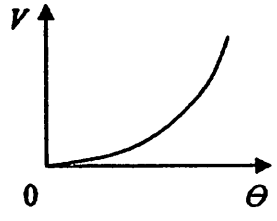
A



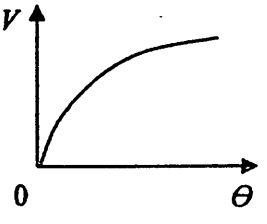
B



C



D



4 Diagram 2 shows a strip of ticker tape.

Rajah 2 menunjukkan satu keratan pita detik.

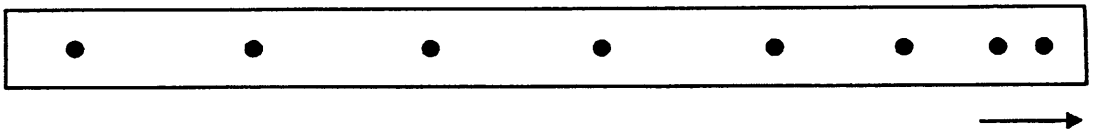


Diagram 2 / *Rajah 2*

Which statement describes the motion shown by the ticker tape?

Pernyataan manakah menghuraikan gerakan yang ditunjukkan oleh pita detik itu?

A Acceleration
Pecutan

B Deceleration
Nyahpecutan

C Uniform velocity followed by deceleration
Halaju seragam diikuti dengan nyahpecutan

D Acceleration followed by uniform velocity
Pecutan diikuti dengan halaju seragam

5 Diagram 3 shows a football hitting the face of a player.

Rajah 3 menunjukkan sebiji bola menghentam muka seorang pemain.

Diagram 3 / *Rajah 3*

A large force acts on the face of the player because

Satu daya yang besar bertindak pada muka pemain itu sebab

A the ball experiences a change in its mass when it hits the face
bola itu mengalami perubahan jisim apabila menghentam muka pemain

B the change in momentum of the ball occurs in a short period of time
perubahan momentum bola berlaku dalam tempoh masa yang pendek

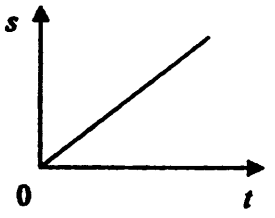
C the change in momentum of the ball occurs in a long period of time
perubahan momentum bola berlaku dalam tempoh masa yang panjang

D some air escapes from the ball when it hits the face
sedikit udara terlepas keluar dari bola itu apabila menghentam muka pemain

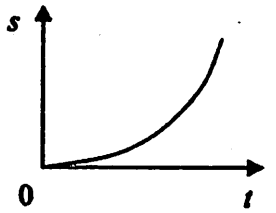
6 Which graph shows motion with uniform velocity?

Graf manakah menunjukkan gerakan dengan halaju seragam?

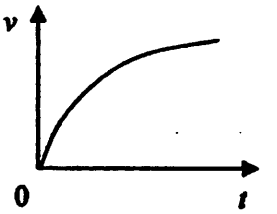
P



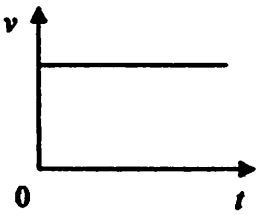
Q



R



S



A P and S / P *dan* S
B P and R / P *dan* S
C Q and S / Q *dan* S
D Q and R / Q *dan* R

7 In which collision is total kinetic energy conserved?

Dalam perlanggaran manakah jumlah tenaga kinetik diabadikan?

	Before collision *Sebelum perlanggaran*	After collision *Selepas perlanggaran*
A	u →, Stationary / *Pegun* *m* *m*	Stationary / *Pegun*, u → *m* *m*
B	u →, Stationary / *Pegun* *m* *m*	$\frac{u}{2}$ →, $\frac{u}{2}$ → *m* *m*
C	u →, u ← *m* *m*	Stationary / *Pegun* *m* *m*
D	u →, u ← *m* *m*	$\frac{u}{2}$ ←, $\frac{u}{2}$ → *m* *m*

8 In which situation will the block move with an acceleration?

Dalam situasi manakah blok itu bergerak dengan suatu pecutan?

A

B

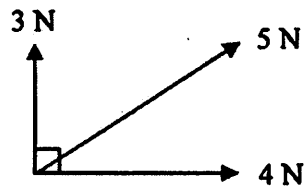
C

D

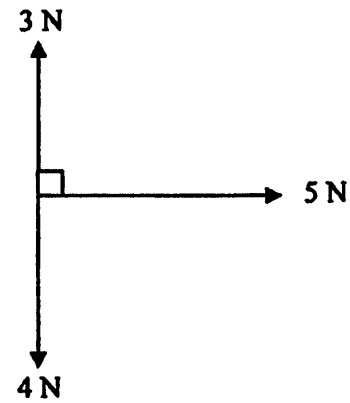
9 Which diagram shows three forces in equilibrium?

Rajah manakah menunjukkan tiga daya dalam keseimbangan?

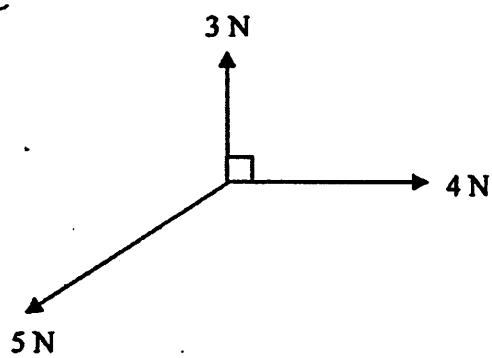
A



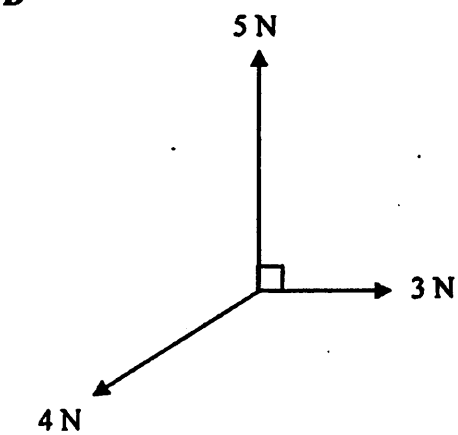
B



C



D



10 Diagram 4 shows two workers P and Q lifting identical loads through the same height using two different methods.

Rajah 4 menunjukkan dua orang pekerja P *dan* Q *mengangkat beban yang serupa melalui ketinggian yang sama dengan dua cara berbeza.*

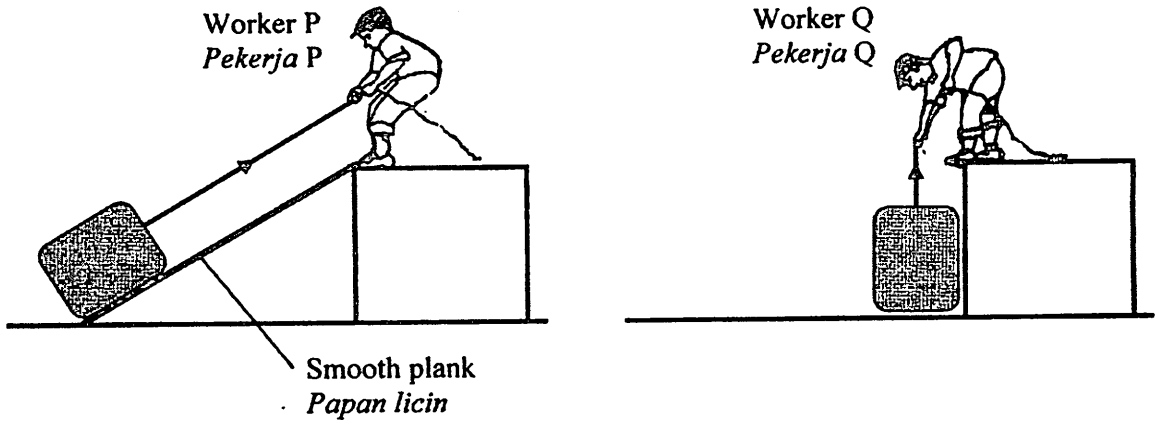


Diagram 4 / *Rajah* 4

Which statement is correct about the force applied and work done?

Pernyataan yang manakah benar mengenai daya yang dikenakan dan kerja yang dilakukan?

A The force exerted by worker P is greater than that of worker Q
Daya yang dikenakan oleh pekerja P *lebih besar daripada pekerja* Q

B The force exerted by worker P is smaller than that of worker Q
Daya yang dikenakan oleh pekerja P *lebih kecil daripada pekerja* Q

C The work done by worker P is greater than that of worker Q
Kerja yang dilakukan oleh pekerja P lebih besar daripada pekerja Q

D The work done by worker P is smaller than that of worker Q
Kerja yang dilakukan oleh pekerja P lebih kecil daripada pekerja Q

11 Diagram 5 shows a graph of force against extension for two springs, R and S. Both springs are made of the same material, and have the same length and diameter.

Rajah 5 menunjukkan graf daya melawan pemanjangan bagi spring R *dan* S. *Kedua-dua spring diperbuat daripada bahan yang sama, dan mempunyai panjang dan diameter yang sama.*

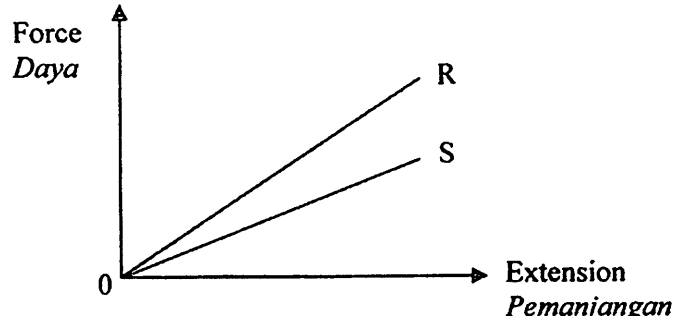


Diagram 5 / *Rajah* 5

Which statement about spring R and S is correct?

Pernyataan manakah mengenai spring R *dan* S *benar?*

A The diameter of the wire of spring S is greater than that of spring R
Diameter dawai spring S *lebih besar daripada spring* R

B Spring S stores more elastic potential energy than spring R
Spring S menyimpan tenaga keupayaan kenyal yang lebih besar daripada spring R

C Spring S has a smaller stiffness than spring R
Spring S mempunyai kekerasan lebih kecil daripada spring R

D Spring S has a larger force constant than spring R
Spring S mempunyai pemalar daya yang lebih kecil daripada spring R

12 Diagram 6 shows four different postures of a person doing some exercises.
Which posture exerts the maximum pressure on the floor?

Rajah 6 menunjukkan empat postur yang berbeza bagi seorang yang sedang bersenam.
Postur manakah yang mengenakan tekanan yang maksimum ke atas lantai?

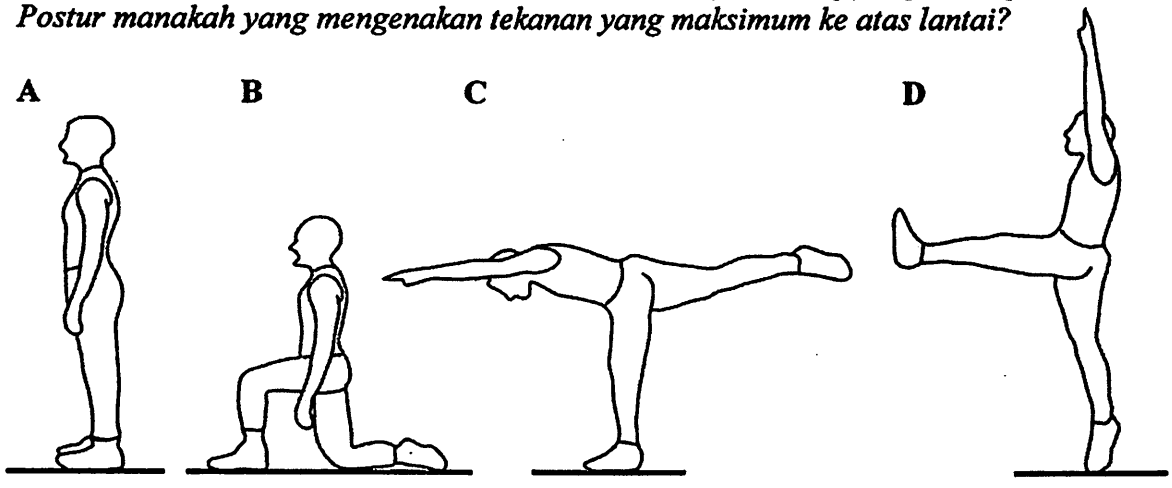


Diagram 6 / *Rajah* 6

13 Diagram 7 shows three containers filled with water to the same level. The pressure caused by the water at points X, Y and Z are P_X, P_Y and P_Z respectively.

Rajah 7 menunjukkan tiga bekas diisi dengan air sehingga paras yang sama tinggi.
Tekanan yang disebabkan oleh air pada titik X, Y dan Z *ialah* P_X, P_Y dan P_Z *masing-masing.*

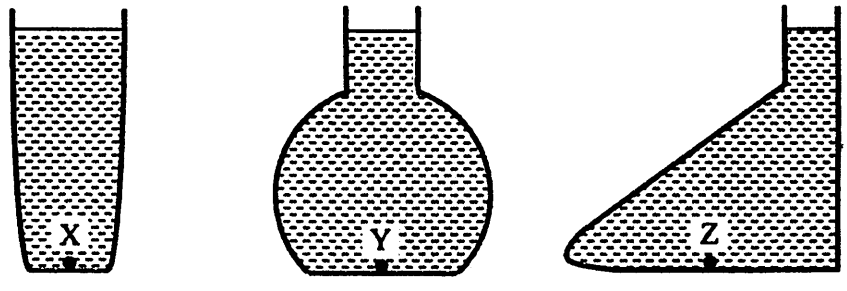


Diagram 7 / *Rajah* 7

Which comparison is correct?

Perbandingan manakah yang betul?

A $P_X = P_Y = P_Z$
B $P_X < P_Y < P_Z$
C $P_X > P_Y > P_Z$

14 Diagram 8 shows a mercury barometer. Which height shows the measurement of the atmospheric pressure?

Rajah 8 menunjukkan satu barometer merkuri. Ketinggian manakah menunjukkan ukuran bagi tekanan atmosfera?

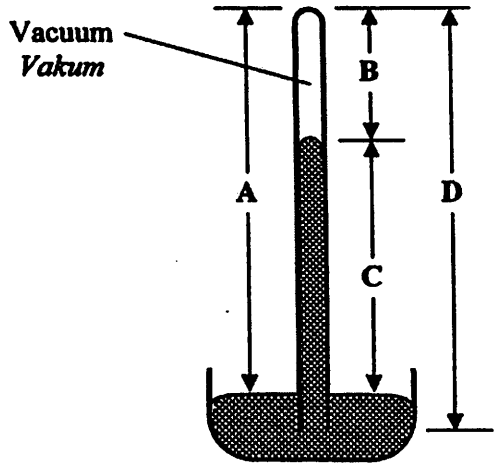


Diagram 8 / *Rajah 8*

15 Diagram 9 shows the random motion of the gas molecules inside a container.

Rajah 9 menunjukkan gerakan rawak bagi molekul-molekul gas di dalam sebuah bekas.

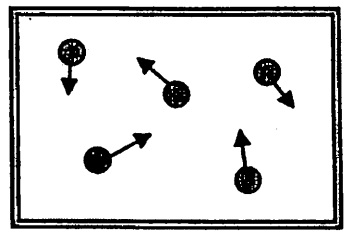


Diagram 9 / *Rajah 9*

The pressure of the gas **will not** increase if

*Tekanan gas **tidak akan** bertambah jika*

A the number of molecules in the container is increased
bilangan molekul di dalam bekas ditambah

B the mass of the molecules is increased / *jisim molekul ditambah*

C the speed of the molecules is increased / *laju molekul ditambah*

D the volume of the container is increased / *isipadu bekas ditambah*

16 Diagram 10 shows a hydraulic compressing machine.

Rajah 10 *menunjukkan sebuah mesin pemampat.*

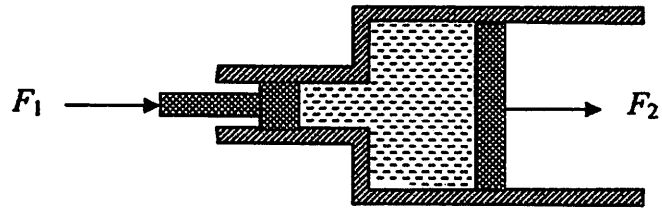


Diagram 10 / *Rajah* 10

Which comparison is true about the forces F_1 and F_2?

Perbandingan manakah betul mengenai daya-daya F_1 *dan* F_2?

A $F_1 = F_2$
B $F_1 > F_2$
C $F_1 < F_2$

17 Diagram 11 shows an oil drum of volume V floating with $\frac{3}{4}$ of its volume submerged under water.

Rajah 11 *menunjukkan sebuah tong minyak berisipadu* V *sedang terapung dengan* $\frac{3}{4}$ *daripada isipadunya tenggelam di bawah air.*

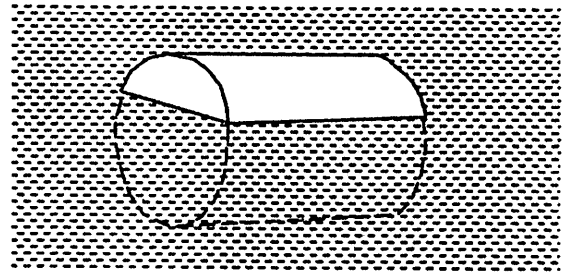


Diagram 11 / *Rajah* 11

If the density of water is ρ, the buoyant force acting on the oil drum is

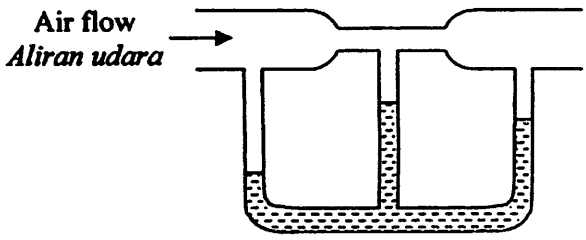
Jika ketumpatan air ialah ρ, *daya julangan yang bertindak ke atas tong minyak ialah*

A $\frac{1}{4}V\rho g$
B $\frac{3}{4}V\rho g$
C $V\rho g$
D $V\rho$

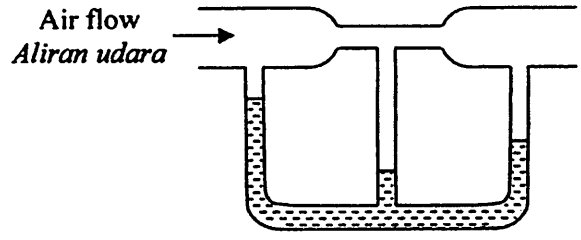
18 Which diagram shows the correct liquid level in the U-tube?

Rajah manakah menunjukkan aras cecair yang betul di dalam tiub-U?

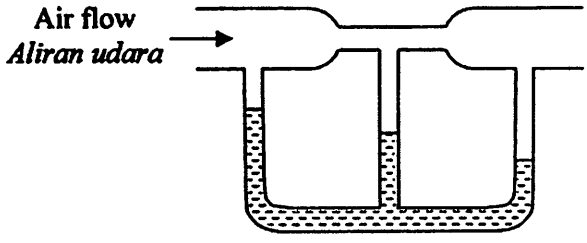
A



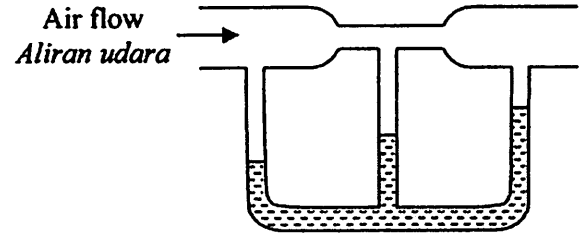
B



C



D



19 Diagram 12 shows two metal blocks P and Q that are placed in thermal contact.

Rajah 12 *menunjukkan dua blok logam* P *dan* Q *yang diletak dalam sentuhan terma.*

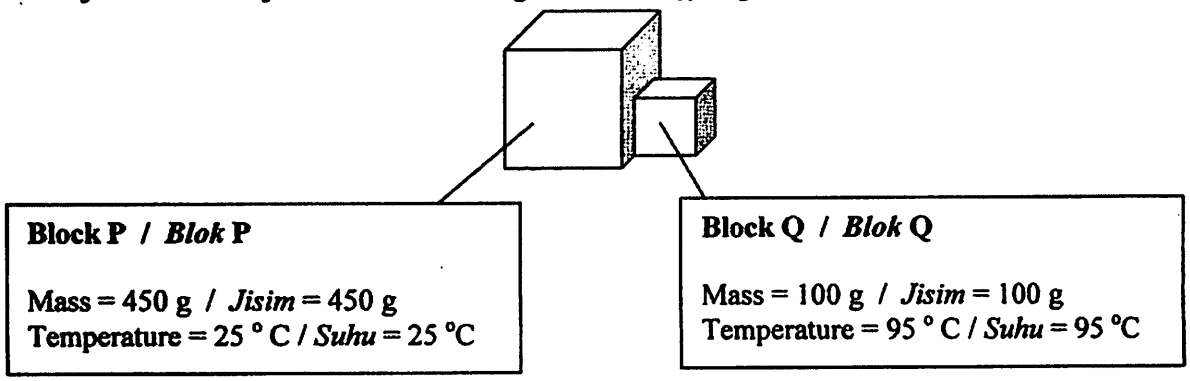


Diagram 12 / *Rajah* 12

Which statement is true about the heat transfer between P and Q?

Pernyataan manakah betul mengenai pemindahan haba antara P *dan* Q?

A No heat is transferred between P and Q
Tiada haba dipindah antara P *dan* Q

B No net heat is transferred between P and Q
Tiada haba bersih dipindah antara P *dan* Q

C Net heat is transferred from P to Q
Haba bersih dipindah dari P *ke* Q

D Net heat is transferred from Q to P
Haba bersih dipindah dari Q *ke* P

20 Diagram 13 shows 100 g of water at 20 °C is poured into a beaker containing 200 g of water at 80 °C.

Rajah 13 *menunjukkan* 100 g *air pada* 20 °C *dituang ke dalam bikar yang mengandungi* 200 g *air pada* 80 °C.

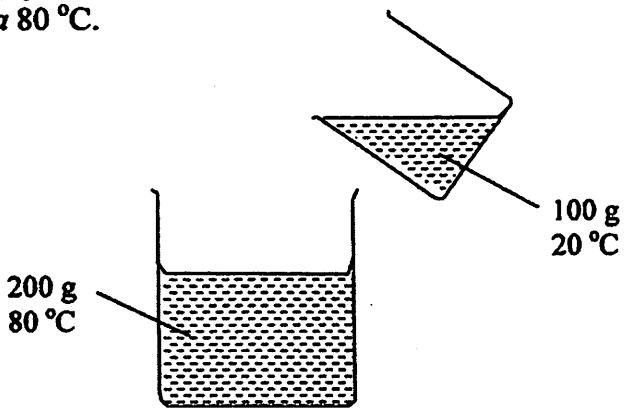


Diagram 13 / *Rajah* 13

What is the final temperature of the mixture?

Berapakah suhu akhir campuran itu?

A 30 °C
B 50 °C
C 60 °C
D 70 °C

21 Diagram 14 shows the variation of temperature with time when a solid X is heated.

Rajah 14 *menunjukkan perubahan suhu dengan masa apabila satu pepejal* X *dipanaskan.*

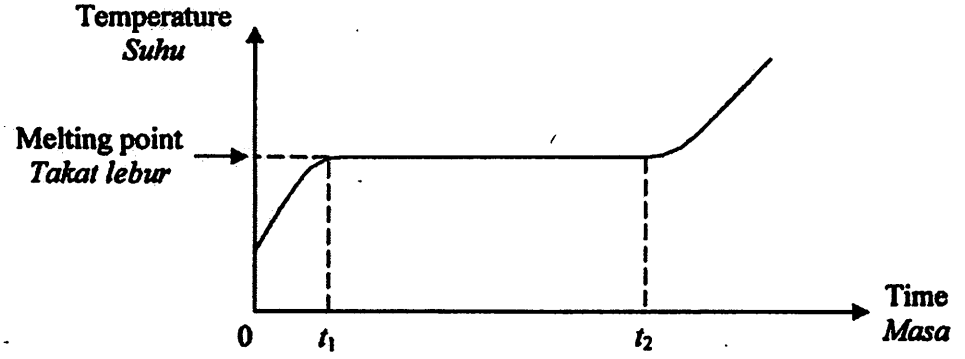


Diagram 14 / *Rajah* 14

What is the state of X from the time t_1 to t_2?

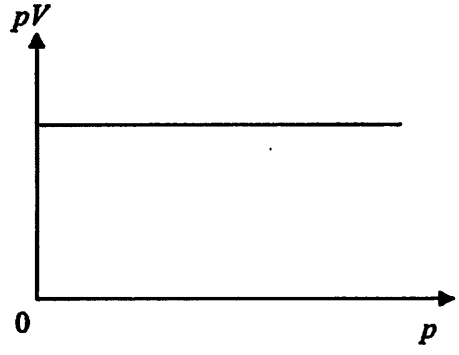
Apakah keadaan X *dari masa* t_1 *ke* t_2?

A Solid only / *Pepejal sahaja*
B Liquid only / *Cecair sahaja*
C Liquid and gas / *Cecair dan gas*
D Solid and liquid / *Pepejal dan cecair*

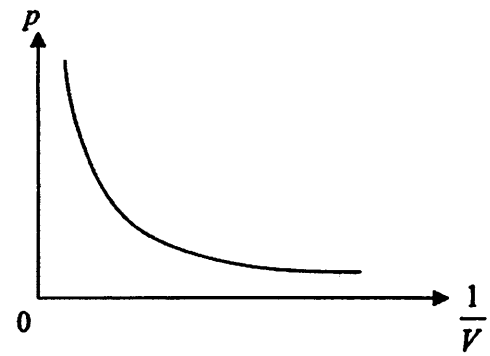
22 Which graph shows the relationship between the pressure and volume of a gas that obeys Boyle's law?

Graf manakah menunjukkan hubungan antara tekanan dan isipadu bagi suatu gas yang mematuhi hukum Boyle?

A



B



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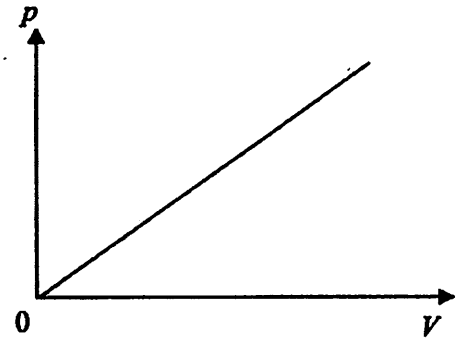

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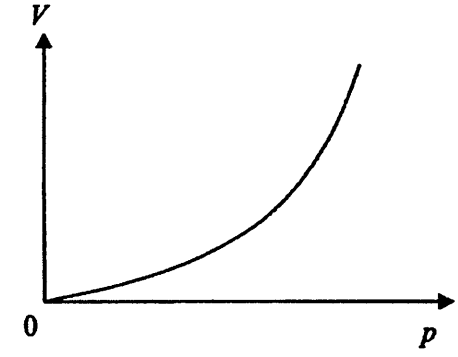


23 Diagram 15 shows the set up of apparatus used to study the properties of a gas.

Rajah 15 *menunjukkan susunan radas untuk mengkaji ciri-ciri suatu gas.*

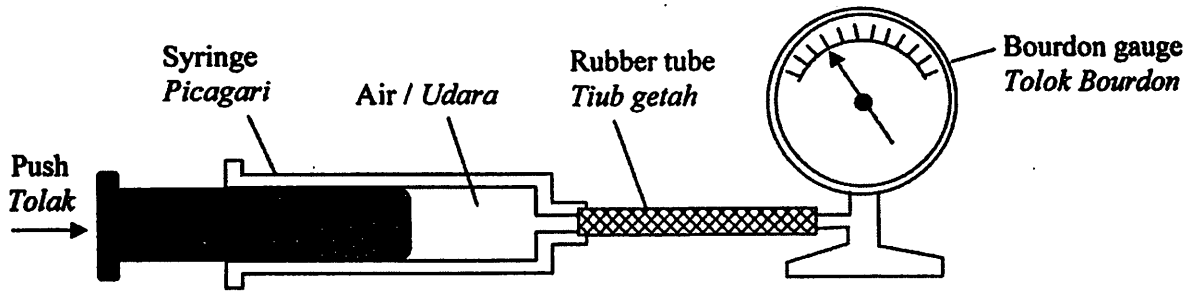


Diagram 15 / *Rajah* 15

The piston is pushed slowly to the right.
Which statement about the behaviour of the gas molecules in the cylinder is correct?

Omboh ditolak dengan perlahan ke kanan.
Pernyataan manakah betul mengenai perlakuan molekul gas di dalam silinder itu?

A The speed of the molecules increases
Laju molekul bertambah

B The molecules collide more frequently with the walls of the cylinder
Molekul-molekul berlanggar lebih kerap dengan dinding silinder

C The average distance between the molecules remains the same
Jarak purata antara molekul-molekul kekal malar

D The molecules bounce back from the wall of the cylinder with a greater momentum
Molekul-molekul melantun balik dari dinding silinder dengan momentum yang lebih besar

24 Diagram 16 shows an object O in front of a convex mirror. T is the centre of curvature of the mirror.

Rajah 16 *menunjukkan suatu objek* O *di hadapan sebuah cermin cembung.* T *ialah pusat kelengkungan cermin itu.*

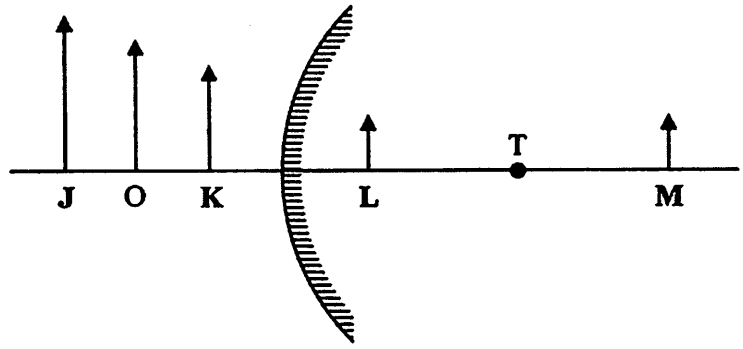


Diagram 16 / *Rajah* 16

The image is formed at
Imej dibentuk di

A J
B K
C L
D M

25 Diagram 17 shows a light ray moving from air into a glass block.

Rajah 17 *menunjukkan satu sinar cahaya bergerak dari udara ke dalam sebuah blok kaca.*

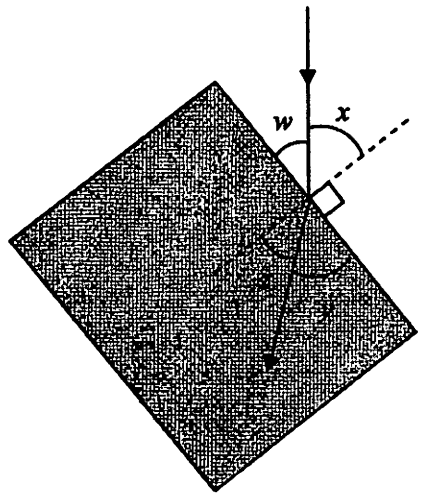


Diagram 17 / *Rajah* 17

Which angle is the angle of incidence and the angle of refraction?

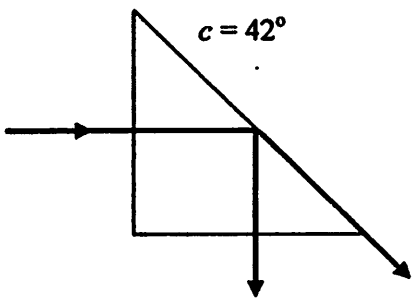
Sudut manakah ialah sudut tuju dan sudut biasan?

	Angle of incidence / *Sudut tuju*	Angle of refraction / *Sudut biasan*
A	*w*	*y*
B	*w*	*z*
C	*x*	*y*
D	*x*	*z*

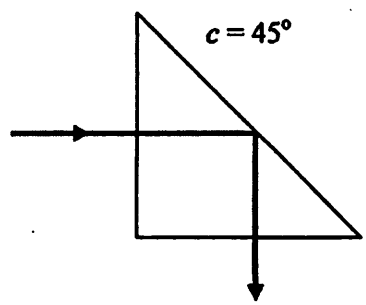
26 Which diagram shows the correct propagation of light through a 45°, 45°, 90° prism? *c* is the critical angle of the prism.

Rajah manakah menunjukkan perambatan cahaya yang betul melalui prisma 45°, 45°, 90°? *c ialah sudut genting prisma itu.*

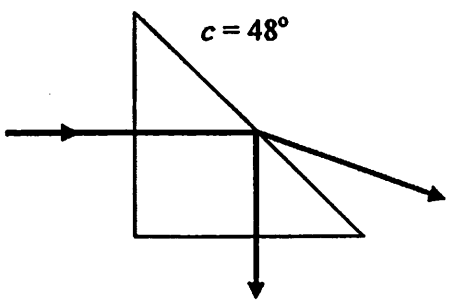
A



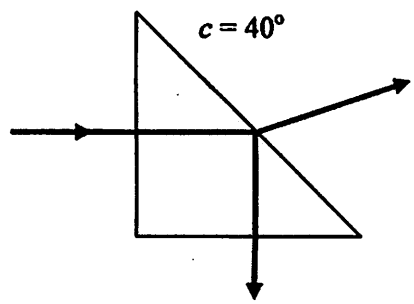
B



C



D



27 Diagram 18 shows the image, I, of an object, O, formed by a convex lens.

Rajah 18 *menunjukkan imej*, I, *bagi objek*, O, *yang dibentuk oleh sebuah kanta cembung.*

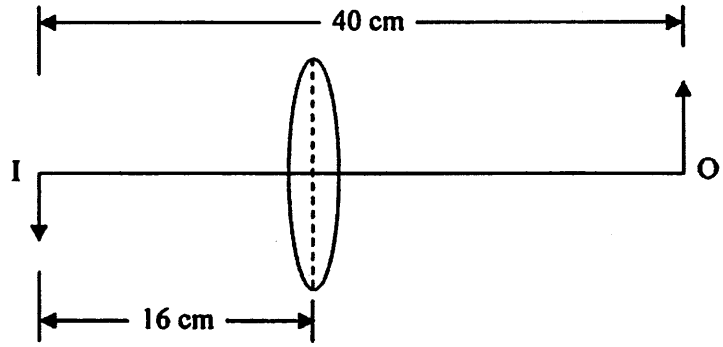


Diagram 18 / *Rajah* 18

What is the focal length of the lens?

Berapakah panjang focus kanta itu?

A 2.5 cm
B 9.6 cm
C 11.4 cm
D 24.0 cm

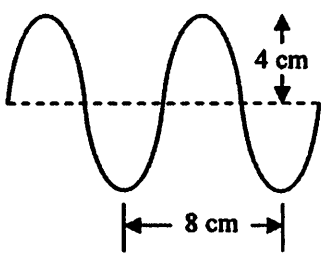
28 An astronomical telescope at normal adjustment consists of two convex lenses placed at a separation of 80 cm. The magnifying power of the telescope is 15. What is the focal length, f_O, of the objective lens and the focal length, f_E, of the eyepiece?

Sebuah teleskop astronomi pada pelarasan normal adalah terdiri daripada dua kanta cembung yang diletak pada jarak pemisahan 80 cm. *Kuasa pembesaran teleskop itu ialah* 15. *Berapakah panjang fokus,* f_O, *bagi kanta objek dan panjang focus,* f_E, *bagi kanta mata?*

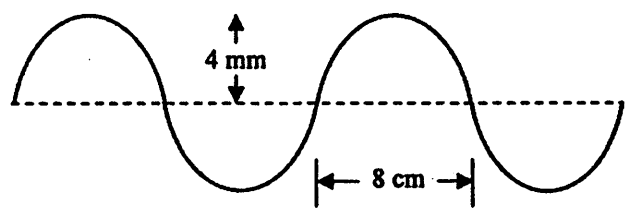
	f_O	f_E
A	5 cm	75 cm
B	75 cm	5 cm
C	75 cm	15 cm
D	80 cm	15 cm

29 Which diagram shows a transverse wave with amplitude 4 cm and wavelength 8 cm?
Rajah manakah menunjukkan suatu gelombang melintang dengan amplitud 4 cm *dan panjang gelombang* 8 cm?

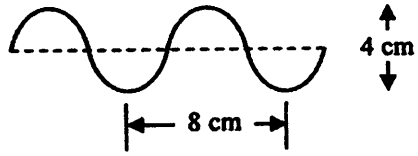
A



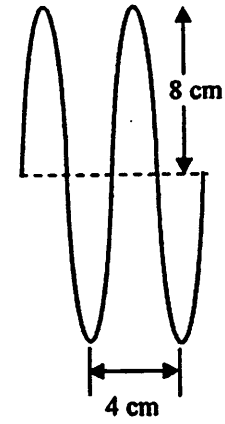
B



C



D



30 Diagram 19 shows wave patterns produced in a ripple tank with a sloping base by a circular vibrator at S.
Rajah 19 *menunjukkan corak gelombang yang dihasilkan di dalam sebuah tangki riak dengan dasar condong oleh penggetar bulat di* S..

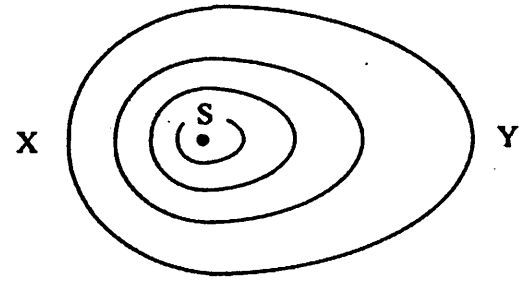


Diagram 19 / *Rajah* 19

Which statement is **true**?
Pernyataan manakah benar?

A Region X is deeper than region Y
Kawasan X *adalah lebih dalam daripada kawasan* Y

B Region Y is deeper than region X
Kawasan Y *adalah lebih dalam daripada kawasan* X

C Both regions X and Y have uniform depth
Kedua-dua kawasan X *dan* Y *mempunyai kedalaman yang seragam*

D The speed of the wave in region X is greater than the speed in region Y
Laju gelombang di kawasan X *adalah lebih besar daripada laju di kawasan* Y

31 Diagram 20 shows water waves being diffracted after passing through a slit.

Rajah 20 *menunjukkan gelombang air dibelau selepas melalui satu celah.*

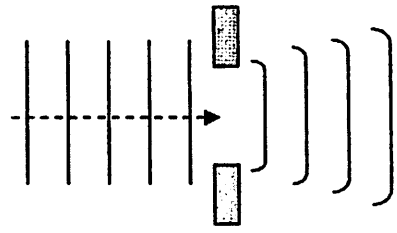


Diagram 20 / *Rajah* 20

Which action will produce circular diffracted waves?

Tindakan manakah akan menghasilkan gelombang terbelau membulat?

A Increase the frequency of the waves
Tambah frekuensi gelombang

B Increase the speed of the wave
Tambah kelajuan gelombang

C Decrease the wavelength
Kurangkan panjang gelombang

D Decrease the size of the slit
Kurangkan saiz celah

32 Diagram 21 shows the positions of loud and soft sounds produced along the line PQ when the audio signal generator is switched on.

Rajah 21 *menunjukkan kedudukan bunyi kuat dan bunyi perlahan yang dihasilkan sepanjang garisan* PQ *apabila penjana isyarat audio dihidupkan.*

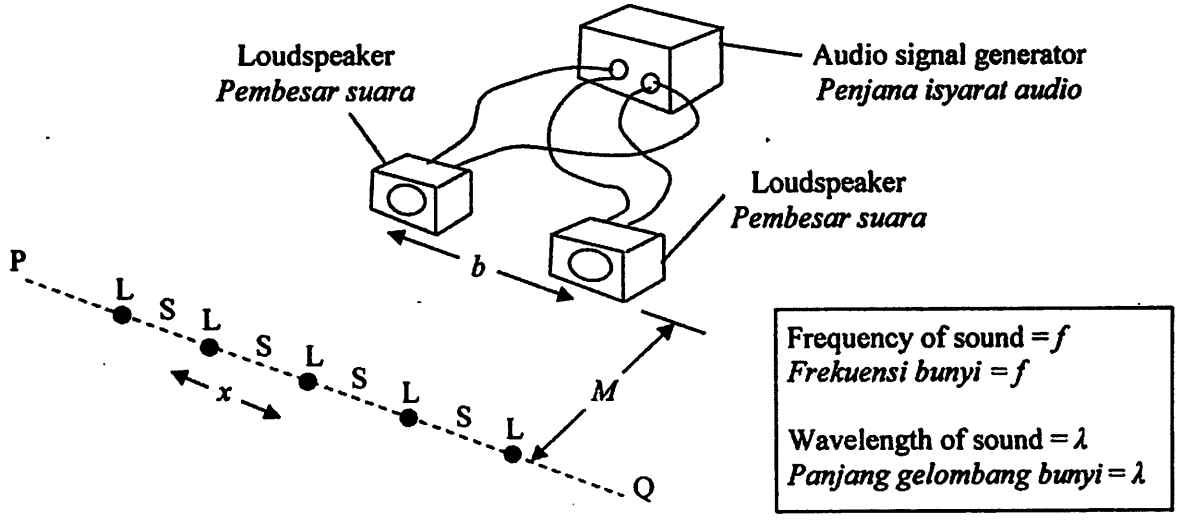


Diagram 21 / *Rajah* 21

The distance between consecutive loud sounds, x, will increase if

Jarak antara bunyi kuat berturutan, x, *akan bertambah jika*

A M is increased / *M ditambah*
B f is increased / *f ditambah*
C λ is decreased / *λ dikurangkan*
D b is increased / *b ditambah*

33 A phenomenon that occurs when a sound wave has been reflected off a surface and is heard after the original sound is known as

Fenomena yang berlaku apabila gelombang bunyi dipantulkan oleh suatu permukaan, dan kedengaran selepas bunyi yang asal dikenali sebagai

A echo / *gema*
B noise / *bising*
C disturbance / *gangguan*
D interference / *interferens*

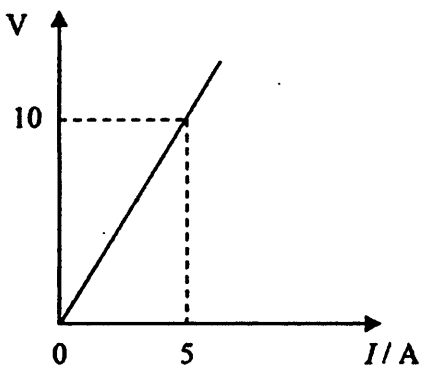
34 Which statement is **not** a property of electromagnetic waves?

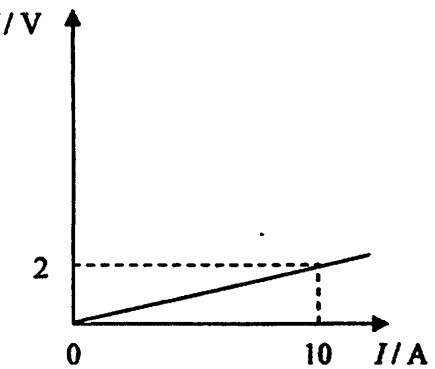
*Pernyataan manakah **bukan** sifat gelombang elektromagnet?*

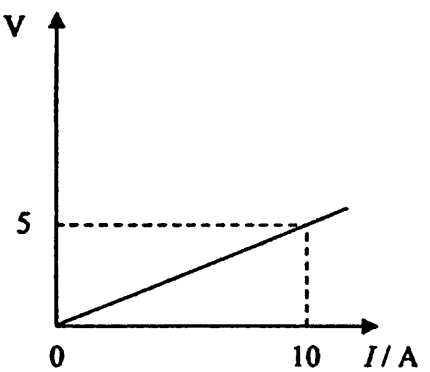
A Travels at a speed of light / *Bergerak pada kelajuan cahaya*
B Obeys the wave equation, $v = f\lambda$ / *Mematuhi persamaan gelombang, $v = f\lambda$*
C Requires a medium to propagate / *Memerlukan medium untuk merambat*
D Can undergo interference / *Boleh mengalami interferens*

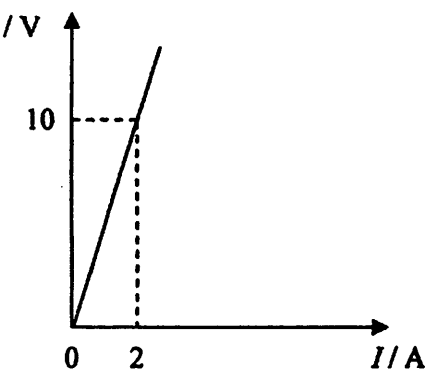
35 Which graph shows the highest resistance?

Graf manakah menunjukkan rintangan paling tinggi?

A


B


C


D


36 Diagram 22 shows 9 identical resistors connected in three different circuits, P, Q and R.
Rajah 22 menunjukkan 9 perintang serupa yang disambungkan dalam tiga litar berlainan P, Q *dan* R.

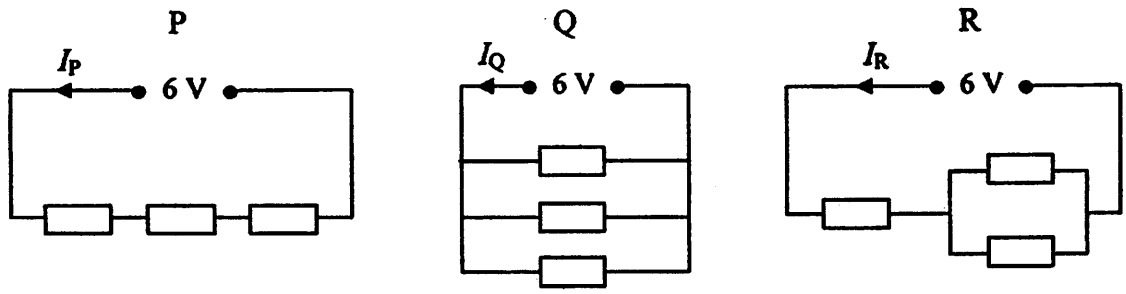


Diagram 22 / *Rajah 22*

Which statement is correct for I_P, I_Q and I_R ?

Pernyataan manakah betul mengenai I_P, I_Q *dan* I_R ?

A $I_P < I_R < I_Q$
B $I_P < I_Q < I_R$
C $I_Q < I_P < I_R$
D $I_Q < I_R < I_P$

37 Diagram 23 shows a circuit with a dry cell that has internal resistance.

Rajah 23 menunjukkan satu litar dengan sel kering yang mempunyai rintangan dalam.

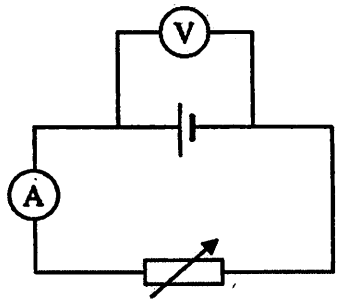


Diagram 23 / *Rajah 23*

What is the change in the ammeter and voltmeter reading when the resistance of the rheostat is reduced?

Apakah perubahan bacaan ammeter dan voltmeter apabila rintangan reostat dikurangkan?

	Ammeter reading / *Bacaan ammeter*	Voltmeter reading / *Bacaan voltmeter*
A	Decreases / *Berkurang*	Decreases / *Berkurang*
B	Decreases / *Berkurang*	Increases / *Bertambah*
C	Increases / *Bertambah*	Decreases / *Berkurang*
D	Increases / *Bertambah*	Increases / *Bertambah*

38 When an electric kettle with a voltage rating of 220 V is connected to a 220 V power supply, the water in the kettle boils in 10 minutes. What is the time taken for the water to boil if the electric kettle is connected to a 200 V power supply?

Apabila cerek elektrik dengan kadaran voltan 220 V *disambung kepada bekalan kuasa* 220 V, *air di dalam cerek itu mendidih dalam masa* 10 *minit. Berapakah masa yang diambil untuk air itu mendidih jika cerek elektrik itu disambung kepada bekalan kuasa* 200 V?

A 10 minutes / 10 *minit*
B Less than 10 minutes / *Kurang daripada* 10 *minit*
C More than 10 minutes / *Lebih daripada* 10 *minit*

39 Diagram 24 shows the set-up of the apparatus to study the magnetic field due to a current in a solenoid. When the switch, K, is off, the needle of the compass points to the north.
Rajah 24 *menunjukkan susunan radas untuk mengkaji medan magnet disebabkan arus dalam sebuah solenoid. Apabila suis,* K, *dimatikan, jarum kompas menunjuk ke arah utara.*

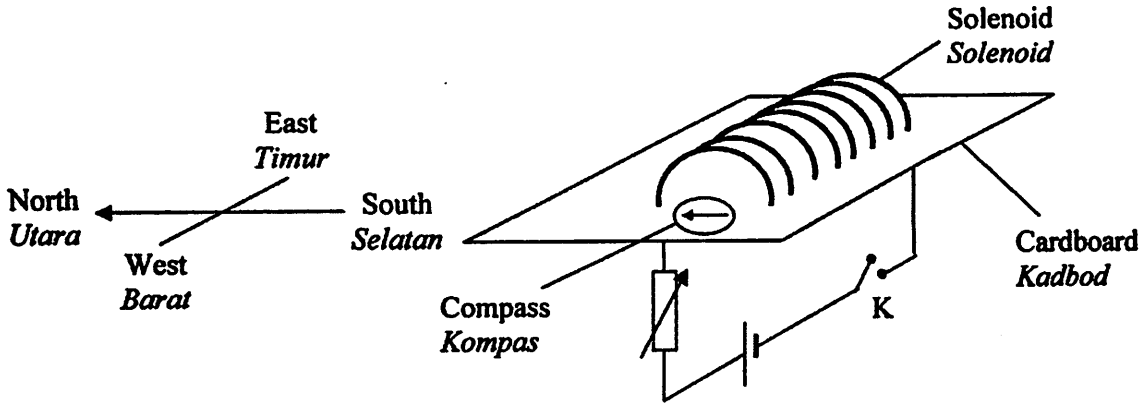


Diagram 24 / *Rajah* 24

Which direction will the compass needle point when switch S is on?

Arah manakah akan ditunjuk oleh jarum kompas apabila suis K *dihidupkan?*

A North / *Utara*
B South / *Selatan*
C East / *Timur*
D West / *Barat*

40 Diagram 25 shows a bare wire PQ placed on two parallel metal rods held at an angle with the horizontal.

Rajah 25 menunjukkan seutas wayar tanpa penebat PQ *diletakkan pada dua batang rod logam yang dipegang pada suatu sudut dengan ufukan.*

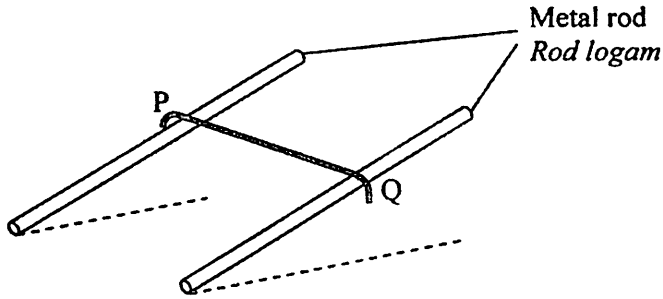
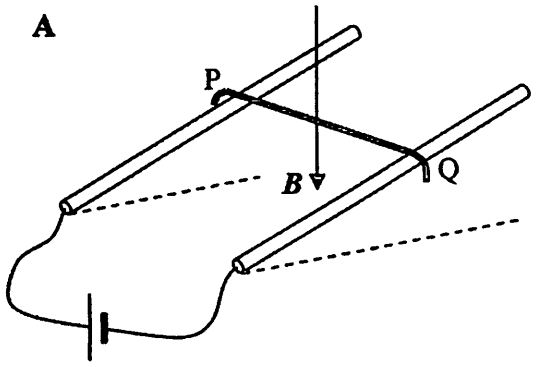


Diagram 25 / *Rajah* 25

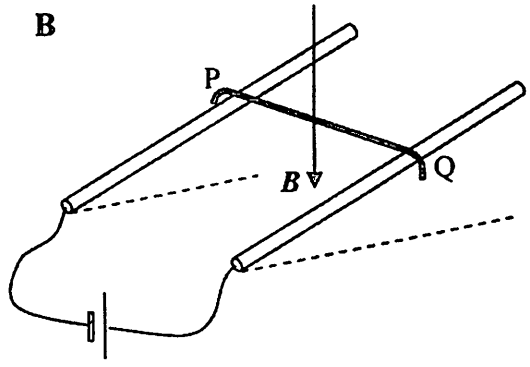
Which diagram shows the correct connection of the battery and direction of magnetic field, ***B***, to prevent PQ from sliding down?

Rajah manakah menunjukkan sambungan yang betul bagi bateri dan arah medan magnet, ***B****, untuk mencegah* PQ *daripada menggelongsor turun?*

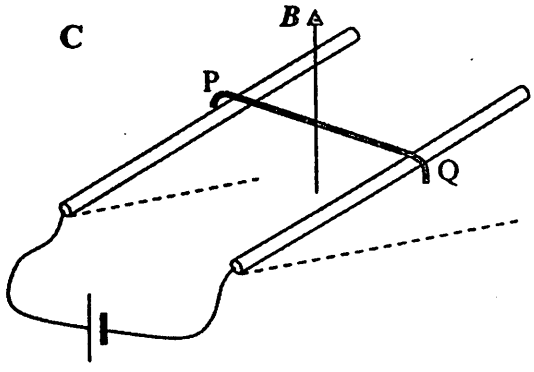
A



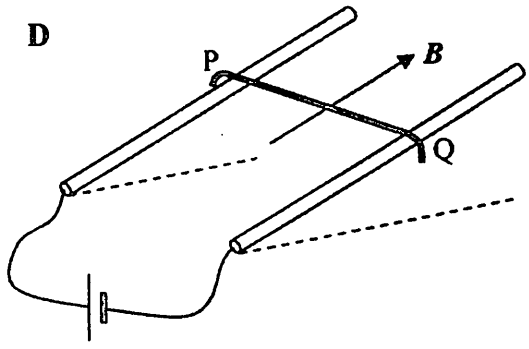
B



C



D



41 Diagram 26 shows wire a XY placed between magnet P and magnet Q.

Rajah 26 *menunjukkan satu wayar* XY *diletakkan antara magnet* P *dan magnet* Q.

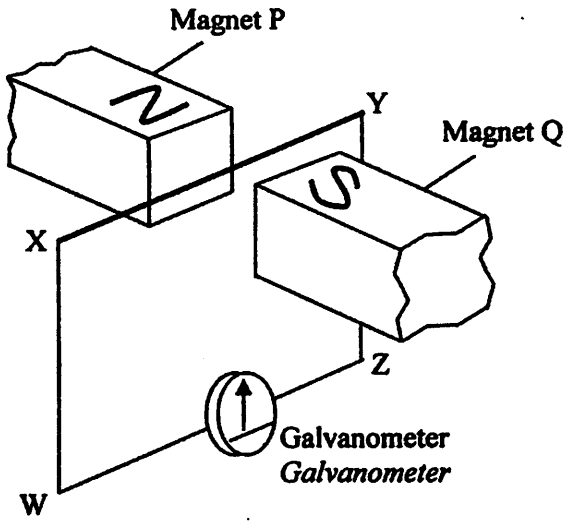


Diagram 26 / *Rajah* 26

Which direction of motion of wire XY will produce current flowing through the galvanometer from W to Z?

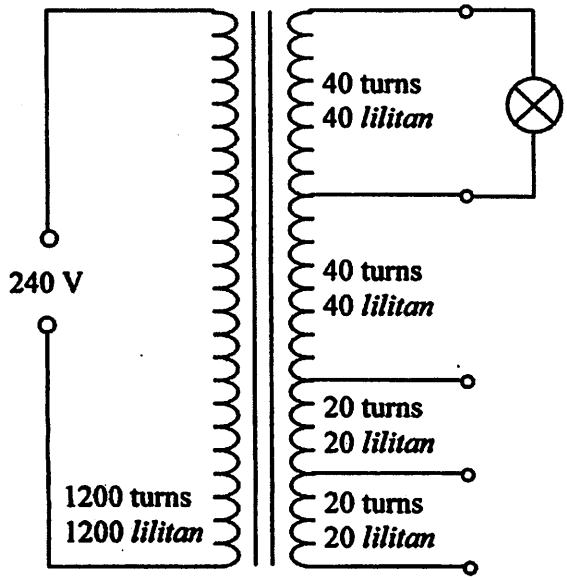
Arah gerakan manakah bagi wayar XY *yang akan menghasilkan arus melalui galvanometer dari* W *ke* Z?

A Towards magnet P / *Ke arah magnet* P
B Towards magnet Q / *Ke arah magnet* Q
C Upwards / *Ke arah atas*
D Downwards / *Ke arah bawah*

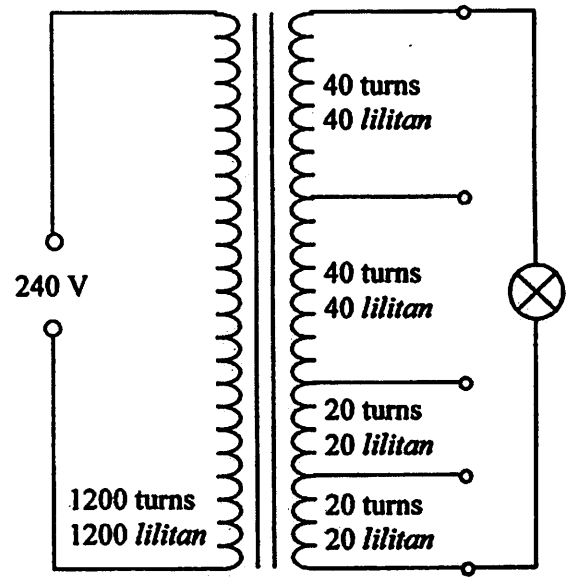
42 A multi-tap transformer consists of primary coil of 1200 turns and secondary coil of a total of 120 turns.
Which diagram shows the correct connection to light up a 12 V, 24 W bulb at normal brightness?

Sebuah transformer multi-tap terdiri daripada gegelung primer 1200 *lilitan dan gegelung sekunder dengan jumlah* 120 *lilitan.*
Rajah manakah menunjukkan sambungan yang betul untuk menyalakan sebuah mentol 12 V, 24 W *dengan kecerahan normal?*

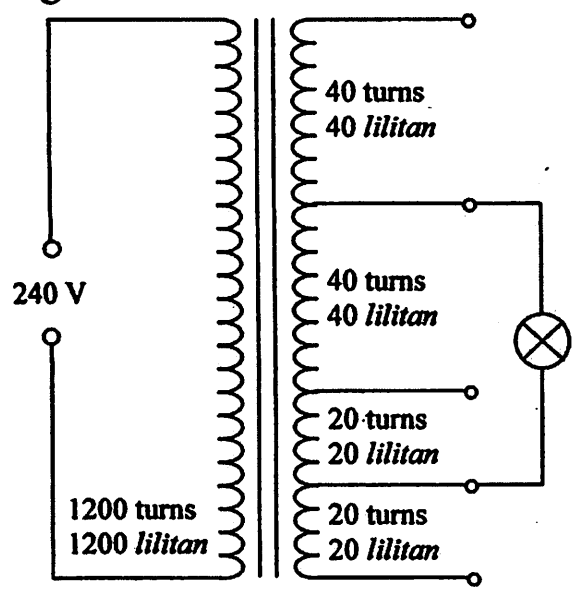
A



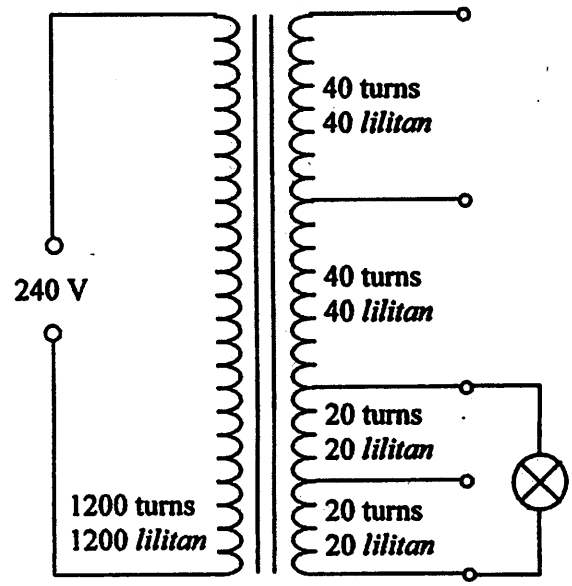
B



C



D



43 A regional power station supplies 220 kW of power at a voltage of 11 kV to a factory. The transmission cable connecting the power station to the factory has a total resistance of 50 Ω. Calculate the power received by the factory.

Sebuah stesen kuasa tempatan membekalkan kuasa 220 kW *pada voltan* 11 kV *kepada sebuah kilang. Kabel penghantaran yang menyambungkan stesen kuasa kepada kilang itu mempunyai jumlah rintangan* 50 Ω. *Hitungkan kuasa yang diterima oleh kilang itu.*

A 20 kW
B 200 kW
C 220 kW
D 240 kW

44 Diagram 27.1 shows that when a cathode ray oscilloscope (CRO) is connected across the 9 Ω resistor, the bright spot is deflected from the centre of the screen, O to P.

Rajah 27.1 *menunjukkan bahawa apabila sebuah osiloskop sinar katod (OSK) disambung merentasi perintang* 9 Ω, *tompok cerah dipesong dari pusat skrin,* O *ke* P.

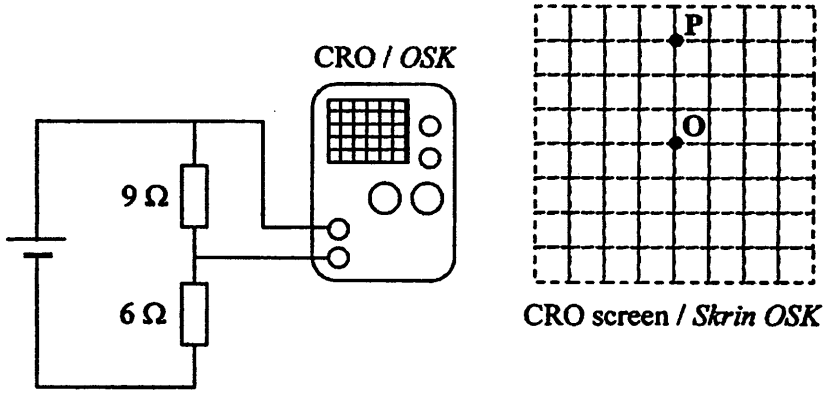


Diagram 27.1 / *Rajah* 27.1

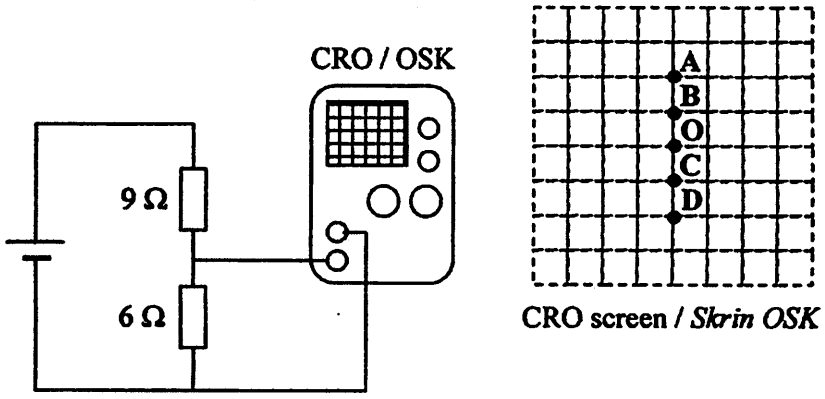


Diagram 27.2 / *Rajah* 27.2

What is the position of the bright spot when the CRO is connected across the 6 Ω resistor as shown in Diagram 27.2?

Apakah kedudukan tompok cerah apabila OSK itu disambung merentasi perintang 6 Ω *seperti ditunjukkan dalam Rajah* 27.2?

45 Diagram 28 shows five identical bulbs in a circuit.

Rajah 28 *menunjukkan lima buah mentol di dalam suatu litar.*

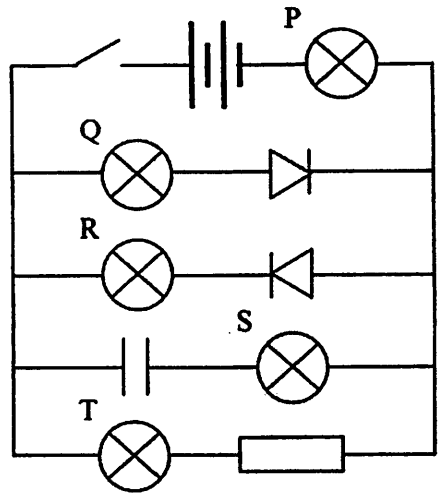


Diagram 28 / *Rajah* 28

Which bulbs light up continuously when the switch is on?

Mentol manakah menyala berterusan apabila suis dihidupkan?

A P, Q and T only / P, Q *dan* T *sahaja*
B Q and S only / Q *dan* S *sahaja*
C R and S only / R *dan* S *sahaja*
D P and R only / P *dan* R *sahaja*

46 Diagram 29 shows the voltage-time graphs at the inputs and output of a logic gate.
Rajah 29 *menunjukkan graf voltan-masa di input-input dan output sebuah get logic.*

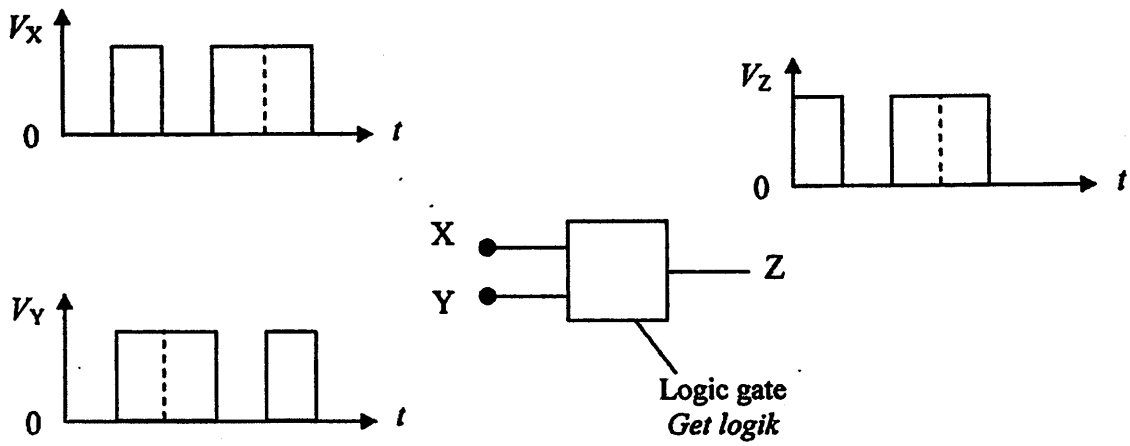


Diagram 29 / *Rajah* 29

Identify the logic gate. / *Kenal pasti get logik itu.*

A OR gate / get ATAU
B AND gate / get DAN
C NOR gate / get TAKATAU
D NAND gate / get TAKDAN

47 Diagram 30 shows a transistor circuit.

Rajah 30 *menunjukkan suatu litar transistor.*

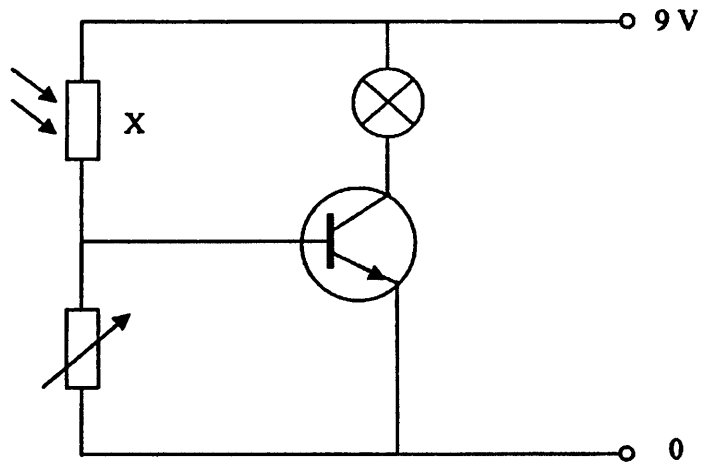


Diagram 30 / *Rajah* 30

What is component X and when will the bulb light up?

Apakah komponen X *dan bilakah mentol menyala?*

	Component X *Komponen* X	The bulb lights up during the *Mentol menyala pada waktu*
A	Light dependent resistor *Perintang peka cahaya*	Night *Malam*
B	Light dependent resistor *Perintang peka cahaya*	Day *Siang*
C	Heat dependent resistor *Perintang peka haba*	Night *Malam*
D	Heat dependent resistor *Perintang peka haba*	Day *Siang*

48 An unstable $^{238}_{92}U$ nucleus decays to a stable $^{226}_{88}Ra$ nucleus. What is the number of alpha particles and beta particles emitted during this process?

Suatu nucleus $^{238}_{92}U$ *yang tak stabil mereput kepada nucleus* $^{226}_{88}Ra$ *yang stabil. Berapakah bilangan zarah alfa dan zarah beta yang dipancar semasa proses ini?*

	Number of alpha particles *Bilangan zarah alfa*	Number of beta particles *Bilangan zarah beta*
A	2	3
B	3	2
C	4	1
D	1	1

49 In a nuclear reaction, 5.265×10^{-10} J energy is released.
What is the mass defect of this reaction?

Dalam suatu tindak balas nuclear, 5.265×10^{-10} J *tenaga dibebaskan.*
Berapakah cacat jisim bagi tindak balas ini?

A 4.74×10^{7} kg
B 1.58×10^{-2} kg
C 1.76×10^{-18} kg
D 5.85×10^{-27} kg

50 Diagram 31 shows the decay graph when radioisotope X decays to Y.
Initially there are 20 mg of X in a sample.

Rajah 31 *menunjukkan graf reputan apabila radioisotop* X *mereput kepada* Y.
Pada awalnya, terdapat 20 mg *bagi* X *dalam suatu sampel.*

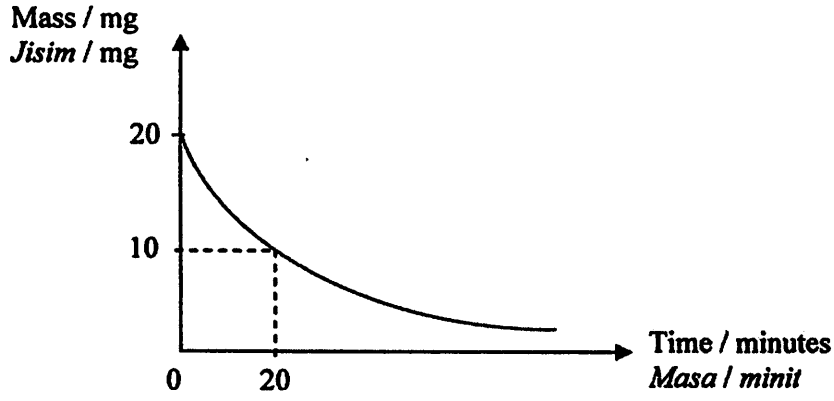


Diagram 31 / *Rajah* 31

Determine the mass of X and the mass of Y in the sample after 40 minutes.

Tentukan jisim X *dan jisim* Y *dalam sampel itu selepas* 40 *minit.*

	Mass of X *Jisim* X	Mass of Y *Jisim* Y
A	10 mg	5 mg
B	10 mg	10 mg
C	5 mg	5 mg
D	5 mg	15 mg

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES

MAKLUMAT UNTUK CALON

1. This question paper consists of 50 questions.

   Kertas soalan ini mengandungi 50 soalan.

2. Answer **all** questions.

   Jawab **semua** soalan.

3. Each question is followed by either three or four options. Choose the best option for each question and blacken the correct space on the objective answer sheet.

   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.

4. Blacken only **one** space for each question.

   *Hitamkan **satu** ruangan sahaja bagi setiap soalan.*

5. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.

   Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.

6. The diagrams in the questions provided are not drawn to scale unless stated.

   Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.

7. You may use a scientific calculator.

   Anda dibenarkan menggunakan kalkulator saintifik.

8. A list of formulae is provided on page 2.

   Satu senarai formula disediakan di halaman 2.