

SULIT

4531/1

Fizik

Kertas 1

Ogos/Sept 2018

1 $\frac{1}{4}$ jam



**MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
NEGERI SEMBILAN**

**PROGRAM PENINGKATAN AKADEMIK TINGKATAN 5
SEKOLAH-SEKOLAH NEGERI SEMBILAN 2018**

PHYSICS (*FIZIK*)

Paper 1 (*Kertas 1*)

One hour and fifteen minutes (*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 2 .*

Kertas soalan ini mengandungi 33 halaman bercetak

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 **three** or **four** options. Choose the best option for each question then blacken the correct space on the answer sheet.
*Setiap soalan diikuti dengan **tiga** atau **empat** pilihan jawapan. Pilih satu jawapan terbaik untuk setiap soalan dan hitamkan ruang yang betul pada kertas jawapan.*
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 non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.
8. A list of formulae is provided on page 3.
Satu senarai formula disediakan di halaman 3.

The following information may be useful. The symbols have their usual meaning.

Maklumat berikut mungkin berfaedah. Simbol-simbol mempunyai makna yang biasa.

1	$a = \frac{v-u}{t}$	16	$n = \frac{\sin i}{\sin r}$
2	$v^2 = u^2 + 2as$	17	$n = \frac{1}{\sin c}$
3	$s = ut + \frac{1}{2}at^2$	18	$n = \frac{\text{real depth}}{\text{apparent depth}}$ $= \frac{\text{dalam nyata}}{\text{dalam ketara}}$
4	Momentum = mv	19	$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
5	$F = ma$	20	Linear magnification / Pembesaran linear, $m = \frac{v}{u}$
6	Kinetic energy / Tenaga kinetik $= \frac{1}{2}mv^2$	21	$v = f\lambda$
7	Gravitational potential energy / Tenaga keupayaan graviti = mgh	22	$\lambda = \frac{ax}{D}$
8	Elastic potential energy / Tenaga keupayaan kenyal = $\frac{1}{2}Fx$	23	$Q = It$
9	Power, $P = \frac{\text{energy}}{\text{time}}$ Kuasa, $P = \frac{\text{tenaga}}{\text{masa}}$	24	$E = VQ$
10	$\rho = \frac{m}{V}$	25	$V = IR$
11	Pressure / Tekanan, $P = \frac{F}{A}$	26	Power / Kuasa, $P = IV$
12	Pressure / Tekanan, $P = h\rho g$	27	$g = 10 \text{ m s}^{-2}$
13	Heat / Haba, $Q = mc\theta$	28	$\frac{N_p}{N_s} = \frac{V_p}{V_s}$
14	Heat / Haba, $Q = ml$	29	Efficiency / Kecekapan = $\frac{V_s I_s}{V_p I_p} \times 100\%$
15	$\frac{PV}{T} = \text{constant} / \text{pemalar}$	30	$E = mc^2$
		31	$c = 3.0 \times 10^8 \text{ m s}^{-1}$
		32	1 a.m.u. / 1 u.j.a = $1.66 \times 10^{-27} \text{ kg}$

1. The speed of sound in liquid is $1.5 \times 10^6 \text{ mms}^{-1}$.
 What is this speed in ms^{-1} ?
*Laju cahaya dalam cecair ialah $1.5 \times 10^6 \text{ mms}^{-1}$.
 Berapakah laju ini dalam ms^{-1} ?*

- A** 1.50×10^3 **B** 1.50×10^4
C 1.50×10^{-3} **D** 1.50×10^{-4}

2. Diagram 2.1 and Diagram 2.2 show a pair of vernier calipers and a micrometer screw gauge.
Rajah 2.1 dan Rajah 2.2 menunjukkan sebuah angkup vernier dan sebuah tolok skru mikrometer.

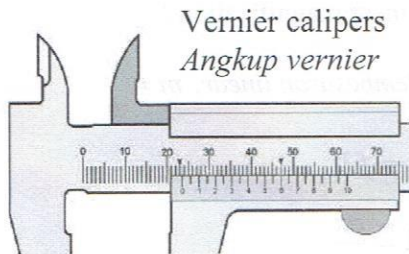


Diagram 2.1
Rajah 2.1



Diagram 2.2
Rajah 2.2

- Which comparison is correct about the sensitivity of both instruments when measuring the thickness of wire?
Perbandingan yang manakah betul tentang kepekaan kedua – dua alat itu apabila mengukur ketebalan suatu dawai?

	Vernier calipers <i>Angkup vernier</i>	Micrometer screw gauge <i>Tolok skru mikrometer</i>
A	Low sensitivity <i>Kepekaan rendah</i>	Low sensitivity <i>Kepekaan rendah</i>
B	Low sensitivity <i>Kepekaan rendah</i>	High sensitivity <i>Kepekaan tinggi</i>
C	High sensitivity <i>Kepekaan tinggi</i>	Low sensitivity <i>Kepekaan rendah</i>

3. Diagram 3 shows two strips of ticker tapes which were attached to two moving trolleys X and Y respectively.

Rajah 3 menunjukkan dua keratan pita detik yang masing-masing dilekat pada troli X dan Y yang sedang bergerak.

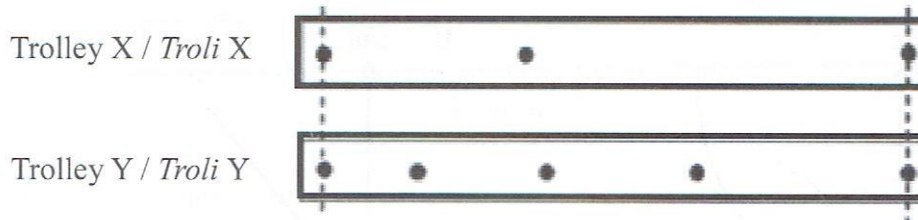


Diagram 3

Rajah 3

Which statement is correct?

Pernyataan yang manakah betul?

- A The time taken by both trolleys are the same
Masa yang diambil oleh kedua-dua troli adalah sama
- B The velocity of both trolleys are the same
Halaju kedua-dua troli adalah sama
- C The distance travelled by both trolleys are the same
Jarak dilalui oleh kedua-dua troli adalah sama
4. Fatimah walks from A to B and then to C as shown in Diagram 4.
Fatimah berjalan dari A ke B, dan kemudian ke C seperti ditunjukkan dalam Rajah 4.

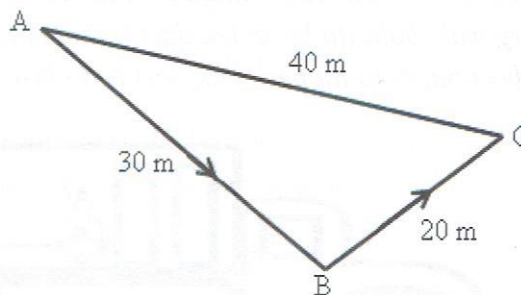


Diagram 4

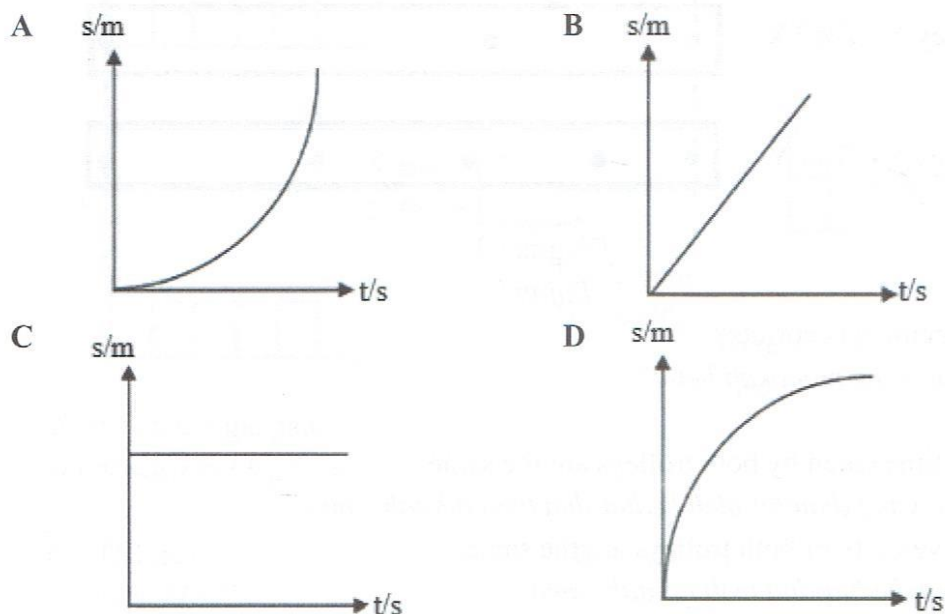
Rajah 4

What is the distance and the displacement travelled as she moves from A to C?

Berapakah jarak dan sesaran yang dilalui apabila dia bergerak dari A ke C?

	Distance (m) <i>Jarak (m)</i>	Displacement (m) <i>Sesaran (m)</i>
A	50	40
B	40	70
C	90	40
D	90	50

5. Which of the following displacement-time graphs shows an object moving with constant velocity?
 Antara graf sesaran-masa berikut, yang manakah menunjukkan objek yang sedang bergerak dengan halaju malar?



6. Diagram 6 shows a ball is placed in position A in a lorry. When the lorry moves, the ball rolls from position A to B. When the lorry stops suddenly, the ball rolls from position B to A.
 Rajah 6 menunjukkan sebiji bola yang diletakkan di kedudukan A di dalam sebuah lori. Apabila lori itu bergerak, bola itu bergolek dari kedudukan A ke B. Apabila lori itu berhenti dengan tiba-tiba, bola itu bergolek dari kedudukan B ke A.

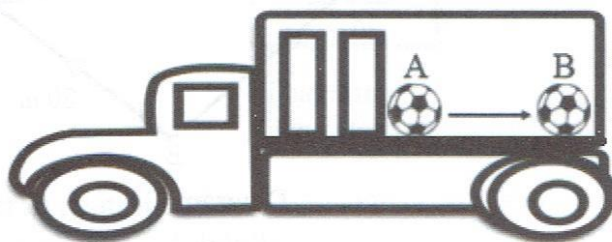


Diagram 6
 Rajah 6

The movement of the ball is caused by
 Pergerakan bola itu adalah disebabkan oleh

- | | |
|----------------------|------------------------|
| A Inertia
Inersia | B Friction
Geseran |
| C Impulse
Impuls | D Momentum
Momentum |

7. Diagram 7 shows the path of a rocket model.
 Rajah 7 menunjukkan lintasan sebuah model roket.

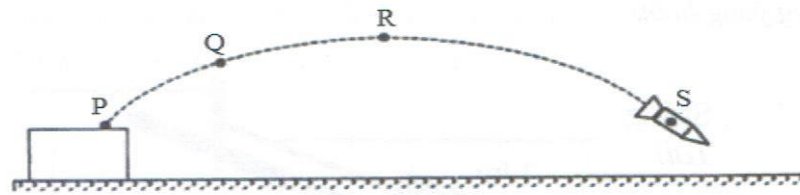


Diagram 7
 Rajah 7

Kinetic energy is minimum at
 Tenaga kinetik adalah minimum di

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

8. Diagram 8 shows a load being suspended by two cables.
 Rajah 8 menunjukkan satu beban digantung oleh dua kabel.

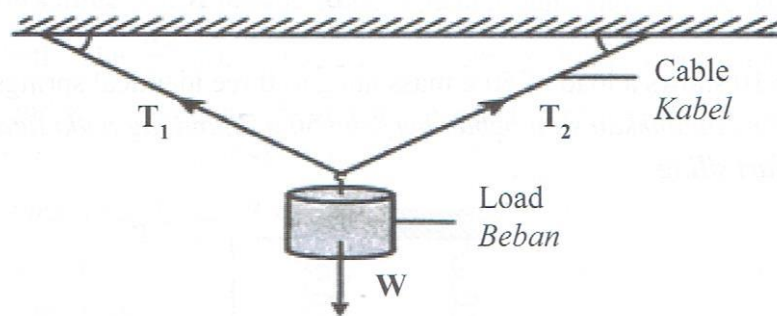


Diagram 8
 Rajah 8

Which of the diagrams represents the forces acting on the load correctly?
 Rajah manakah yang mewakili daya-daya yang bertindak ke atas beban itu dengan betul?

- | | |
|----------|----------|
| <p>A</p> | <p>B</p> |
| <p>C</p> | <p>D</p> |

9. Diagram 9 shows a block of 3 kg mass tied by a light string on a smooth inclined plane.
Rajah 9 menunjukkan satu blok berjisim 3 kg diikat dengan tali ringan pada satah condong yang licin.

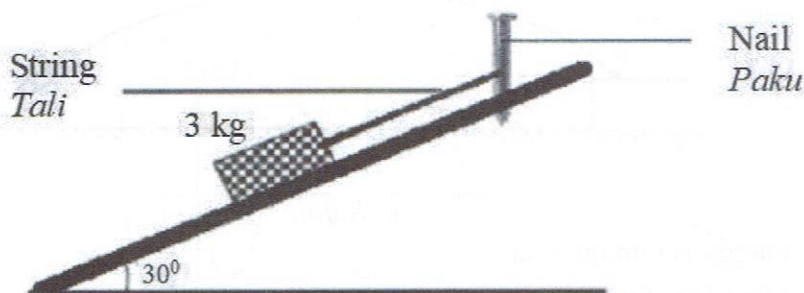


Diagram 9
Rajah 9

What is the tension in the string if the block is at rest?
Berapakah tegangan tali jika blok berada dalam keadaan pegun?

- A 10.0 N B 12.0 N
C 15.0 N D 30.0 N
10. Diagram 10 shows a load of 50 g mass hung to three identical springs from a ceiling.
Rajah 10 menunjukkan satu beban berjisim 50 g digantung pada tiga spring yang serupa dari siling.

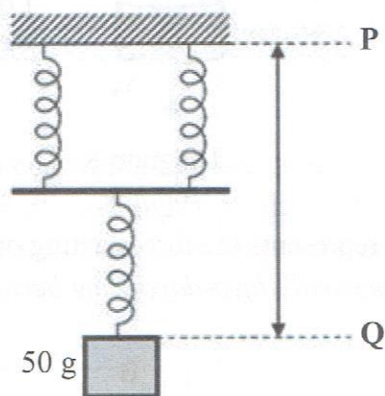


Diagram 10
Rajah 10

Each spring will be extended by 1 cm when a 10 g load is hung from one end separately.

Setiap spring akan memanjang sebanyak 1 cm apabila satu beban 10 g digantung secara berasingan.

If the original length of each spring is 10 cm, what is the length between P and Q?
Jika panjang asal setiap spring adalah 10 cm, berapakah panjang antara P dan Q?

- A 7.5 cm B 27.5 cm
C 30.0 cm D 37.5 cm

11. Diagram 11 shows a suction cup used as a hanger.

Rajah 11 menunjukkan mangkuk penyedut digunakan sebagai alat penggantung.

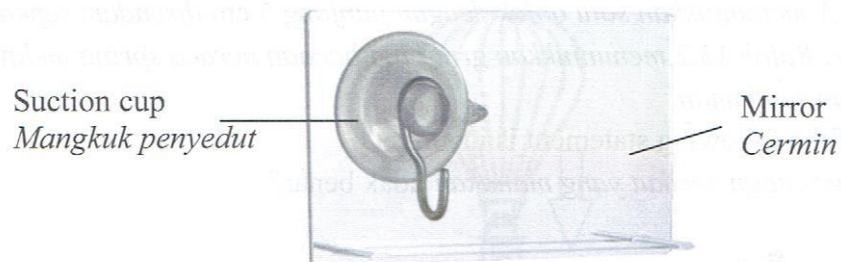


Diagram 11

Rajah 11

What is the purpose of pressing the suction cup onto the mirror?

Apakah tujuan menekan mangkuk penyedut ke atas cermin?

- A To increase the atmospheric pressure inside the cup
Untuk meningkatkan tekanan atmosfera di dalam mangkuk
- B To decrease the air pressure inside the cup
Untuk mengurangkan tekanan udara di dalam mangkuk
- C To produced bigger gas pressure inside the cup
Untuk hasilkan tekanan gas yang besar di dalam mangkuk
- D To change the atmospheric pressure
Untuk mengubah tekanan atmosfera

12. Diagram 12 shows a hydraulic jack in equilibrium. Calculate the value of force, F if the mass of load is 30 kg and cross-sectional area of piston 1 and 2 are 90 cm^2 and 6 cm^2 respectively.

Rajah 12 di bawah menunjukkan jek hidraulik dalam keseimbangan. Hitungkan nilai daya, F jika jisim beban ialah 30 kg dan luas keratan rentas piston 1 dan 2 masing-masing ialah 90 cm^2 and 6 cm^2 .

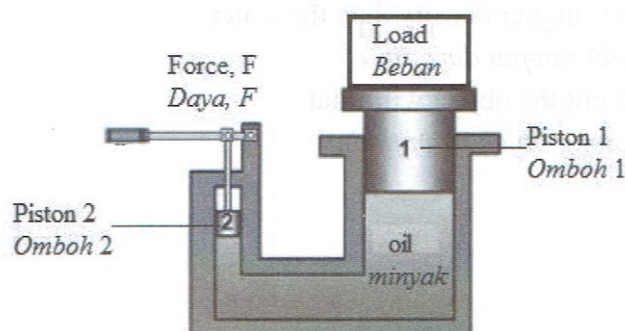


Diagram 12

Rajah 12

- A 10 N
- B 20 N
- C 30 N
- D 40 N

13. Diagram 13.1 shows an object with length of 5 cm is totally immersed in water. Diagram 13.2 shows the graph of the spring balance reading against depth. *Rajah 13.1 menunjukkan satu objek dengan panjang 5 cm direndam sepenuhnya ke dalam air. Rajah 13.2 menunjukkan graf bagi bacaan neraca spring melawan kedalaman rendaman.*

Which of the following statement is incorrect?

Antara pernyataan berikut yang manakah tidak benar?

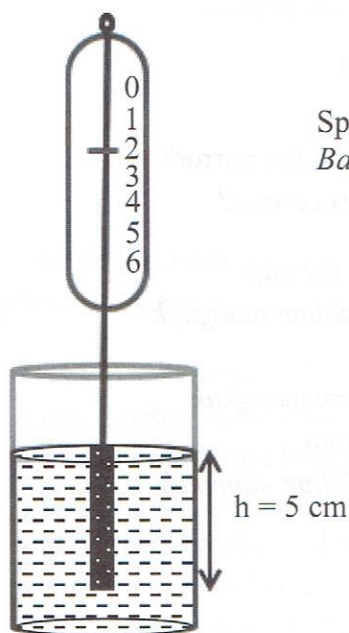


Diagram 13.1
Rajah 13.1

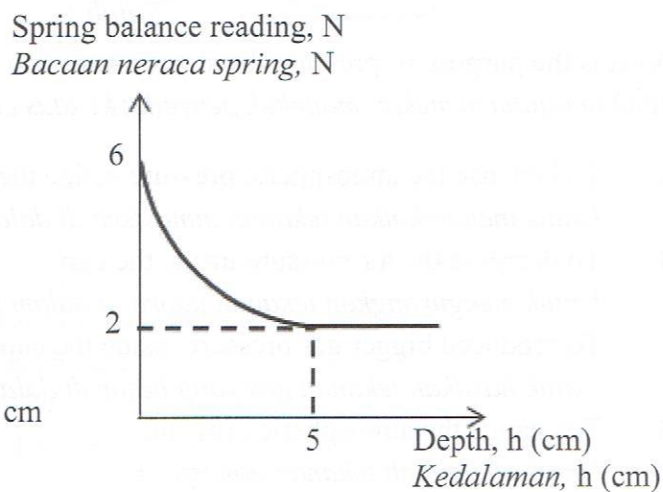


Diagram 13.2
Rajah 13.2

- A The buoyant force acting on the object is 4 N
Daya apungan yang bertindak pada objek ialah 4 N
- B The weight of the object is 6 N
Berat objek ialah 6 N
- C The object has higher density than the water
Objek itu lebih tumpat dari air
- D If the rope is cut the object will float
Jika tali dipotong objek akan timbul

14. Diagram 14 shows a hot air balloon moving towards the ground.
Rajah 14 menunjukkan sebuah belon udara panas bergerak ke arah permukaan bumi.

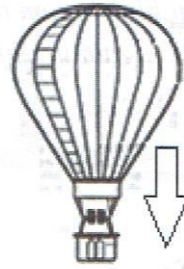


Diagram 14
Rajah 14

Which of the statements describes the situation?

Pernyataan manakah menerangkan situasi tersebut?

- A The hot air has a lower density than the surrounding air
Ketumpatan udara panas lebih rendah daripada udara sekeliling
- B Bouyant force of the hot air balloon is lower than the weight of the balloon
Daya apungan belon udara panas lebih rendah daripada berat belon itu.
- C Temperature of the air in the balloon increases
Suhu udara dalam belon itu meningkat
- D Gravitational force on the hot air balloon is zero
Daya graviti ke atas belon udara panas adalah sifar

15. Diagram 15.1 shows a metal block hanging from a spring balance. Diagram 15.2 shows the metal block immersed in eureka can filled with water. *Rajah 15.1 menunjukkan satu blok logam tergantung dari sebuah neraca spring. Rajah 15.2 menunjukkan blok logam itu ditenggelamkan ke dalam tin eureka yang berisi air.*

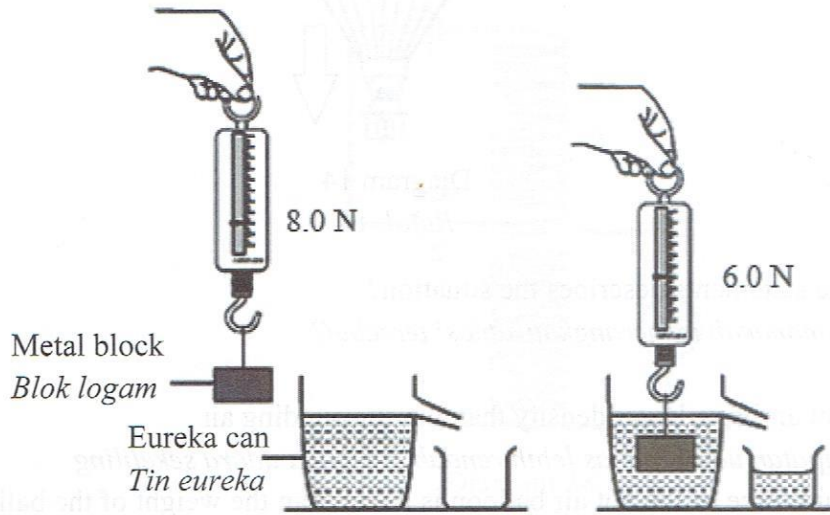


Diagram 15.1
Rajah 15.1

Diagram 15.2
Rajah 15.2

What is the mass of the water in the beaker?

Berapakah jisim air di dalam bikar?

- A 0.2 kg B 0.4 kg
C 0.6 kg D 0.8 kg
16. Diagram 16 shows a Venturi tube with both ends are closed. After water is poured into the tube, which of the tubes shows the correct water level? *Rajah 16 menunjukkan sebuah tiub Venturi dengan kedua-dua hujung ditutup. Selepas air dituang ke dalam tiub, antara berikut yang manakah menunjukkan aras air yang betul?*

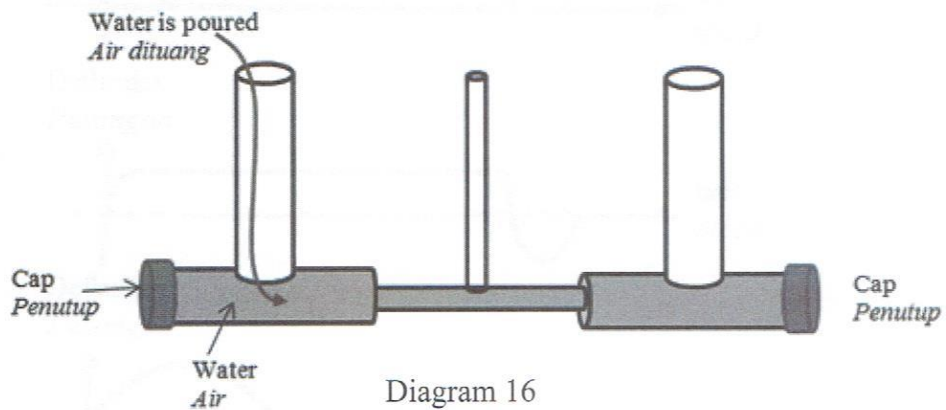
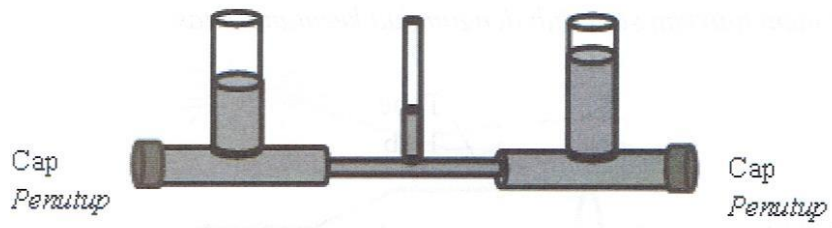
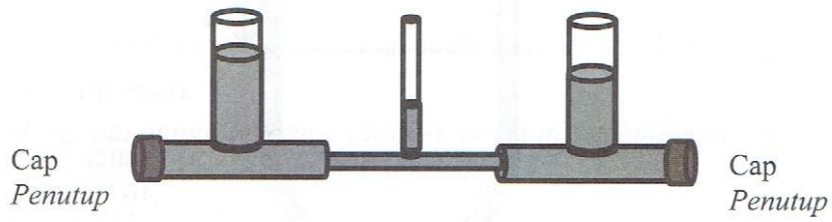


Diagram 16
Rajah 16

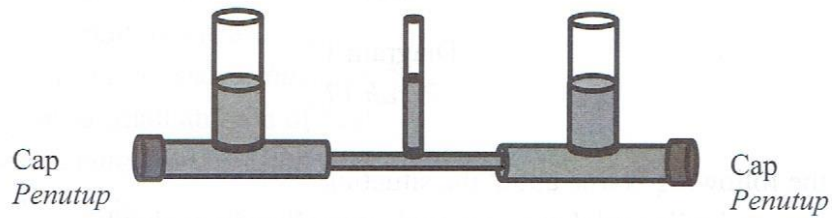
A



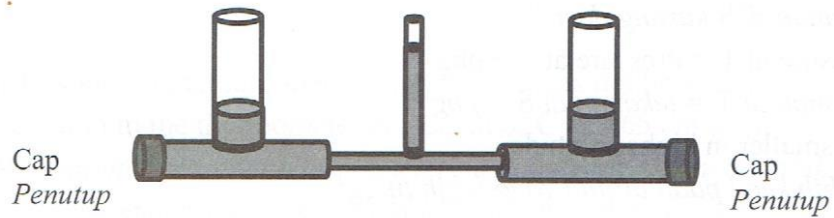
B



C



D



17. Diagram 17 shows a tube with two cross-sections.
Rajah 17 menunjukkan satu tiub dengan dua keratan rentas.

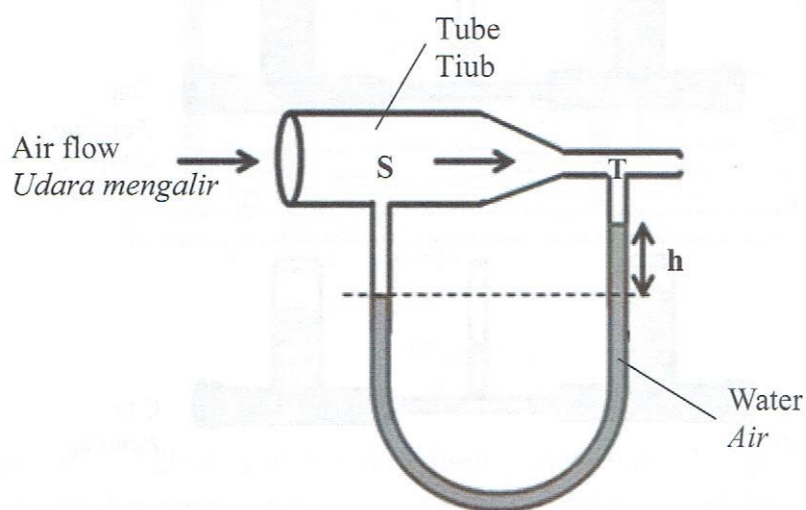


Diagram 17
Rajah 17

- Which of the following is true about the situation?
Manakah antara berikut adalah benar berkaitan situasi tersebut?
- A Pressure at S is less than T
Tekanan di S kurang dari T
 - B Pressure at T = Pressure at S + ρhg
Tekanan di T = tekanan di S + ρhg
 - C h is smaller in higher altitude
h lebih kecil pada altitud yang lebih tinggi
 - D h is bigger when water is replaced with cooking oil
h lebih besar apabila air digantikan dengan minyak masak

18. Diagram 18 shows a boy holding a sparkling firework.
 Rajah 18 menunjukkan seorang budak lelaki memegang sebatang bunga api.



Diagram 18

Rajah 18

The spark from the firework which falls on the boy's hand does not produce severe burns because the spark

Percikan daripada bunga api yang jatuh ke atas tangan budak itu tidak menyebabkan lecuran yang teruk kerana percikan bunga api

- A is at a lower temperature
 berada pada suhu yang rendah
- B releases light, not heat
 membebaskan cahaya, bukan haba
- C contains a small amount of heat
 mengandungi jumlah haba yang sedikit
- D has a low specific heat capacity
 mempunyai muatan haba tentu yang rendah
19. Diagram 19 shows a mercury thermometer which has not been calibrated. The length of mercury column in the thermometer is 5 cm at 0 °C and 65 cm at 100 °C.
 Rajah 19 menunjukkan sebuah termometer merkuri yang belum ditentukan. Panjang turus pada termometer ialah 5 cm pada 0 °C dan 65 cm pada 100 °C.

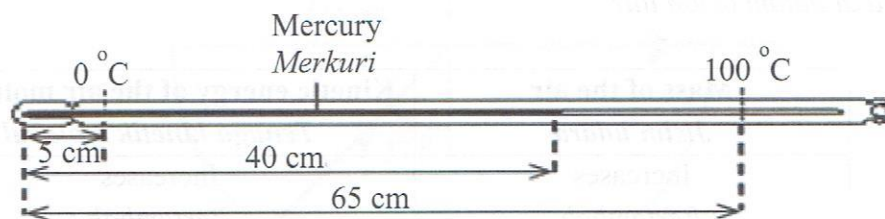


Diagram 19

Rajah 19

When the thermometer is placed in hot water, the length of the mercury column is 40 cm. What is the temperature of the hot water?

Apabila termometer itu dimasukkan ke dalam air panas, panjang turus merkuri menjadi 40 cm. Berapakah suhu air panas?

- A 35.0 °C B 58.3 °C
 C 61.5 °C D 70.0 °C

20. Diagram 20 shows a metal cylinder of mass 3.0 kg and specific heat capacity $1600 \text{ J kg}^{-1} \text{ }^{\circ}\text{C}^{-1}$ is heated with a heater of power 2 kW.
Rajah 20 menunjukkan satu silinder logam yang berjisim 3.0 kg dan muatan haba tentu $1600 \text{ J kg}^{-1} \text{ }^{\circ}\text{C}^{-1}$ dipanaskan dengan pemanas yang berkuasa 2 kW.

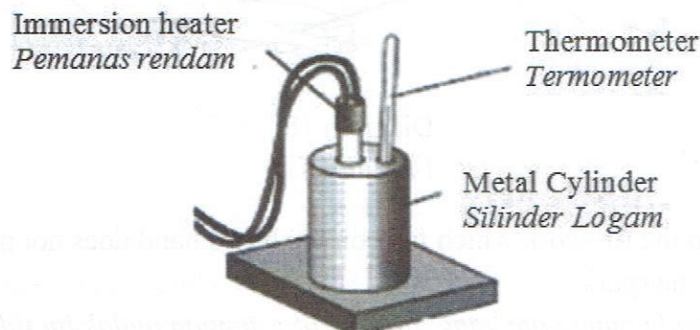


Diagram 20
 Rajah 20

What is the rise in temperature of the cylinder if the heater is switched on for 1 minute?
Berapakah kenaikan suhu silinder itu jika pemanas dihidupkan selama 1 minit?

- A 0.42 °C B 2.40 °C
 C 25.0 °C D 42.0 °C
21. A balloon is put under the sun until the volume is increased. Which of the following is correct about the mass of the air and the kinetic energy of the air molecules inside the balloon?
Sebiji belon dibiarkan di bawah cahaya matahari sehingga isipadunya bertambah. Antara berikut, yang manakah betul mengenai jisim udara dan tenaga kinetik molekul udara di dalam belon itu?

	Mass of the air <i>Jisim udara</i>	Kinetic energy of the air molecules <i>Tenaga kinetik molekul</i>
A	Increases <i>Bertambah</i>	Increases <i>Bertambah</i>
B	Unchanged <i>Tidak berubah</i>	Unchanged <i>Tidak berubah</i>
C	Increases <i>Bertambah</i>	Unchanged <i>Tidak berubah</i>
D	Unchanged <i>Tidak berubah</i>	Increases <i>Bertambah</i>

22. Diagram 22 shows a ray of light directed to a glass block.
Rajah 22 menunjukkan sinar cahaya dihalakan ke blok kaca.

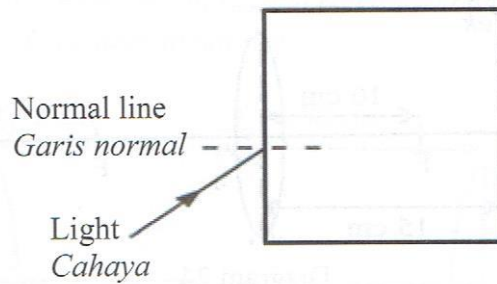


Diagram 22
Rajah 22

Which statement is correct?
Pernyataan manakah yang betul?

- A The light refracts towards the normal as it enters the glass block
Cahaya terbias mendekati normal apabila memasuki blok kaca
 - B The incident angle is equal to the refracted angle
Sudut tuju sama dengan sudut biasan
 - C The light travels faster as it enters the glass block
Cahaya merambat lebih laju apabila memasuki blok kaca
 - D The brightness of light increases as it travels in the glass block
Kecerahan cahaya bertambah apabila ia merambat di dalam blok kaca
23. Diagram 23 shows a ray of light propagates in a transparent semi-circular block.
Rajah 23 menunjukkan suatu sinar cahaya merambat dalam satu blok semi bulatan yang lutsinar.

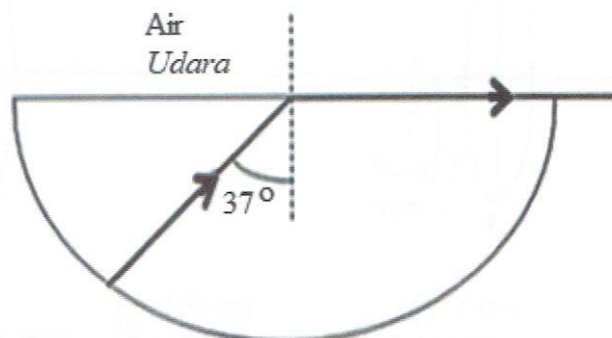


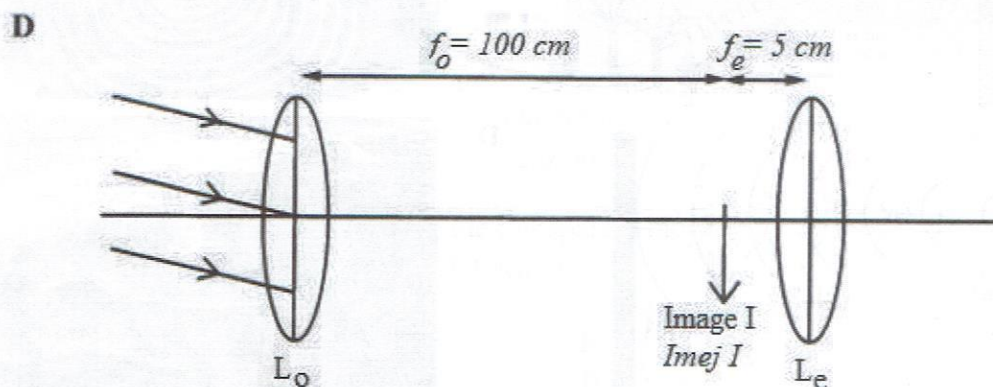
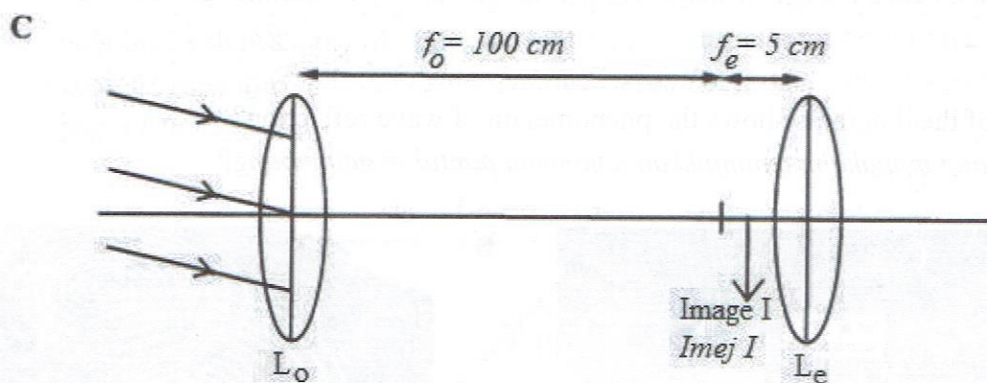
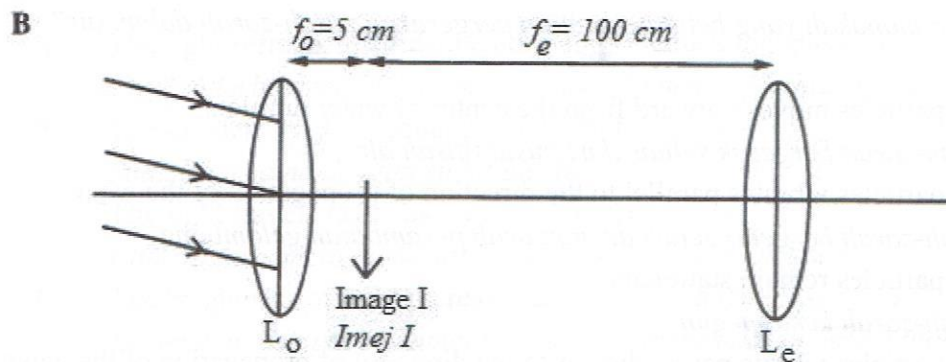
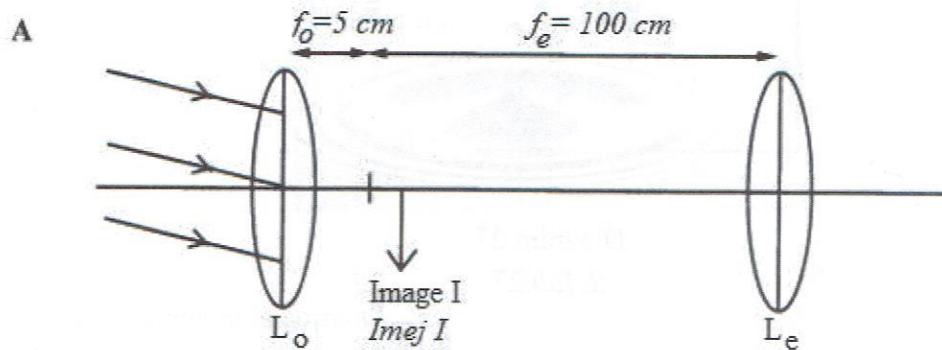
Diagram 23
Rajah 23

What is the refractive index of the transparent block?
Apakah indeks biasan bagi blok lutsinar itu?

- A 1.25
- B 1.33
- C 1.43
- D 1.66

26. Which arrangement of objective lens, L_o , eyepiece, L_e , and position of image, I, is correct for a telescope at normal adjustment?

Susunan kanta objek, L_o , kanta mata, L_e , dan kedudukan imej, I, manakah yang betul untuk satu teleskop pada pelarasan normal?



27. Diagram 27 shows the ripples produced by water droplets onto a river surface.
Rajah 27 menunjukkan riak-riak yang dihasilkan oleh titisan air pada permukaan sungai.

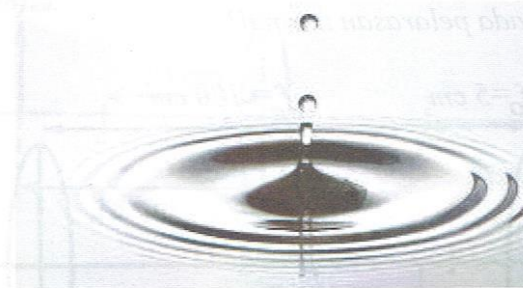
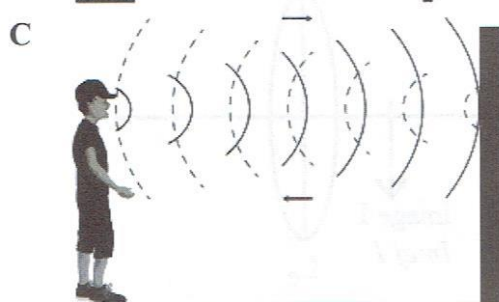
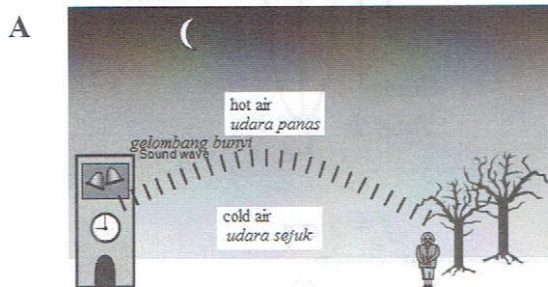


Diagram 27
Rajah 27

Which statement is correct about the movement of particles in the water?
Pernyataan manakah yang betul berkenaan pergerakan zarah-zarah dalam air?

- A The particles moves outward from the center of water droplets
Zarah-zarah bergerak keluar dari pusat titisan air
 - B The particles vibrates parallel to the direction of propagation of the wave
Zarah-zarah bergetar selari dengan arah perambatan gelombang
 - C The particles remain stationary
Zarah-zarah kekal pegun
 - D The particles vibrate perpendicular to the direction of propagation of the wave
Zarah-zarah bergetar berserenjang dengan arah perambatan gelombang
28. Which of the diagrams shows the phenomenon of wave reflection?
Rajah yang manakah menunjukkan fenomena pantulan gelombang?



29. Diagram 29 shows a concrete barrier near a fishing village.
Rajah 29 satu penghadang konkrit berdekatan sebuah perkampungan nelayan.

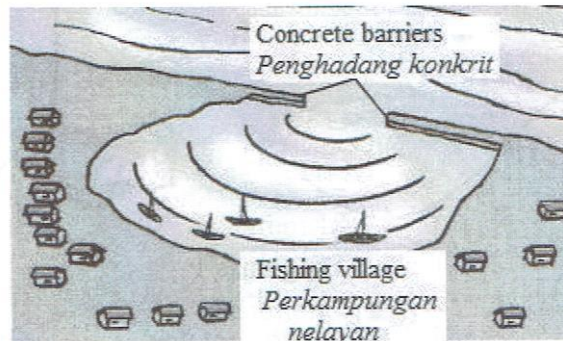


Diagram 29

Rajah 29

What will happen to the water wave after passing the barrier?

Apakah yang akan terjadi kepada gelombang air selepas melalui penghadang?

- A The wavelength decreases
Panjang gelombang berkurangan
- B The amplitude of wave decreases
Amplitud gelombang berkurangan
- C The frequency of wave increases
Frekuensi gelombang bertambah
- D The velocity of wave remain unchanged
Halaju gelombang tidak berubah
30. Diagram 30 shows a bat transmitted its ultrasonic wave. After 5 s, it received the echoes reflected by a fly. What is the distance between the fly and the bat if the speed of ultrasonic sound wave is 340 ms^{-1} ?
Rajah 30 menunjukkan satu kelawar memancarkan gelombang ultrasoniknya. Selepas 5 s ia menerima gema yang dipantulkan oleh seekor lalat. Berapakah jarak antara lalat dan kelawar jika kelajuan gelombang ultrasonik itu ialah 340 ms^{-1} ?

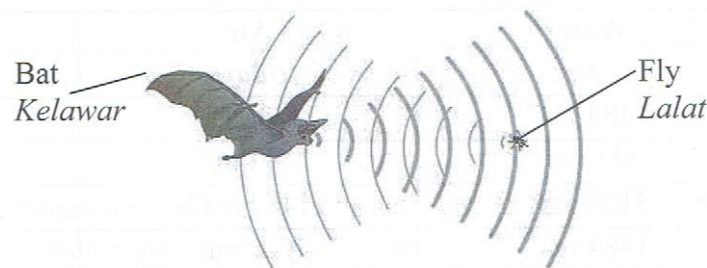


Diagram 30

Rajah 30

- A 68 m
- B 850 m
- C 1700 m
- D 136 m

31. Diagram 31 shows resultant of the wave interference.
Rajah 31 menunjukkan paduan interferens gelombang.

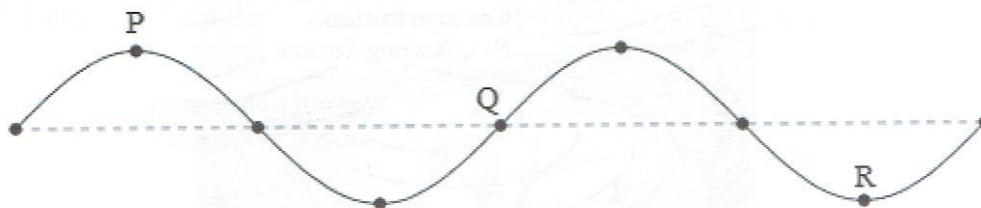


Diagram 31
Rajah 31

At which lines do the points located?

Pada garisan-garisan manakah titik-titik berikut berada?

	Point P <i>Titik P</i>	Point Q <i>Titik Q</i>	Point R <i>Titik R</i>
A	Antinodal <i>Antinod</i>	Nodal <i>Nod</i>	Antinodal <i>Antinod</i>
B	Antinodal <i>Antinod</i>	Antinodal <i>Antinod</i>	Nodal <i>Nod</i>
C	Nodal <i>Nod</i>	Antinodal <i>Antinod</i>	Antinodal <i>Antinod</i>
D	Nodal <i>Nod</i>	Nodal <i>Nod</i>	Antinodal <i>Antinod</i>

32. The sound waves propagation travels at different speed in the air, water and solid.
 Which comparison is correct about the speed of sound waves?
Gelombang bunyi bergerak dengan kelajuan yang berbeza dalam udara, air dan pepejal.
Perbandingan yang manakah betul tentang kelajuan gelombang bunyi?

	Water <i>Air</i>	Air <i>Udara</i>	Steel <i>Keluli</i>
A	1484 ms ⁻¹	343 ms ⁻¹	5120 ms ⁻¹
B	343 ms ⁻¹	1484 ms ⁻¹	5120 ms ⁻¹
C	5120 ms ⁻¹	1484 ms ⁻¹	343 ms ⁻¹
D	1484 ms ⁻¹	5120 ms ⁻¹	343 ms ⁻¹

33. Diagram 33 shows an application of electromagnetic waves.
Rajah 33 menunjukkan satu aplikasi gelombang elektromagnet.

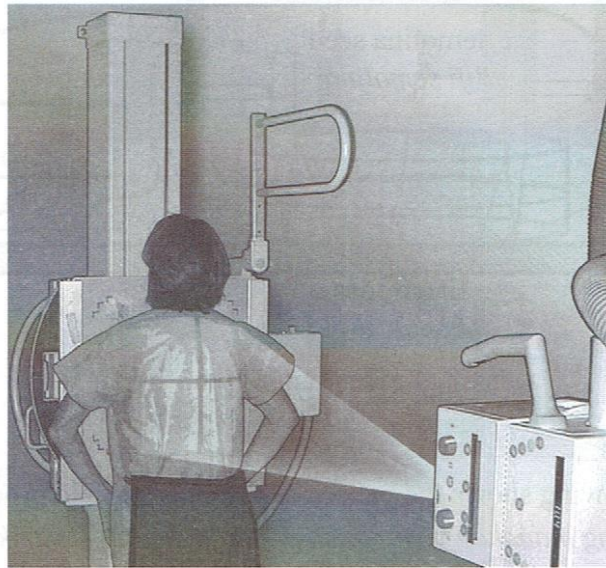


Diagram 33

Rajah 33

Which statement is correct about the characteristics of the waves used?
Pernyataan yang manakah betul tentang gelombang yang digunakan?

	Type of wave <i>Jenis gelombang</i>	Frequency <i>Frekuensi</i>	Total energy <i>Jumlah tenaga</i>
A	Longitudinal <i>Membujur</i>	High <i>Tinggi</i>	High <i>Tinggi</i>
B	Transverse <i>Melintang</i>	High <i>Tinggi</i>	Low <i>Rendah</i>
C	Transverse <i>Melintang</i>	High <i>Tinggi</i>	High <i>Tinggi</i>
D	Longitudinal <i>Membujur</i>	Low <i>Rendah</i>	Low <i>Rendah</i>

34. Diagram 34 shows the set-up of apparatus to map electric field.

Rajah 34 menunjukkan penyediaan radas untuk memetakan medan elektrik.

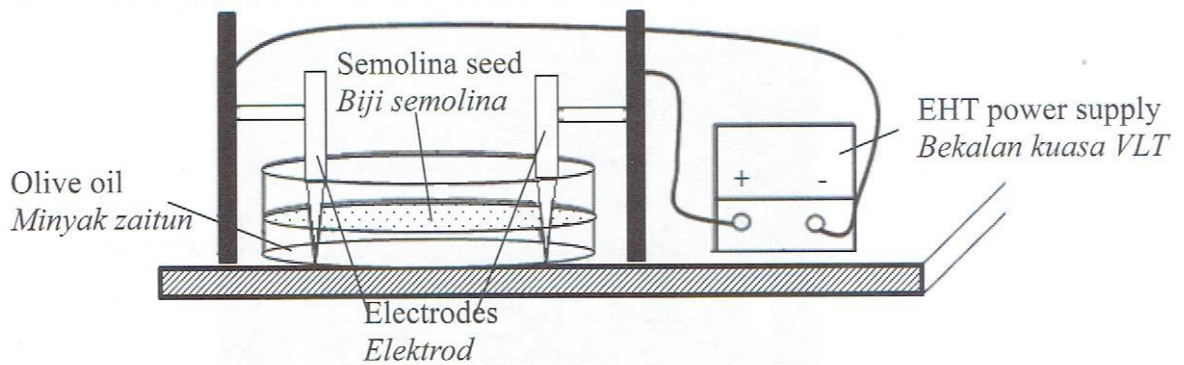
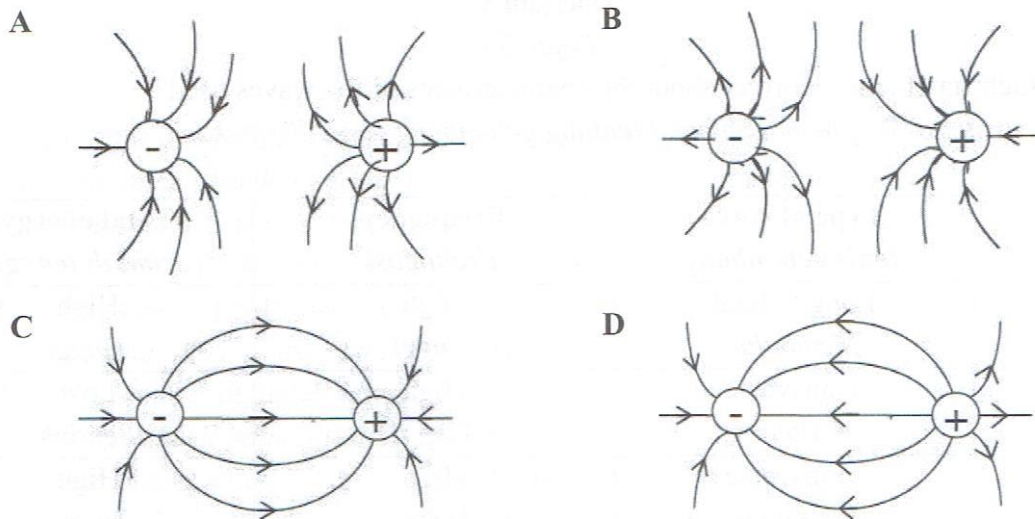


Diagram 34

Rajah 34

Which of the following shows the pattern of the electric field produced?

Antara berikut yang manakah menunjukkan corak medan elektrik yang dihasilkan?



35. Which of the following will not increase the effective resistance in a circuit?

Manakah antara berikut tidak akan meningkatkan rintangan berkesan dalam satu litar?

- A Increase the length of the wire
Meningkatkan panjang dawai
- B Decrease the diameter of the wire
Mengurangkan diameter dawai
- C Resistors are connected in series
Perintang-perintang disambung secara bersiri
- D Resistors are connected in parallel
Perintang-perintang disambung secara selari

36. Diagram 36 shows a circuit containing three resistors connected in series and in parallel.
 Rajah 36 menunjukkan satu litar yang mengandungi tiga perintang yang disambung secara sesiri dan selari.

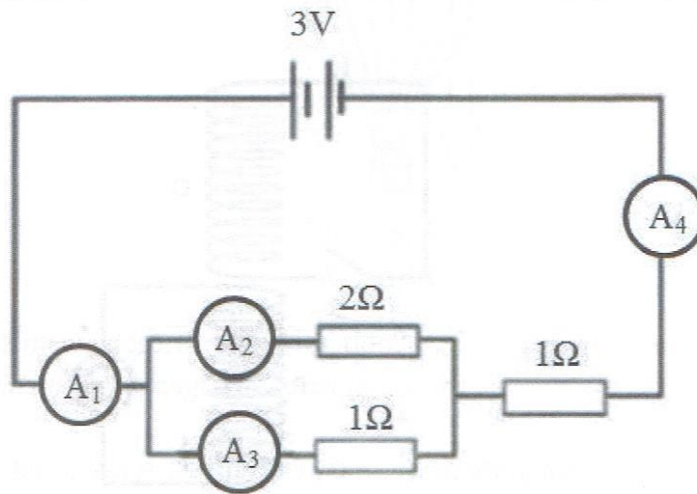


Diagram 36

Rajah 36

Which ammeter has the smallest reading?

Ammeter manakah yang mempunyai bacaan yang paling rendah?

- | | | | |
|---|-------|---|-------|
| A | A_1 | B | A_2 |
| C | A_3 | D | A_4 |
37. A $6\ \Omega$ bulb connected in series with a 3 V battery. The current flows through the circuit is 0.4 A, what is the internal resistance of the battery.
 Sebiji mentol $6\ \Omega$ disambungkan secara bersiri dengan bateri 3 V. Jika arus yang mengalir melalui litar ialah 0.4 A, berapakah nilai bagi rintangan dalam bateri?

- | | | | |
|---|---------------|---|---------------|
| B | $0.5\ \Omega$ | B | $1.0\ \Omega$ |
| C | $1.5\ \Omega$ | D | $2.0\ \Omega$ |

38. Diagram 38 shows coil P is connected to a centre-zero galvanometer, while coil Q is connected to a battery and a switch S, and is placed above coil P.

Rajah 38 menunjukkan gegelung P disambungkan kepada galvanometer sifar-tengah manakala gegelung Q disambungkan kepada bateri dan suis S, dan ditempatkan di atas gegelung P.

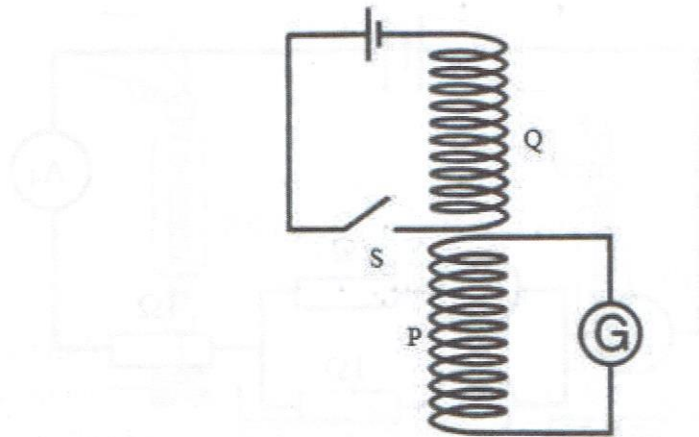
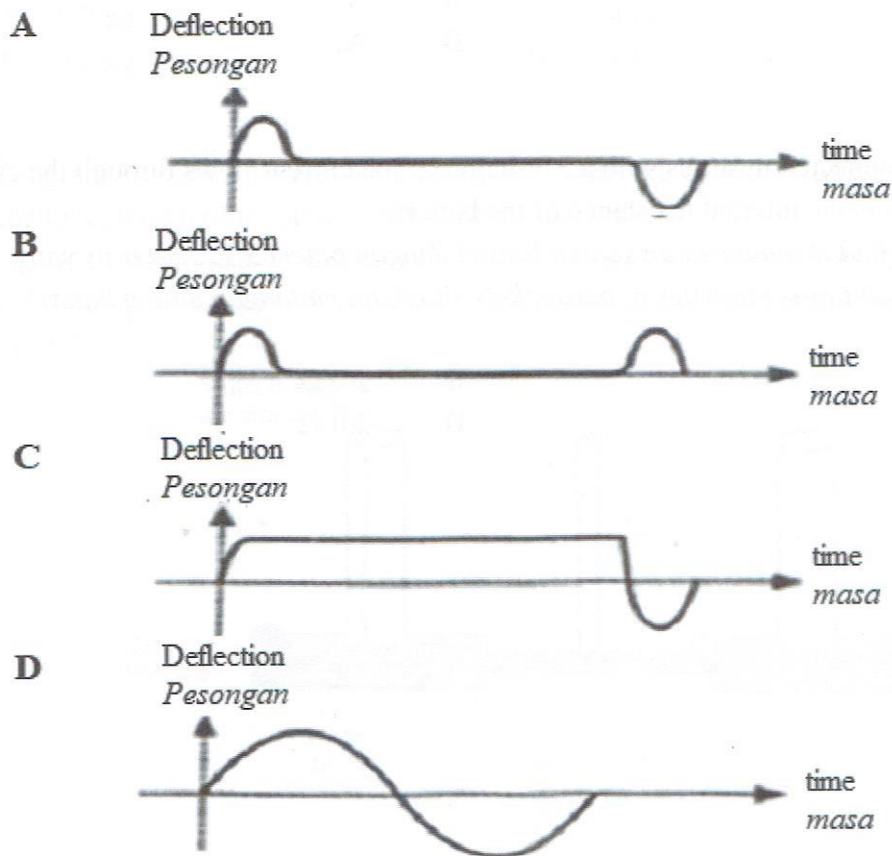


Diagram 38

Rajah 38

Which of the following graphs best represents the deflection of the galvanometer when S is closed for a few seconds and then opened?

Graf manakah yang terbaik mewakili pesongan galvanometer apabila suis S ditutup beberapa saat dan kemudian dibuka?



39. Diagram 39 shows a model of transformer sets up by Syahir.
Rajah 39 menunjukkan sebuah model transformer yang disediakan oleh Syahir.

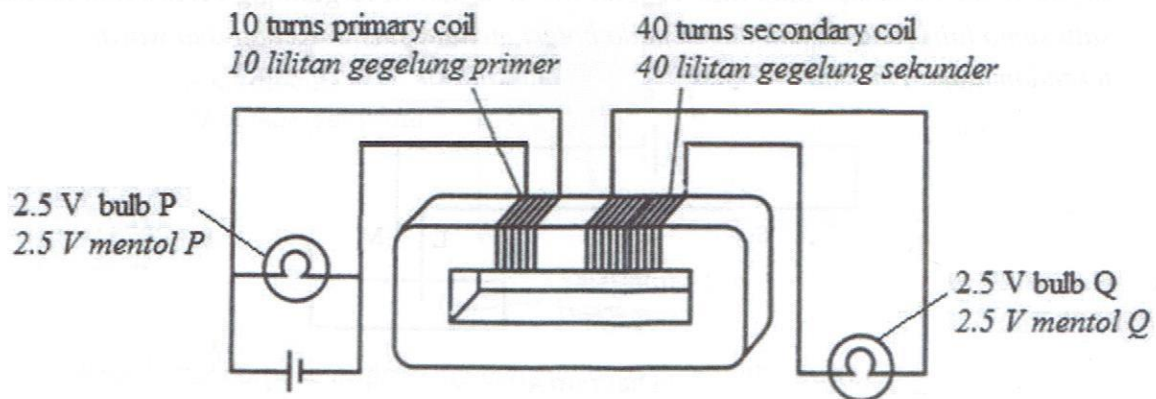


Diagram 39
Rajah 39

The transformer is connected to 2.5 V d.c. supply. Both bulbs have a voltage of 2.5 V. What does Syahir notice about the lamps?

Transformer itu disambungkan dengan bekalan 2.5 V d.c. Kedua-dua mentol itu mempunyai voltan 2.5 V. Apakah yang dapat diperhatikan oleh Syahir berkenaan mentol-mentol tersebut?

	Lamp P <i>Mentol P</i>	Lamp Q <i>Mentol Q</i>
A	Not light up <i>Tidak menyala</i>	Not light up <i>Tidak menyala</i>
B	Dim <i>Malap</i>	Dim <i>Malap</i>
C	Normal brightness <i>Kecerahan normal</i>	Very bright <i>Sangat cerah</i>
D	Normal brightness <i>Kecerahan normal</i>	Not light up <i>Tidak menyala</i>

40. Diagram 40 shows a circuit with wire L and M are closely hung to each other connected to a battery through switch S. Both wires are immersed in mercury. *Rajah 40 menunjukkan satu litar dengan wayar L dan M tergantung berdekatan antara satu sama lain yang disambung kepada bateri melalui suis S. Kedua-dua wayar terendam dalam merkuri.*

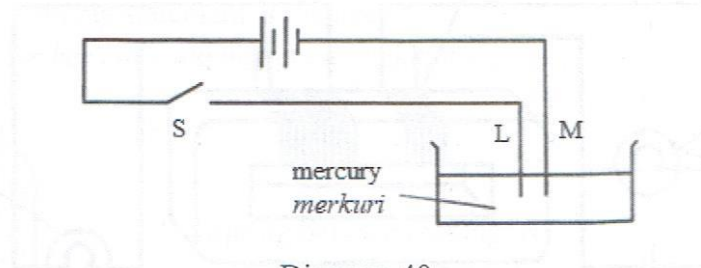


Diagram 40
Rajah 40

When switch S is closed,
Apabila suis S ditutup,

- A L and M will repel each other
L dan M akan menolak satu sama lain
- B L and M will attract to each other
L dan M akan menarik satu sama lain
- C both L and M move to the right
kedua-dua wayar bergerak ke kanan
- D both L and M move to the left
kedua-dua wayar bergerak ke kiri
- 41 Diagram 41.1 shows a bar magnet is moved into the coil of wire which is connected to an oscilloscope. The trace on the oscilloscope is shown in Diagram 41.2. *Rajah 41.1 menunjukkan sebatang magnet digerak masuk ke dalam gegelung wayar yang disambung kepada satu osiloskop. Surihan osiloskop ditunjukkan seperti dalam Rajah 41.2.*

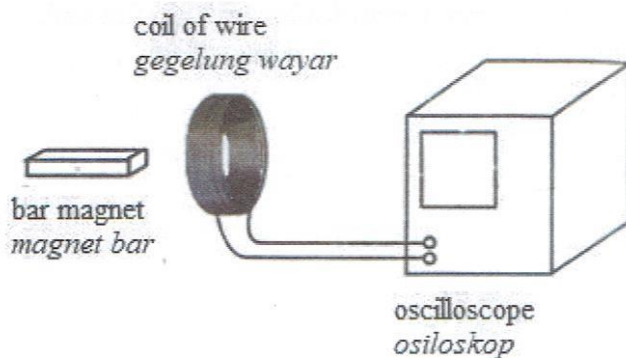


Diagram 41.1
Rajah 41.1

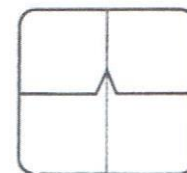
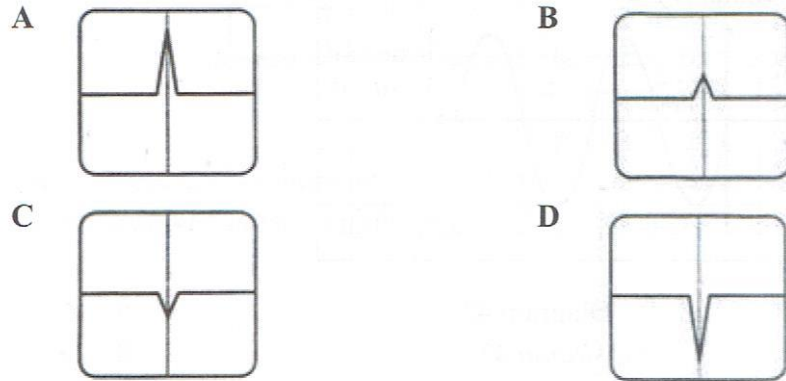


Diagram 41.2
Rajah 41.2

The magnet is then moved back from the coil at a greater speed. Which of the following traces shows this situation?

Magnet itu kemudian digerakkan semula ke belakang dengan lebih laju. Manakah di antara surihan berikut menunjukkan keadaan tersebut?



- 42 Diagram 42 shows three coils P, Q and R are wound around an iron core. P has N turns, while Q and R both have $\frac{N}{2}$ turns. Two identical bulbs of 200V, 100W each are connected to Q and R. Assume that the transformer has an efficiency of 100%.
Rajah 42 menunjukkan tiga gegelung P, Q dan R dililit pada teras besi. P mempunyai N lilitan, sementara setiap Q dan R mempunyai $\frac{N}{2}$ lilitan. Dua mentol yang serupa pada 200V, 100W setiap satu disambung pada Q dan R. Anggap transformer mempunyai kecekapan 100%.

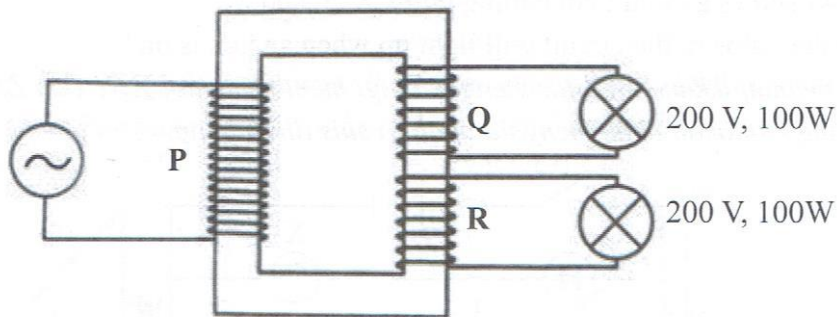


Diagram 42
Rajah 42

If P is connected to a constant voltage supply of 400 V, what is current that flows through P?

Jika P disambung bekalan voltan malar 400 V, berapakah arus yang mengalir melalui P?

- | | | | |
|----------|--------|----------|--------|
| A | 0.25 A | B | 0.50 A |
| C | 1.00 A | D | 2.00 A |

43. Diagram 43 shows a trace seen on a Cathode Ray Oscilloscope (CRO) screen.
Rajah 43 menunjukkan surihan di atas skrin Osiloskop Sinar Katod (OSK).

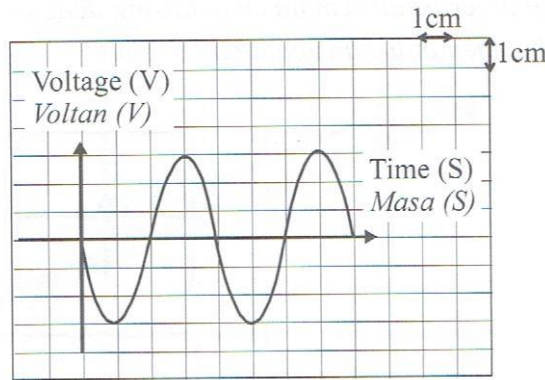


Diagram 43
Rajah 43

The Y-gain and the time-base are set at 3.0 volt/division and 10 ms/division respectively.

What is the frequency of the alternating current power supply that is connected to the C.R.O?

Gandaan-Y dan dasar masa telah disetkan pada 3.0 volt/bahagian dan 10 ms/bahagian masing-masing.

Berapakah frekuensi arus ulang-alik yang disambungkan ke OSK?

- | | | | |
|----------|----------|----------|---------|
| A | 0.025 Hz | B | 0.04 Hz |
| C | 25 Hz | D | 40 Hz |
44. Diagram 44 shows a circuit containing bulbs X, Y and Z.
 Which of the bulbs in the circuit will light up when switch is on?
*Rajah 44 menunjukkan satu litar mengandungi mentol-mentol X, Y dan Z.
 Mentol yang manakah akan menyala apabila suis ditutupkan.*

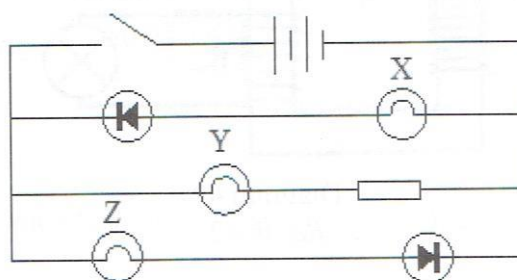


Diagram 44
Rajah 44

- | | | | |
|----------|--------------------|----------|--------------------------|
| A | X and Y
X dan Y | B | X and Z
X dan Z |
| C | Y and Z
Y dan Z | D | X, Y and Z
X, Y dan Z |

45. Diagram 45 shows a transistor circuit.
Rajah 45 menunjukkan suatu litar transistor.

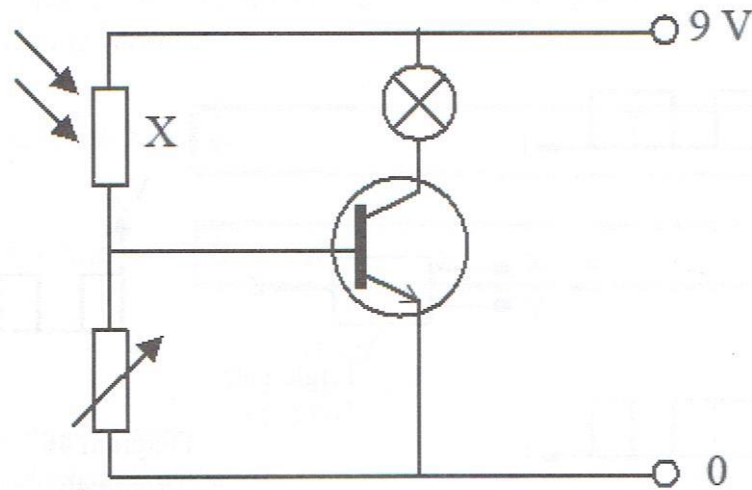
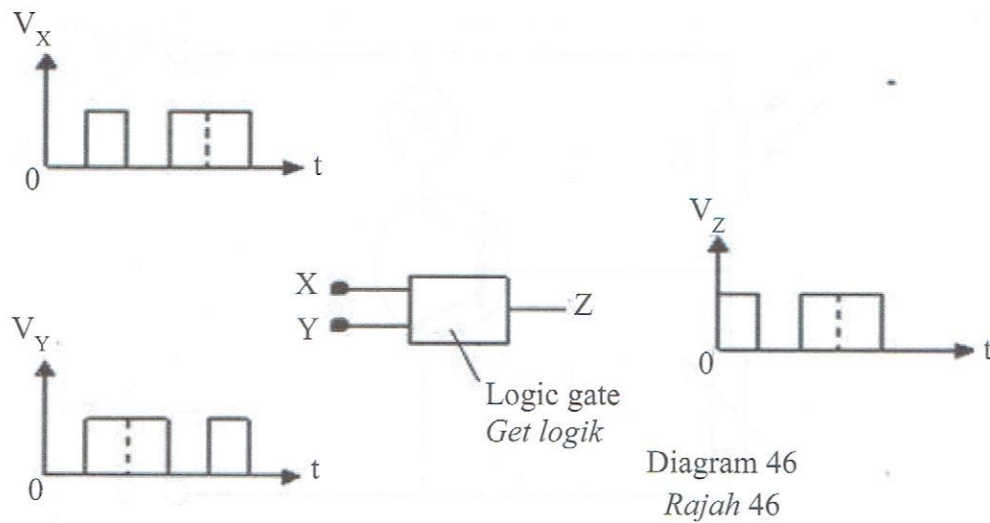


Diagram 45
Rajah 45

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

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



Identify the logic gate.
Kenal pasti get logik itu.

- | | |
|----------------------------------|----------------------------------|
| A OR gate
<i>Get ATAU</i> | B AND gate
<i>Get DAN</i> |
| C NOR gate
<i>Get TAKATAU</i> | D NAND gate
<i>Get TAKDAN</i> |
47. Diagram 47 shows a nuclide notation of radioisotope Radium-226.
Rajah 47 menunjukkan simbol nuklid radioisotop Radium-226.

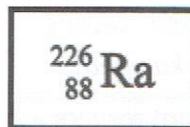


Diagram 47
Rajah 47

What is the number of neutrons of the element?
Berapakah bilangan neutron unsur itu?

- | | |
|-------|-------|
| A 88 | B 138 |
| C 226 | D 314 |

48. The equation in Diagram 48 shows the decay process of a Uranium-238 sample.
Persamaan dalam Rajah 48 menunjukkan proses pereputan satu sampel Uranium-238.

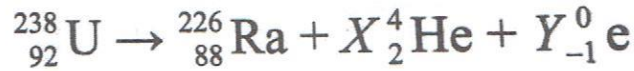


Diagram 48

Rajah 48

Determine the values of X and Y.

Tentukan nilai X dan Y.

	X	Y
A	12	6
B	3	2
C	3	3
D	6	4

49. The mass of two radioactive materials, P and Q are X g and 100 g respectively. The half-life of P is 6 hours and that of Q is 8 hours. After 24 hours, both have the same mass. What is the value of X?
Jisim dua bahan radioaktif, P dan Q masing-masing ialah X g dan 100 g. Separuh hayat P adalah 6 jam dan Q adalah 8 jam. Selepas 24 jam, kedua-duanya mempunyai jisim yang sama. Apakah nilai X?

- A 12.5 g
 B 25.0 g
 C 50.0 g
 D 200.0 g

50. Which of the following nuclear reactions is an example of nuclear fusion?
Antara tindak balas nuklear berikut yang manakah contoh perlakuran nuklear?

- A ${}^1_1\text{H} + {}^2_1\text{H} \rightarrow {}^3_2\text{He} + \gamma$
 B ${}^{210}_{84}\text{Po} \rightarrow {}^{206}_{82}\text{Pb} + {}^4_2\text{He} + \gamma$
 C ${}^{211}_{82}\text{Pb} \rightarrow {}^{211}_{83}\text{Bi} + {}^0_{-1}\text{e} + \gamma$
 D ${}^{239}_{93}\text{Pu} + {}^1_0\text{n} \rightarrow {}^{144}_{58}\text{Ce} + {}^{93}_{36}\text{Kr} + 3 {}^1_0\text{n}$

END OF QUESTION PAPER
 KERTAS SOALAN TAMAT