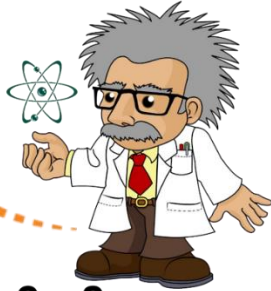


Intuitions
are **CREATIVITY**

see what the others dont see...



but an  lives on

P H Y S I C S m a d e **E A S Y**

ALINA IMAN ARIF

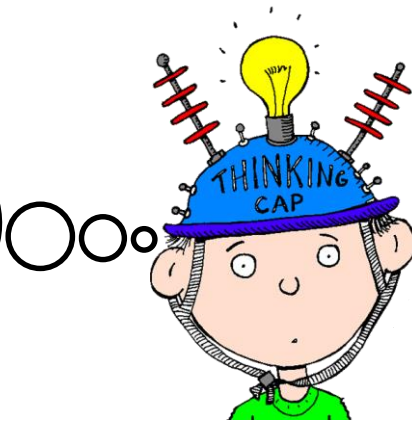
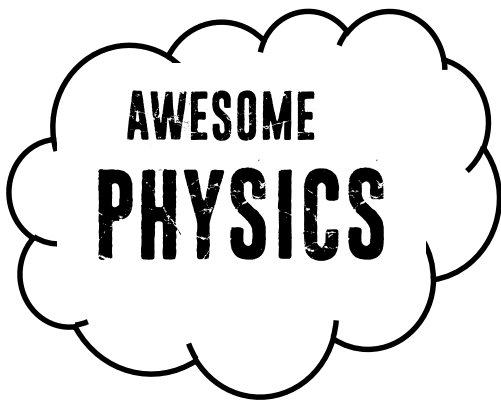


NAME :

CLASS :

TEACHER'S NAME :

DON'T WAIT FOR **OPPORTUNITY.**



CREATE IT!

Believe in yourself
DREAM BIG...AIM HIGH...NEVER GIVE UP

CHECKLIST

BIL.	TRIAL	TOPIC	NOTES
1	Edited	OBJECTIVE	Revision
	SBP 2007	<ul style="list-style-type: none"> • THERMOMETER • TOTAL INTERNAL REFELCTION • MOTION GRAPH • REFLECTION OF WAVE 	
2	SBP 2009	<ul style="list-style-type: none"> • MEASUREMENTS • ELECTROMAGNETISME INDUCTION • THERMA EQUILIBRIUM • LOGIC GATE 	
3	PAHANG SET B 2015	<ul style="list-style-type: none"> • MIRROR • TICKER TAPE • SPECIFIC HEAT CAPACITY & LATENT HEAT • PRESSURE 	
4	SBP 2015	<ul style="list-style-type: none"> • MEASUREMENTS • ELASTICITY • RADIOACTIVITY • HEAT 	
5	PERAK 2015	NO.1 - 8 (understanding concept)	
6	SBP 2014	<ul style="list-style-type: none"> • ARCIMEDES' PRINCIPLE • ELECTRICITY • LIGHT (TIR + TELESCOPE) • ELECTRONIC 	ESSAY section B+C

OBJECTIVE

1. What is the S.I unit for pressure?
Apakah unit S.I bagi tekanan?

- A. Pascal
Pascal
- B. Newton
Newton

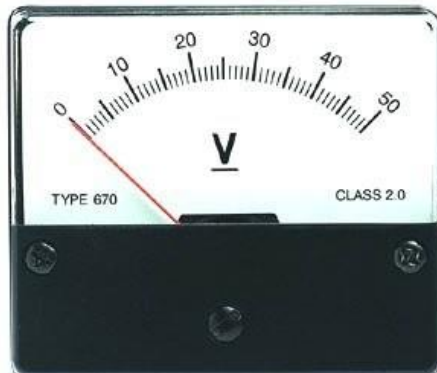
- C. m^3
 m^3
- D. $kg\ m\ s^{-2}$
 $kg\ m\ s^{-2}$

2. Which instrument is the most sensitive?
Alat pengukur yang manakah yang paling peka?

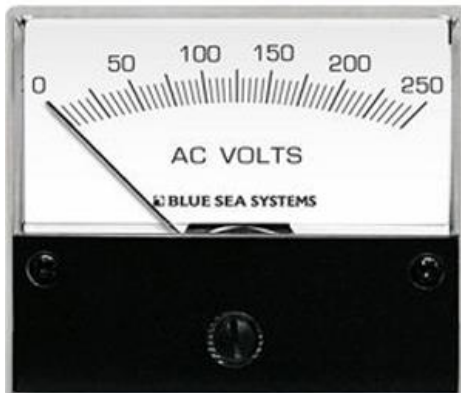
A.



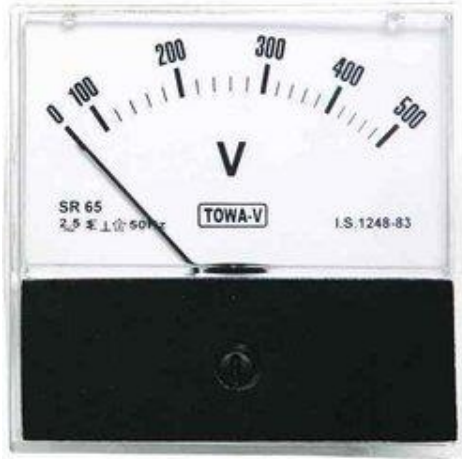
B.



C.



D.



3. The speed of sound in cold air is 330 m s^{-1} . What is this speed in km h^{-1} ?
Laju bunyi dalam udara sejuk ialah 330 m s^{-1} . Berapakah laju ini dalam km j^{-1} ?
- A. 19.8
B. 91.7
C. 1188
D. 5500
4. Diagram 1 shows a boy sliding down from Q to R.
Rajah 1 menunjukkan seorang budak menggelongsor turun daripada Q ke R.

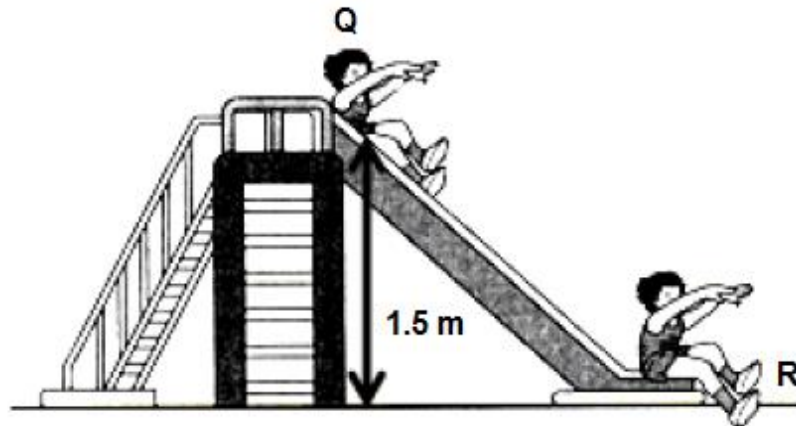


Diagram 1 / Rajah 1

What is the speed of the boy at R?
Berapakah laju budak itu di R?

- A. 1.50 m s^{-1}
B. 5.48 m s^{-1}
C. 10.95 m s^{-1}
D. 30.0 m s^{-1}
5. A student draws graph y against x . The relationship between y and x is $y = p + qx$, p and q are constants. The gradient of graph y against x is
Seorang pelajar melukis graf y lawan x . Hubungan antara y dan x ialah $y = p + qx$, p dan q adalah pemalar. Kecerunan graf y lawan x ialah
- A. p
B. q
C. y
D. x

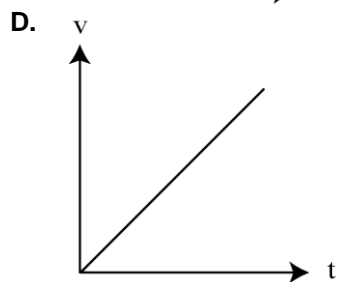
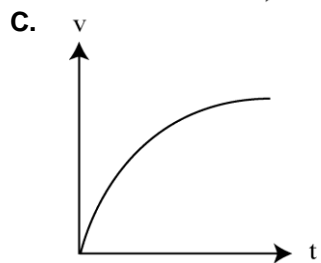
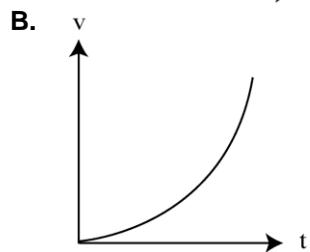
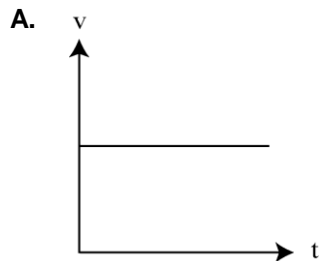
6. Which of the following statements about inertia of an object is **false**?

*Pernyataan berikut yang manakah tentang inersia adalah **palsu**?*

- A. An object with a small mass has a small inertia.
Sebuah objek dengan jisim yang kecil mempunyai inersia yang kecil.
- B. Inertia is the property of matter that causes it to resist any change in its motion or state of rest.
Inersia adalah sifat jirim yang menyebabkan ia menentang sebarang perubahan kepada gerakannya atau keadaan pegunnya.
- C. The SI unit of inertia is kilogram.
Unit bagi inersia ialah kilogram.

7. Which graph shows an increasing acceleration?

Graf yang manakah menunjukkan pecutan yang bertambah?



8. Principle of conservation of momentum states that
Prinsip keabadian momentum menyatakan bahawa
- inertia of an object is called momentum.
inersia sesuatu objek dipanggil momentum.
 - momentum is directly proportional to mass and velocity.
momentum adalah berkadar terus dengan jisim dan halaju .
 - the total momentum of a collision or an explosion are conserved.
jumlah momentum perlanggaran atau letupan yang diabadikan.
 - the total momentum of a system is constant, unless external force acts on the system.
jumlah momentum suatu sistem adalah malar, melainkan daya luar bertindak ke atas sistem.
9. A rocket of 50 000 kg at rest. It generate an upward force 800 000 N from burning fuel. The acceleration due to gravity is 10 m s^{-2} . What is the acceleration of the rocket?
Sebuah roket 50 000 kg dalam keadaan rehat. Ia menjana kuasa ke atas 800 000 N dari pembakaran bahan api. Pecutan disebabkan oleh graviti adalah 10 m s^{-2} . Apakah pecutan roket ?
- 6.0 m s^{-2}
 - 15 m s^{-2}
 - 16 m s^{-2}
 - 26 m s^{-2}
10. Diagram 2 shows a stone being pulled using a sling shot. The rubber cord has a force constant of 300 N m^{-1} . It is pulled to an extension of 20.0 cm from its original length.
Rajah 2 menunjukkan sebuah batu yang ditarik menggunakan pukulan sling. Kord getah mempunyai pemalar daya 300 N m^{-1} . Ia ditarik untuk pemanjangan 20.0 cm panjang dari asalnya.

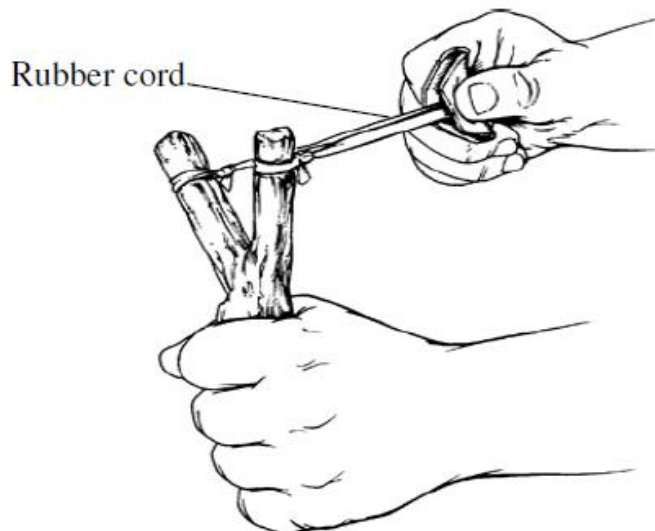


Diagram 2 / Rajah 2

What is the elastic potential energy stored in the rubber cord?
Berapakah tenaga keupayaan elastik yang tersimpan dalam tali getah?

- 6 J
- 12 J
- 15 J
- 30 J

11. Amongst the measuring instruments below, which instrument is used to measure the pressure of a gas in an enclosed container?

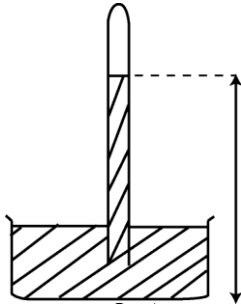
Antara alat pengukur di bawah, yang manakah digunakan untuk mengukur tekanan gas dalam bekas tertutup?

- A. Barometer
Barometer
- B. Hydrometer
Hidrometer
- C. Manometer
Manometer

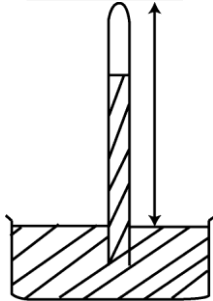
12. The diagrams shows a simple barometer. Which diagram correctly shows the measurement taken to determine the atmospheric pressure?

Rajah menunjukkan sebuah barometer ringkas. Rajah yang manakah menunjukkan dengan betul cara tekanan atmosfera diukur?

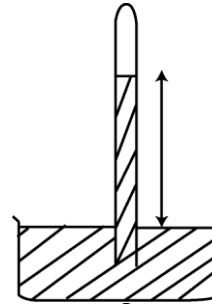
A.



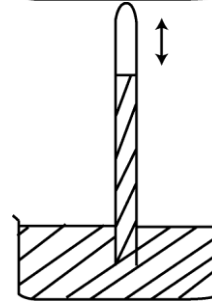
B.



C.



D.



13. Diagram 3 shows a manometer is connected to a gas supply.
Rajah 3 menunjukkan sebuah manometer disambungkan ke bekalan gas.

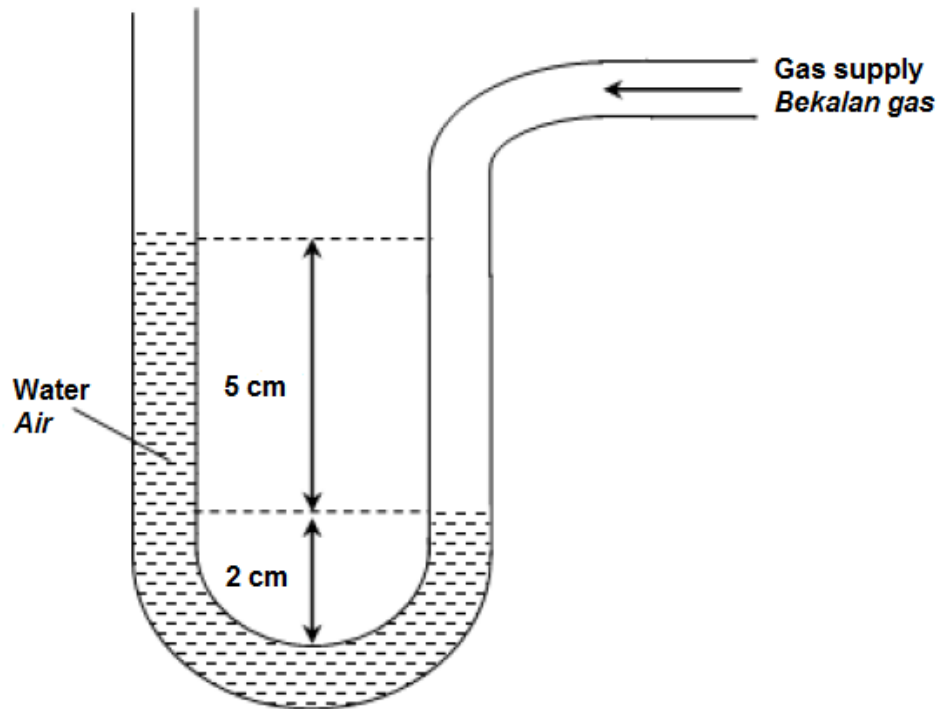


Diagram 3 / Rajah 3

Gas pressure is equal to
Tekanan gas bersamaan dengan

- A. 5 cm of water + atmospheric pressure
5 cm air + tekanan atmosfera
- B. 7 cm of water + atmospheric pressure
7 cm air + tekanan atmosfera
- C. Atmospheric pressure – 5 cm of water
Tekanan atmosfera – 5 cm air
- D. Atmospheric pressure – 7 cm of water
Tekanan atmosfera – 7 cm air

14. Diagram 4 shows a container ship floating on the sea.
Rajah 4 menunjukkan sebuah kapal kontena terapung di permukaan laut.



Diagram 4 / Rajah 4

The buoyant force exerted on a container ship is equal to
Daya tujuh yang dikenakan ke atas kapal kontena itu adalah sama dengan

- A. The mass of container ship
Jisim kapal kontena
 - B. The density of container ship
Ketumpatan kapal kontena
 - C. The weight of container ship and its load carried
Berat kapal kontena beserta berat muatan yang dibawa
 - D. The volume of the water displaced by the container ship
Isipadu air yang disesarkan oleh kapal kontena tersebut
15. Diagram 5 shows a hydrometer floating upright in water. What will happen to the length of the portion of the hydrometer that is above the surface of the water, Q, if the water is replaced by cooking oil?
Rajah 5 menunjukkan sebuah hidrometer terapung secara menegak dalam air. Apakah akan terjadi kepada panjang bahagian hidrometer yang berada di atas permukaan air, Q, jika air digantikan dengan minyak masak?

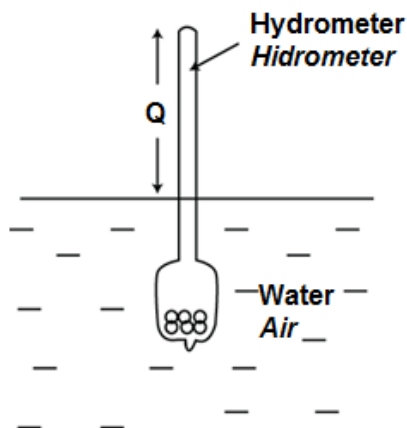


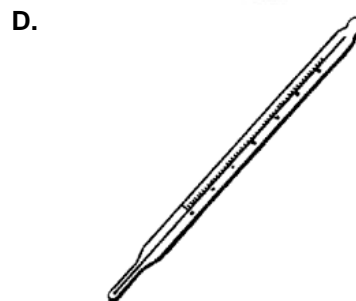
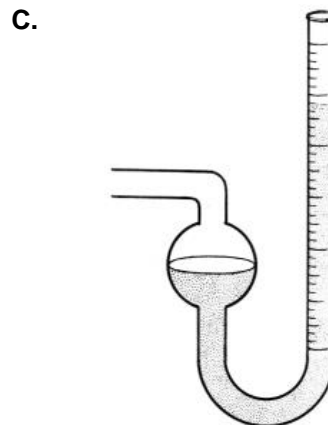
Diagram 5 / Rajah 5

- A. increases
bertambah
- B. decreases
berkurangan
- C. remains unchanged
kekalkan tidak berubah

16. What are the lower and upper fixed points used when calibrating a thermometer?
Apakah titik atas dan titik bawah yang digunakan semasa menentukurkan termometer?

	Lower fixed point <i>Titik bawah tetap</i>	Upper fixed point <i>Takat atas tetap</i>
A.	pure melting ice <i>takat lebur ais tulen</i>	steam <i>stim</i>
B.	pure melting ice <i>takat lebur ais tulen</i>	boiling water <i>air didih</i>
C.	salt and ice <i>garam dan ais</i>	boiling water <i>air didih</i>
D.	salt and ice <i>garam dan ais</i>	steam <i>stim</i>

17. Which instrument can be used to give a reading of 35°C?
Alat pengukur yang manakah boleh digunakan untuk memberi bacaan 35°C?



18. The rate of evaporation of water can be increased by
Kadar meguapan air boleh dinaikkan dengan

- A. Putting the water in a sealed container
Letakkan air ke dalam bekas tertutup
- B. Lowering the temperature of the water
Turunkan suhu air
- C. Adding ice to the water
Campurkan ais ke dalam air
- D. Increasing the exposed surface area of the water
Menambahkan luas permukaan air yang terdedah

19. Diagram 6 shows the relationship between volumes (in cm^3) of a gas against its temperature (in $^{\circ}\text{C}$). The pressure of the gas is kept constant.
Rajah 6 menunjukkan hubungan antara isipadu (dalam cm^3) suatu gas dengan suhunya (dalam $^{\circ}\text{C}$). Tekanan gas dimalarkan.

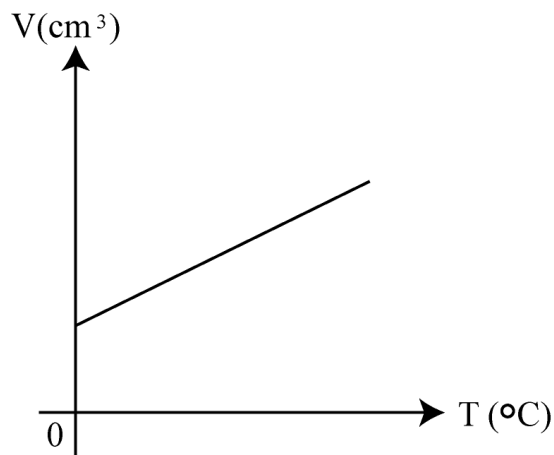


Diagram 6 / Rajah 6

The absolute zero temperature can be obtained by
Suhu sifar mutlak boleh diperoleh dengan

- A. finding the gradient
menentukan kecerunan
- B. extrapolating the graph until it intercept the T-axis.
memanjangkan graf sehingga ia memintas paksi-T.
- C. finding the intercept on the V-axis.
mencari pintasan pada paksi-V.
- D. finding the minimum value of V.
mencari nilai minimum bagi V.

20. Diagram 7 shows the temperature against time graph for 600 g of liquid X that is heated by a 1 000 W electric immersion heater.
Rajah 7 menunjukkan graf suhu melawan masa bagi 600 g cecair X yang dipanaskan oleh sebuah pemanas rendam yang mempunyai kuasa 1 000 W.

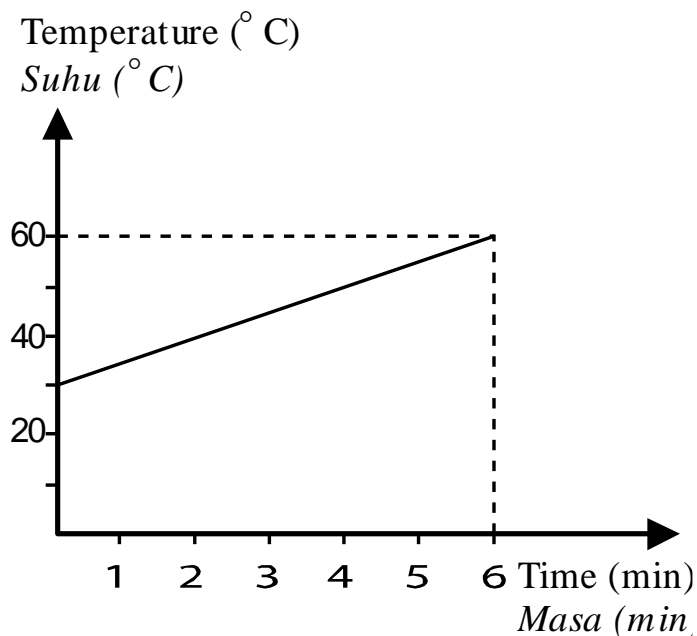


Diagram 7 / Rajah 7

Determine the specific heat capacity of liquid x in $\text{J kg}^{-1}\text{C}^{-1}$.
Tentukan muatan haba tentu bagi cecair X dalam $\text{J kg}^{-1}\text{C}^{-1}$.

- | | | | |
|-----------|----|-----------|-------|
| A. | 20 | C. | 1 200 |
| B. | 60 | D. | 2 000 |

21. Diagram 8 shows an observer see the object from plane mirror.
Rajah 8 menunjukkan pemerhati melihat objek dari cermin satah.

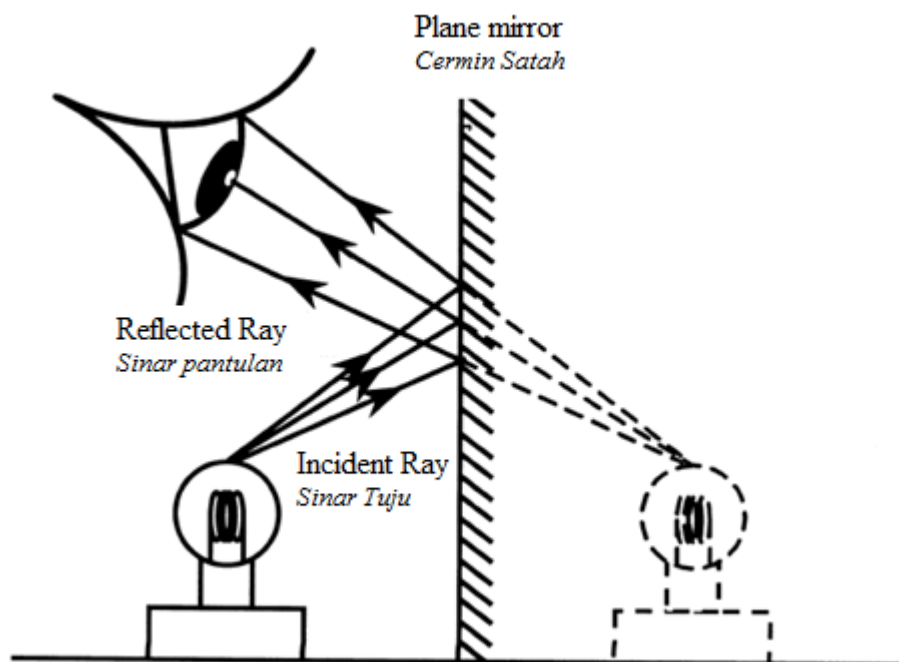


Diagram 8 / Rajah 8

What is the characteristic of image formed by a plane mirror?
Apakah ciri imej yang terbentuk oleh cermin satah?

- A. The image formed is real
Imej yang terhasil adalah nyata
- B. The image formed is virtual
Imej yang terbentuk adalah maya
- C. The image formed is inverted
Imej yang terbentuk adalah songsang
- D. The object distance is shorter than the image distance
Jarak objek adalah lebih pendek daripada jarak imej

22. Diagram 9 shows a concave mirror.
Rajah 9 menunjukkan sebuah cermin cekung.

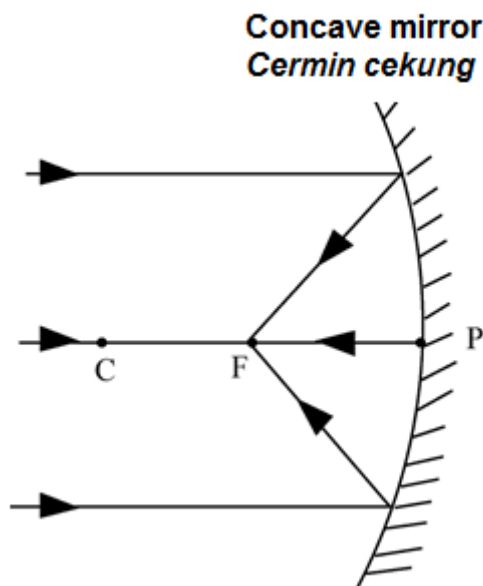


Diagram 9 / Rajah 9

The distance between *P* and *F* is
Jarak di antara P dan F ialah

- A. the focal length of the mirror
jarak fokus cermin
- B. the radius of the sphere from which the mirror was cut
jejari sfera di mana cermin dipotong
- C. the line joining the pole to the centre of curvature
garis yang menyambung kutub dengan pusat lengkung
- D. the diameter of the sphere which the mirror was cut
diameter sfera di mana cermin dipotong

23. Diagram 10 shows an astronomical telescope.

Rajah 10 menunjukkan sebuah teleskop astronomi.

The focal length of the objective lens and the eyepiece of an astronomical telescope are f_o and f_e respectively. The distance between the two lenses is L .

Panjang fokus kanta objektif dan kanta mata bagi sebuah teleskop astronomi masing-masing adalah f_o dan f_e . Jarak antara kedua-dua kanta pula adalah L .



Diagram 10 / Rajah 10

Which of the relationship between L , f_o and f_e is correct for the astronomical telescope at normal adjustment?

Manakah antara hubungan berikut antara L , f_o dan f_e adalah benar bagi teleskop astronomi pada pelarasan normal?

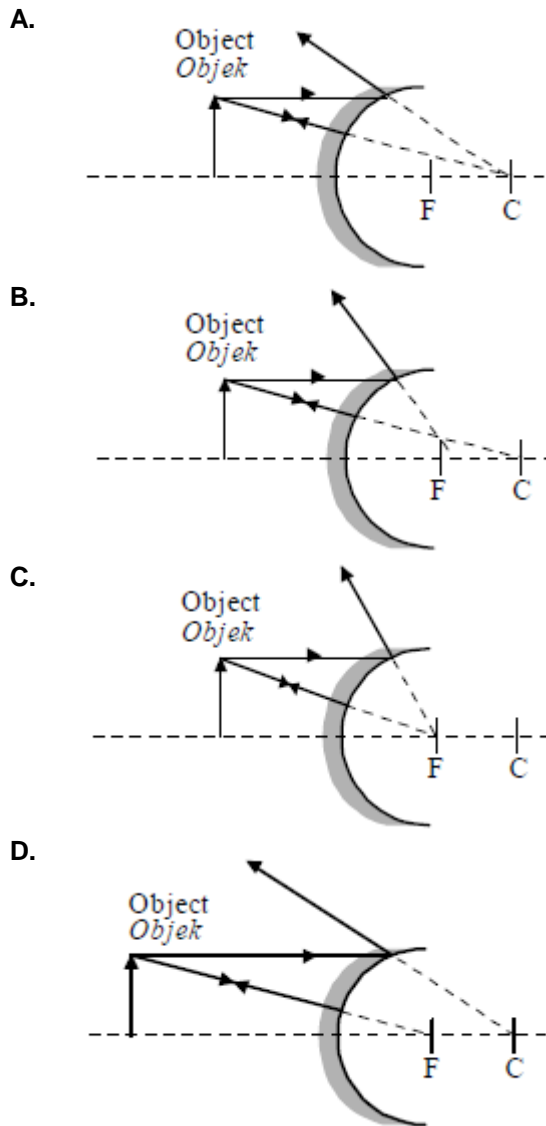
- A. $L = f_o - f_e$
- B. $L < f_o + f_e$
- C. $L > f_o + f_e$
- D. $L = f_o + f_e$

24. What are the required conditions for the lens with focal length f to be used as an objective lens for a microscope?

Apakah syarat-syarat yang perlu dipatuhi untuk membolehkan kanta berpanjang fokus, f digunakan sebagai kanta objektif mikroskop?

	Type of lens <i>Jenis kanta</i>	Object distance <i>Jarak objek</i>
A.	Convex <i>Cembung</i>	Less than f <i>Kurang dari f</i>
B.	Concave <i>Cekung</i>	Less than f <i>Kurang dari f</i>
C.	Convex <i>Cembung</i>	Between f and $2f$ <i>Antara f dan $2f$</i>
D.	Concave <i>Cekung</i>	Between f and $2f$ <i>Antara f dan $2f$</i>

25. Which of the following ray diagrams is **correct**?
 Manakah di antara rajah sinar berikut adalah **benar**?



26. Diagram 11 shows a water wave in a ripple tank at side view.
 Rajah 11 menunjukkan gelombang air dalam tangki riak pada pandangan sisi.

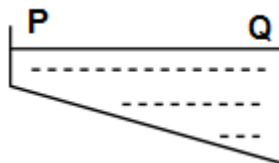


Diagram 11 / Rajah 11

What happens to the velocity of the water wave when it travels from point Q to point P?

Apa akan terjadi kepada halaju gelombang air apabila ia merambat dari titik Q ke titik P?

- A. Increases
Bertambah
- B. Decreases
Berkurang
- C. No change
Tidak berubah
- D. Increase then decrease
Bertambah kemudian berkurang

27. Which of the following cannot travel through vacuum?

Yang manakah berikut tidak boleh merambat melalui vakum?

- | | |
|---|---|
| <ul style="list-style-type: none"> A. Microwave
<i>Gelombang mikro</i> B. Radio wave
<i>Gelombang radio</i> | <ul style="list-style-type: none"> C. Sound wave
<i>Gelombang bunyi</i> D. X-ray
<i>Sinar-X</i> |
|---|---|

28. Diagram 12 shows the electromagnetic spectrum.

Rajah 12 menunjukkan spectrum gelombang electromagnet.

P	X- ray X- ray	Q	Visible light <i>Cahaya tampak</i>	R	Micro wave <i>Gelombang mkiro</i>	S
---	------------------	---	---------------------------------------	---	--------------------------------------	---

Diagram 12 / Rajah 12

What is P, Q, R and S?

Apakah P, Q, R dan S?

	P	Q	R	S
A.	gamma rays <i>Sinar gama</i>	ultravio-let rays <i>Sinar untra ungu</i>	infrared rays <i>Sinar infra merah</i>	radio waves <i>Gelombang radio</i>
B.	ultravio-let rays <i>Sinar untra ungu</i>	infrared rays <i>Sinar infra merah</i>	radio waves <i>Gelombang radio</i>	gamma rays <i>Sinar gama</i>
C.	infrared rays <i>Sinar infra merah</i>	radio waves <i>Gelombang radio</i>	gamma rays <i>Sinar gama</i>	ultravio-let rays <i>Sinar untra ungu</i>
D.	radio waves <i>Gelom-bang radio</i>	gamma rays <i>Sinar gama</i>	ultraviolet rays <i>Sinar untra ungu</i>	infrared rays <i>Sinar infra merah</i>

29. Diagram 13 shows the phenomenon of interference of water waves.
Rajah 13 menunjukkan fenomena interferens gelombang air.

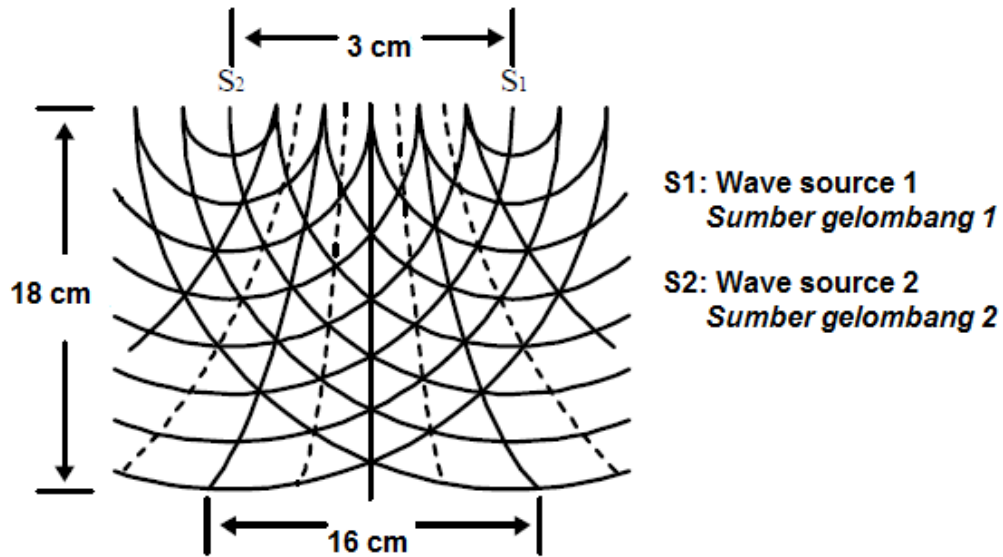


Diagram 13 / Rajah 13

What is the wavelength of the water waves?
Berapakah panjang gelombang bagi gelombang air tersebut?

- | | |
|---|---|
| <p>A. 0.67 cm</p> <p>B. 2.67 cm</p> | <p>C. 3.38 cm</p> <p>D. 9.00 cm</p> |
|---|---|
30. Which of the following characteristics of microwave makes it suitable to be used in satellite communication?
Manakah antara sifat gelombang mikro berikut menjadikan ia sesuai digunakan dalam komunikasi satelit?
- A.** It is neutral
ia bersifat neutral
 - B.** It has a high frequency
ia mempunyai frekuensi yang tinggi
 - C.** It has a long wavelength
ia mempunyai panjang gelombang yang panjang
 - D.** It needs a medium to propagate
ia memerlukan medium untuk merambat

31. Diagram 14 shows a fuse.
Rajah 14 menunjukkan sebuah fius.



Diagram 14 / Rajah 14

The reason a fuse is used in an electrical device is to
Sebab fius digunakan dalam alat elektrik ialah untuk

- A. protect the device
melindungi alat
 - B. increase the efficiency of the device
menambahkan kecekapan alat.
 - C. decrease the resistance of the device
mengurangkan rintangan alat.
 - D. lower the current flowing to the device
mengurangkan arus mengalir ke alat.
32. Tungsten is chosen to be used as the filament of an electric bulb rather than copper.
This is because
*Tungsten dipilih digunakan sebagai filamen mentol elektrik dan bukan kuprum.
Ini adalah sebab*
- A. tungsten is a better conductor of electricity.
tungsten adalah konduktor arus yang lebih baik.
 - B. the melting point of tungsten is higher.
takat lebur tungsten adalah lebih tinggi.
 - C. tungsten is cheaper.
tungsten lebih murah.
 - D. copper burns easily.
kuprum terbakar dengan mudah.

33. Diagram 15 shows a metal coated ball in contact with positive plate connected to EHT power supply.
Rajah 15 menunjukkan sebuah bola bersalut logam bersentuhan dengan plat positif yang disambungkan kepada bekalan kuasa VLT.

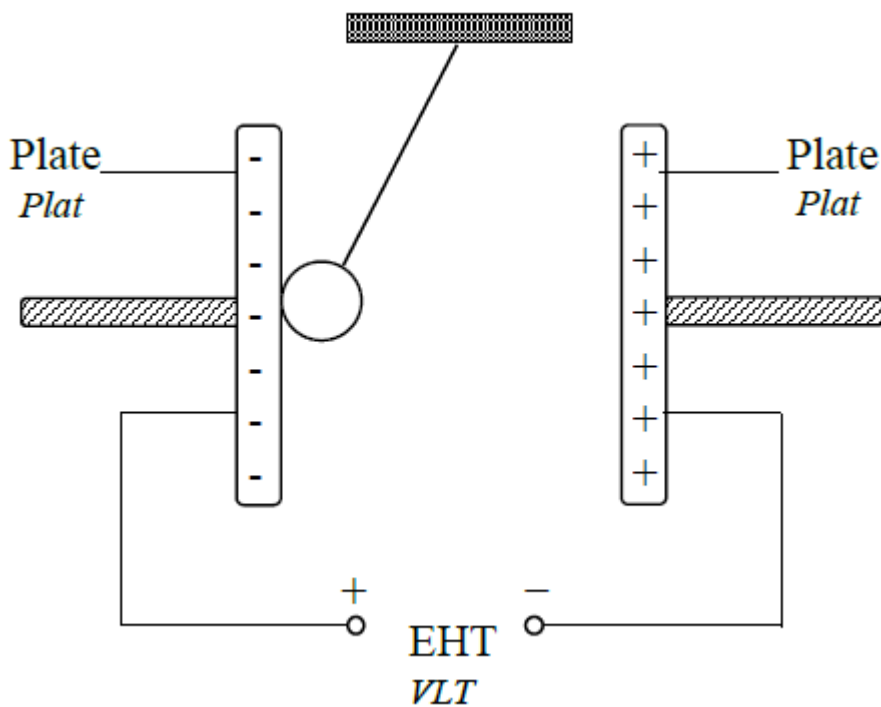
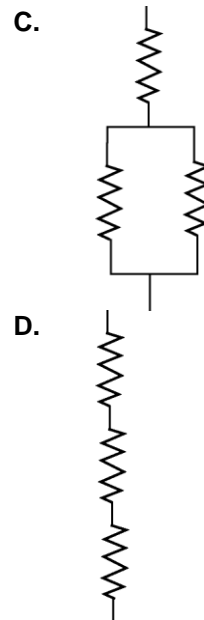
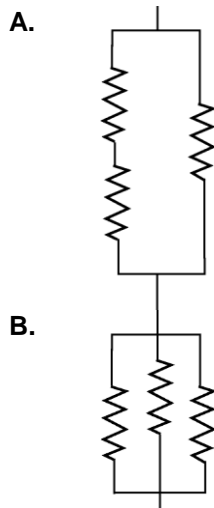


Diagram 15 / Rajah 15

Which of the following is **true**?
*Pernyataan manakah yang **benar**?*

- A. The sphere is neutral
Sfera kekal neutral
- B. The sphere is not charged
Sfera tidak dicaskan
- C. The sphere is negatively charged
Sfera itu bercas negatif
- D. The sphere is positively charge
Sfera itu bercas positif

34. All the resistors shown below are identical. Which of the following circuits will produce the highest effective resistance?
Semua perintang yang ditunjukkan di bawah adalah serupa. Litar yang manakah akan menghasilkan rintangan berkesan yang paling tinggi?



35. Diagram 16 shows four identical bulbs connected to a cell 6V. Which bulb labelled A, B, C and D is the brightest?
Rajah 16 menunjukkan empat mentol serupa yang disambungkan kepada sebuah sel 6 V. Mentol yang manakah A, B, C atau D akan nyala dengan paling terang?

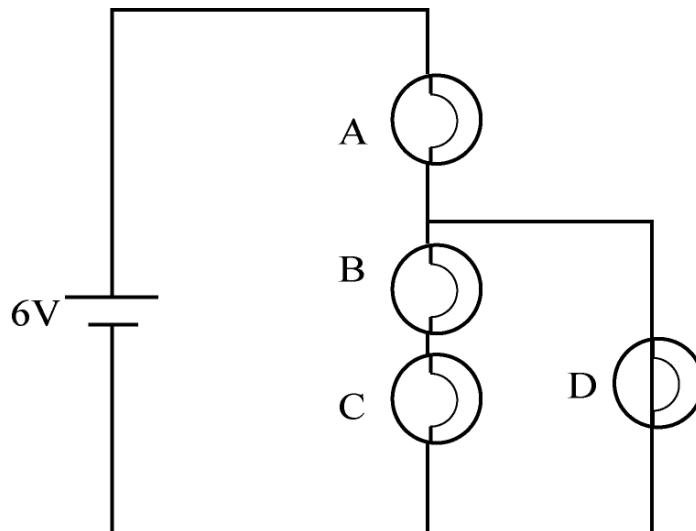


Diagram 16 / Rajah 16

36. Diagram 17 shows a transformer.
Rajah 17 menunjukkan sebuah transformer.

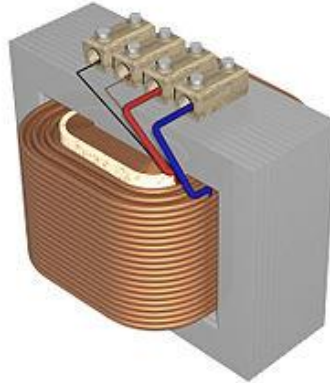


Diagram 17 / Rajah 17

The operation of a transformer based on
Operasi transformer adalah berdasarkan kepada

- A. magnetic effect of current
kesan magnet arus
 - B. heating effect of current
kesan pemanasan arus
 - C. electromagnetic induction
aruhan elektromagnet
 - D. catapult field
medan lastik
37. Diagram 18 shows a horseshoe electromagnet.
Rajah 18 menunjukkan electromagnet bentuk kasut kuda.

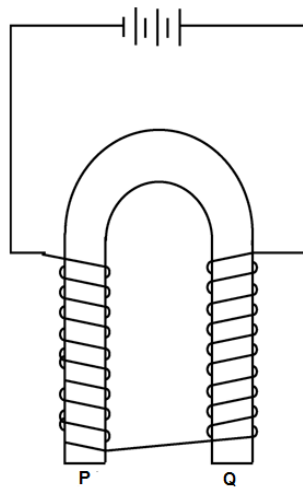


Diagram 18 / Rajah 18

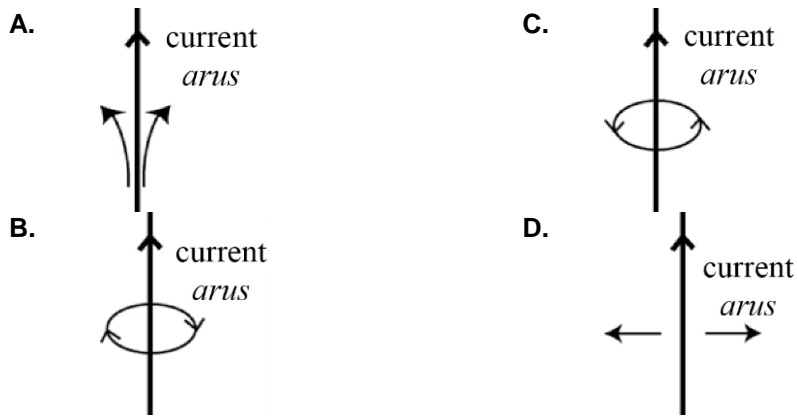
What are the polarities of the parts labelled X and Y of the horseshoe electromagnet shown in the diagram below?

Apakah kekutuban bahagian berlabel X dan Y bagi elektromagnet bentuk kasut kuda di bawah?

	P	Q
A.	North <i>Utara</i>	North <i>Utara</i>
B.	North <i>Utara</i>	South <i>Selatan</i>
C.	South <i>Selatan</i>	North <i>Utara</i>
D.	South <i>Selatan</i>	South <i>Selatan</i>

38. Which of the following diagrams shows correctly the direction and orientation of the magnetic field in the vicinity of a straight current carrying conductor?

Rajah yang manakah menunjukkan dengan betul arah dan orientasi medan magnet di sekitar seutas dawai lurus yang membawa arus?



39. Diagram 19 shows a current carrying straight conductor in a magnetic field.
Rajah 19 menunjukkan konduktor lurus yang membawa arus dalam medan magnet.

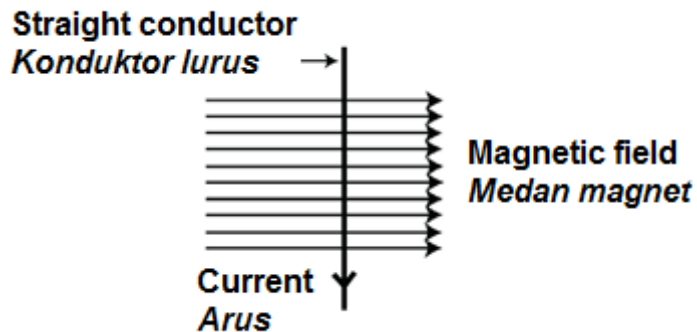


Diagram 19 / Rajah 19

In which direction will the conductor move?
Dalam arah manakah konduktor akan bergerak?

- A. To the left
Ke kiri
- B. To the right
Ke kanan
- C. Into the paper
Ke dalam kertas
- D. Out of the paper
Keluar dari kertas

40. Soft iron core is used as the transformer core because
Teras besi lembut digunakan sebagai teras transformer kerana

- A. it is easily magnetised and demagnetised
ia mudah dimagnet dan dinyahmagnet
- B. it becomes a permanent magnet
ia menjadi magnet kekal
- C. it has low resistance
ia mempunyai rintangan yang rendah
- D. it is a good conductor
ia merupakan konduktor yang baik

41. Diagram 20 shows a diode connection in a circuit.
Rajah 20 menunjukkan penyambungan diod di dalam sebuah litar.

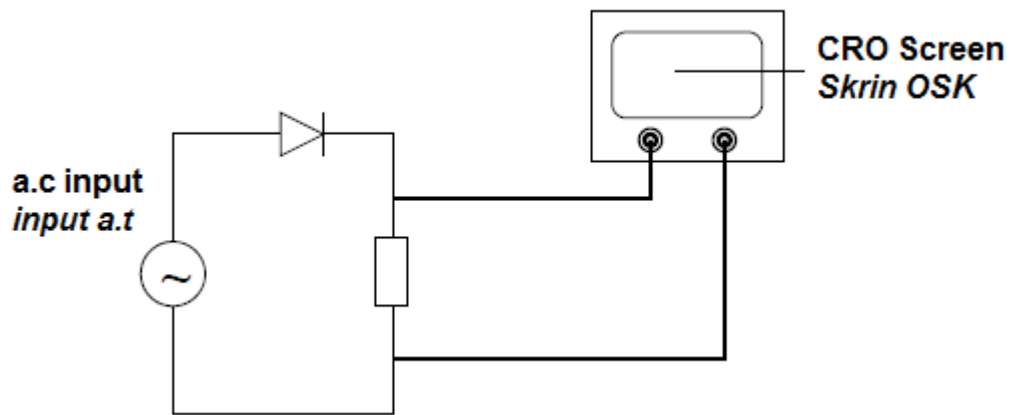
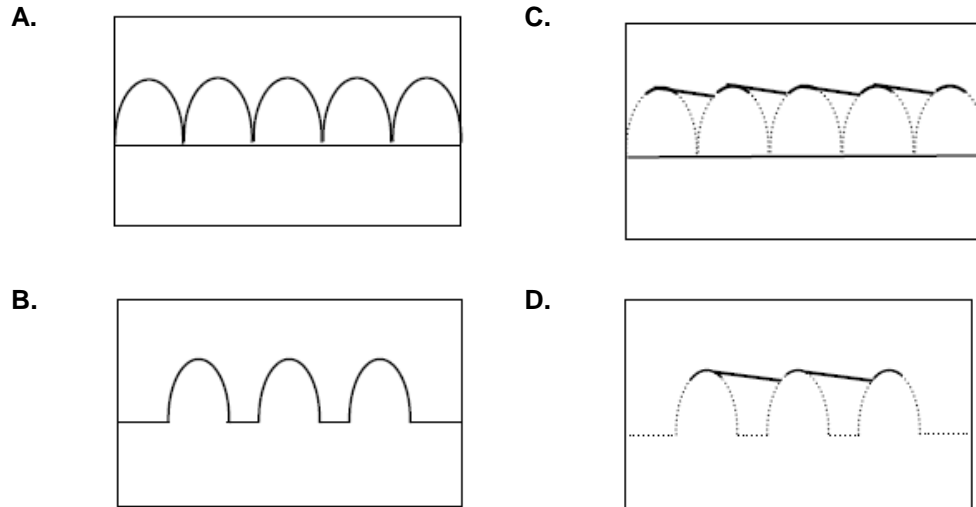


Diagram 20 / *Rajah 20*

Which output pattern is **correct**?
Corak output manakah yang betul?



42. Which of the following is a function of transistor?
 Yang manakah berikut adalah fungsi sebuah transistor?

- A. As a current amplifier
Sebagai penguat arus
- B. As a rectifier
Sebagai rectifier
- C. Convert sound energy to electrical energy
Tukar tenaga bunyi kepada tenaga elektrik
- D. As a modulator
Sebagai modulator

43. What are cathode rays?
 Apakah sinar katod?

- | | |
|--|--|
| <ul style="list-style-type: none"> A. Neutrons
 <i>Neutron</i> B. Electrons
 <i>Elektron</i> | <ul style="list-style-type: none"> C. Ions
 <i>Ion</i> D. Protons
 <i>Proton</i> |
|--|--|

44. Diagram 21 shows the structure of a cathode-ray oscilloscope tube. A fixed potential difference is applied across the deflection plates.
 Rajah 21 menunjukkan struktur sebuah tiub osiloskop sinar katod. Satu beza keupayaan kekal dikenakan merentasi plat-plat pesongan.

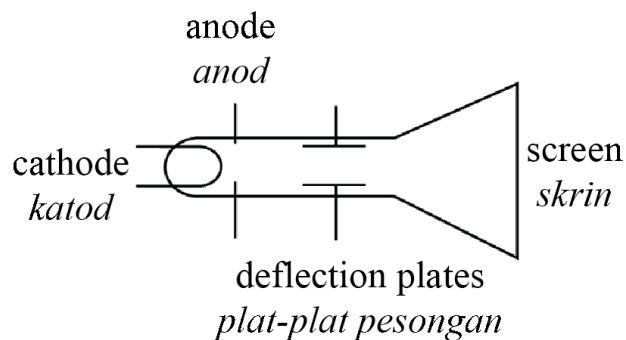
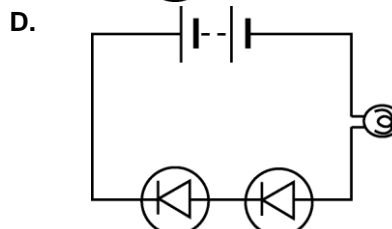
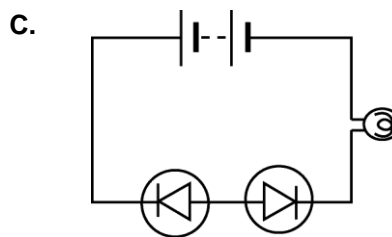
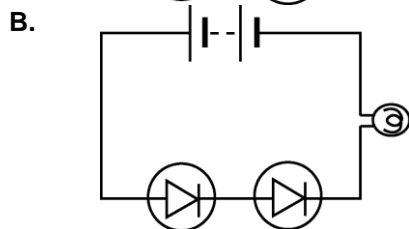
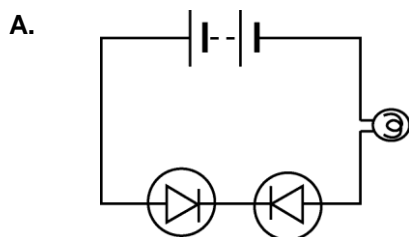


Diagram 21 / Rajah 21

Which of the following will increase the angle of deflection of the spot on the screen?
 Yang manakah berikut akan menambahkan sudut pesongan titik pada skrin?

- A. Decrease the distance from the deflection plates to the screen.
Kurangkan jarak dari plat pesongan ke skrin.
- B. Increase the length of the deflection plates.
Tambahkan panjang plat pesongan.
- C. Increase the potential difference between cathode and anode.
Tambahkan beza keupayaan antara katod dan anod.
- D. Decrease the separation of the deflection plates.
Kurangkan pemisahan antara plat pesongan.

45. In which of the following circuits will the bulb lights up?
 Dalam litar yang manakah mentol akan menyala?



46. The following devices can be used to detect radioactive emissions **except**
*Alat-alat berikut boleh digunakan untuk mengesan pancaran radioaktif **kecuali***

- A. Cloud Chamber
Kebuk kabus
- B. Cathode Ray Oscilloscope
Oskiloskop Sinar Katod
- C. Gold Leaf Electroscope
Elektroskop Daun Emas
- D. Geiger-Muller tube
Tiub Geiger-Muller

47. Diagram 22 shows an equation of radioactive decay.
Rajah 22 menunjukkan satu persamaan pereputan radioaktif.

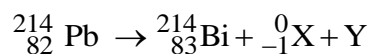


Diagram 22 / Rajah 22

What are X and Y?
Apakah X dan Y?

	X	Y
A.	γ	α
B.	α	β
C.	β	α
D.	β	γ

48. Diagram 23 shows a fireman detecting radiation through lead walls of the storeroom.
 The radiation was emitted by the radioactive material.
Rajah 23 menunjukkan seorang ahli bomba sedang mengesan sinaran melalui dinding plumbum bilik stor. Sinaran tersebut dihasilkan oleh bahan radioaktif.

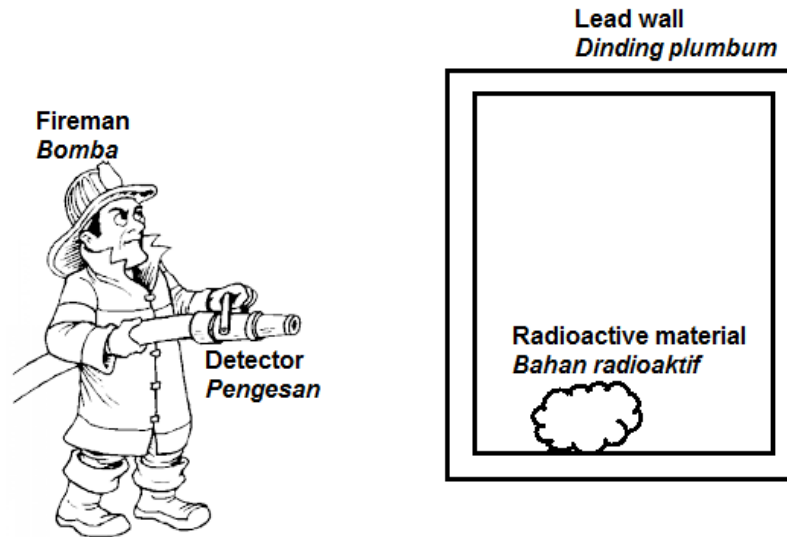
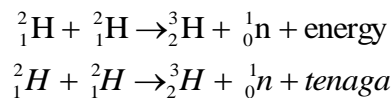


Diagram 23 / Rajah 23

Which type of radiation was being detected?
Apakah jenis sinaran yang dikesan?

A.	γ
B.	α
C.	X-ray
D.	β

49.



The equation above represents a nuclear fusion. What conditions must exist before the reaction above can take place?

Persamaan di atas mewakili pelakuran nuklear. Apakah syarat mesti wujud sebelum tindakbalas di atas boleh berlaku?

- A catalyst must be added
Pemangkin perlu ditambahkan
- Oxygen must be present
Oksigen mesti wujud
- Neutrons must be bombarded to the reacting materials
Neutron mesti ditembak kepada bahan-bahan tindakbalas
- Very high temperature and pressure is required
Suhu dan tekanan yang sangat tinggi diperlukan

50. Diagram 24 shows a process of nuclear fission.
Rajah 24 menunjukkan proses pembelahan nukleus.

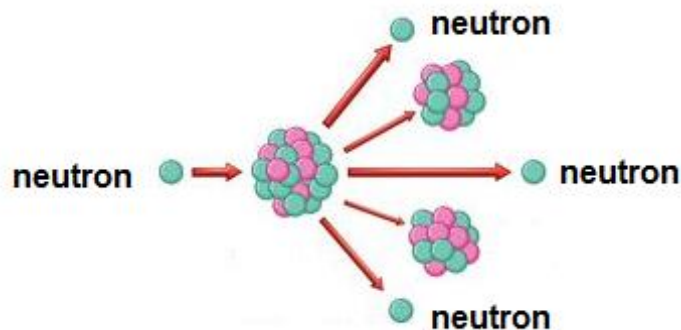


Diagram 24 / Rajah 24

What happens during nuclear fission?
Apakah terjadi semasa pembelahan nukleus?

- A. It occur at a temperature of about 1000 °C
Pembelahan nukleus berlaku pada suhu 1000 °C
- B. The process does not lead to any mass defect
Pembelahan nukleus tidak menghasilkan satu cacat jisim
- C. High energy neutron is produced in the process
Satu neutron yang bertenaga tinggi dihasilkan semasa pembelahan nukleus
- D. Heavy nucleus is split into 2 lighter nuclei
Satu nucleus berat dipecahkan kepada 2 nukleus yang lebih ringan

STRUCTURE

TRIAL SBP 2007

1. Diagram 1.1 shows a liquid-in-glass thermometer.

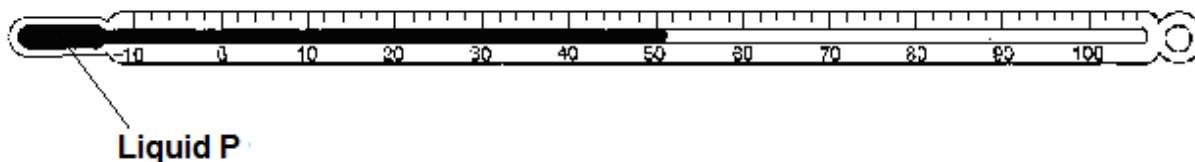


Diagram 1.1

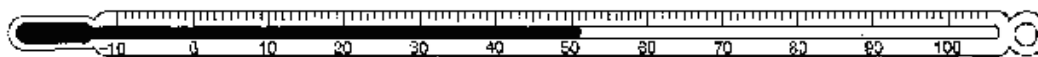
- (a) (i) Name the liquid P used in the thermometer.

..... [1 mark]

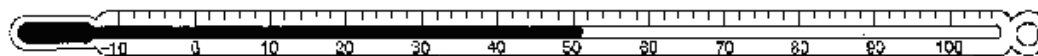
- (ii) State the physical change in the liquid when the temperature increases.

..... [1 mark]

- (b) Diagram 1.2 shows two types of thermometers.



Thermometer X



Thermometer Y

Diagram 1.2

- (i) Which thermometer is more sensitive?

..... [1 mark]

- (ii) State **one** reason for your answer in 1 (b) (i).

..... [1 mark]

TOTAL **4 marks**

2. Diagram 2 shows a cross-sectional area of an optical fibre which consist of two layers of glass with different refractive index. The glass which forms the inner core, Y is surrounded by another type of glass which forms the outer layer, X.

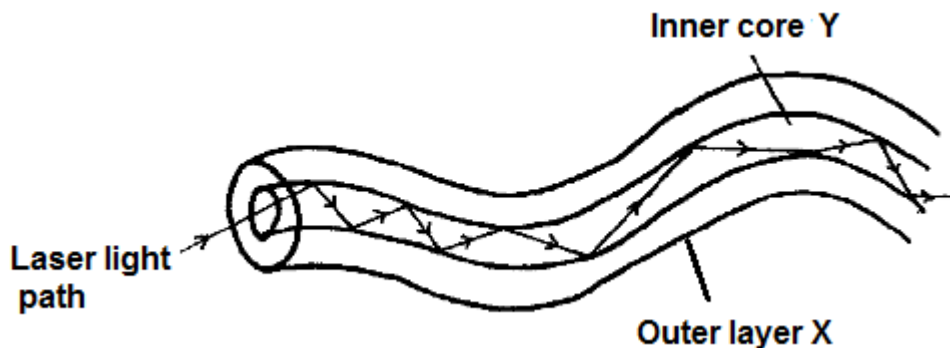


Diagram 2

- (a) (i) Name the light phenomenon observed in optical fibre?

..... [1 mark]

- (ii) Compare the refractive index of outer layer X and inner core Y.

..... [1 mark]

- (b) The refractive index of inner core Y is 2.10.
Calculate the critical angle of the inner core Y.

[2 marks]

- (c) Name other optical device that applies the phenomenon in (a)(i).

..... [1 mark]

TOTAL 5 marks

3. Diagram 3.1 shows a car driven by a kidnapper has overtook a police car at 2.00 p.m. The police car then followed the kidnapper's car.
Diagram 3.2 shows a velocity against time graph for both cars.

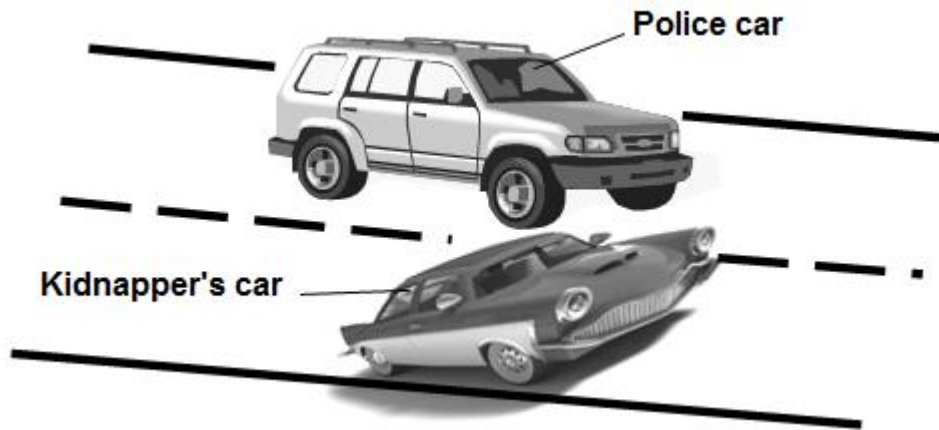


Diagram 3.1

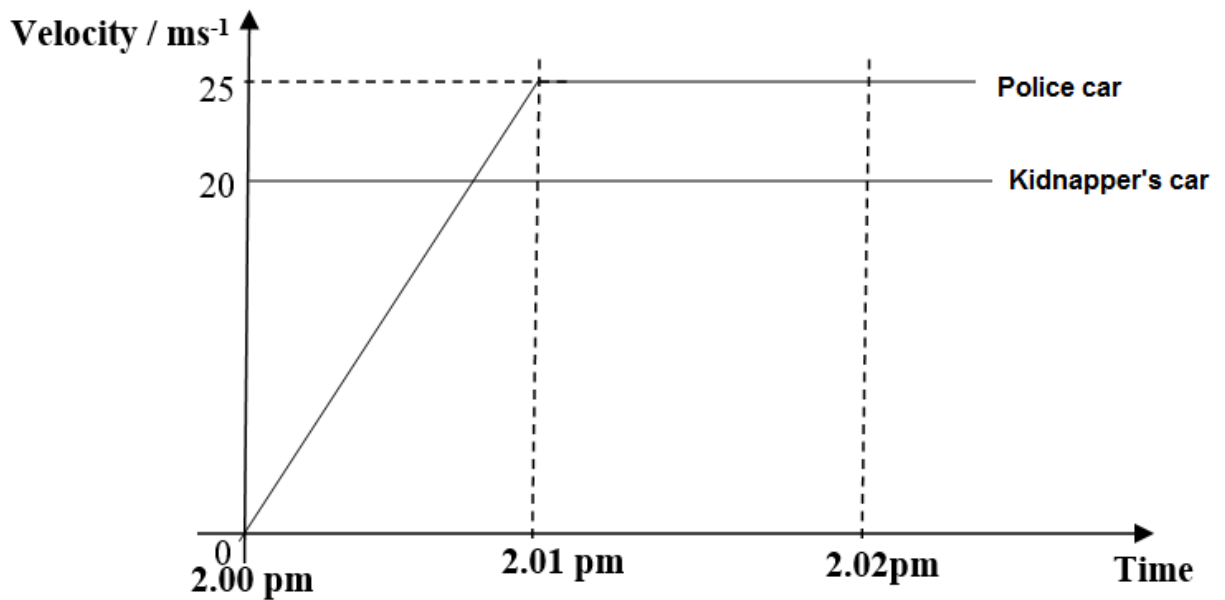


Diagram 3.2

- (a) Based on graph in Diagram 3.2, state the motion of the
(i) kidnapper's car

.....
[1 mark]

- (ii) police car

.....
[1 mark]

(b) (i) What is the net force acting on the police car after 2.01 p.m?

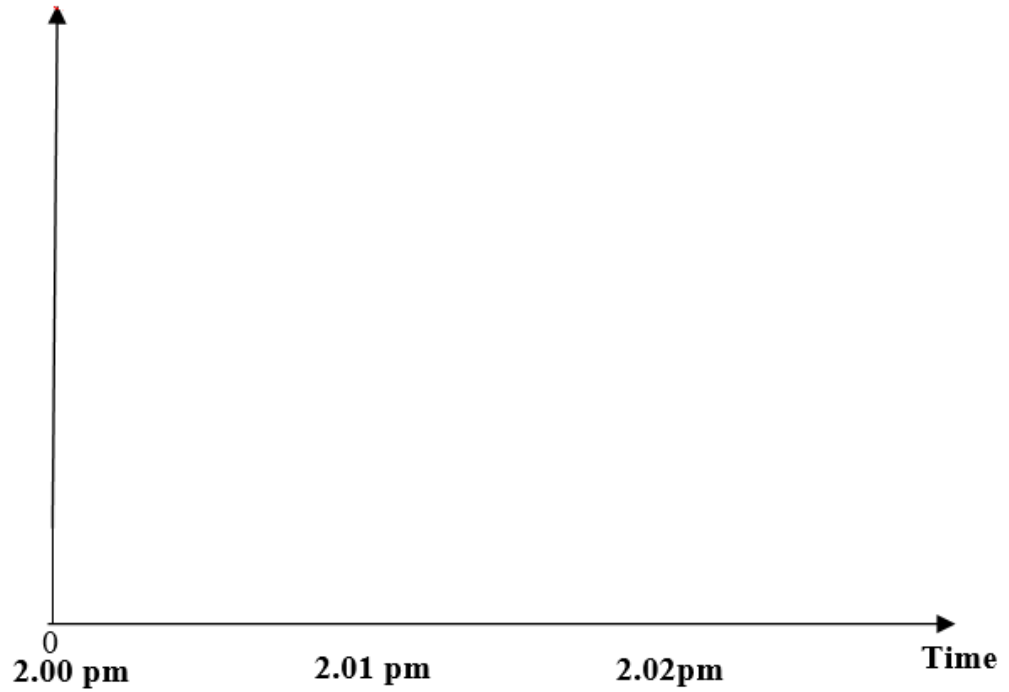
..... [1 mark]

(ii) Give a reason for your answer in 3(b)(i).

..... [1 mark]

(c) Sketch a displacement against time graph of the police car.

Displacement / m



[2 marks]

TOTAL

6 marks

4. Diagram 4.1 shows a submarine transmitting ultrasonic waves directed at a big rock on the sea bed. After sometime, the submarine detects the wave again.

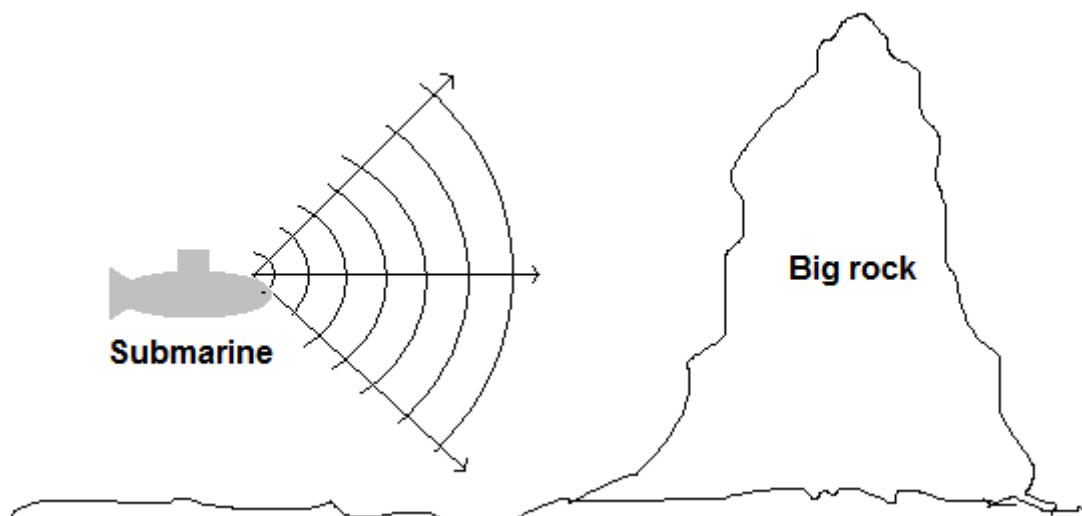


Diagram 4.1

- (a) State the wave phenomenon involved.
- [1 mark]
- (b) Explain why the submarine used ultrasonic wave but not ordinary sound wave?
- [1 mark]
- (c) (i) Calculate the distance of the submarine from the big rock if the submarine detects the second wave after 1.5 seconds.
[Velocity of ultrasonic wave = 1560 ms^{-1}]

[2 marks]

- (ii) Diagram 4.2 shows how the pulses of the transmitted ultrasonic wave is displayed on the screen of a cathode ray oscilloscope (CRO).

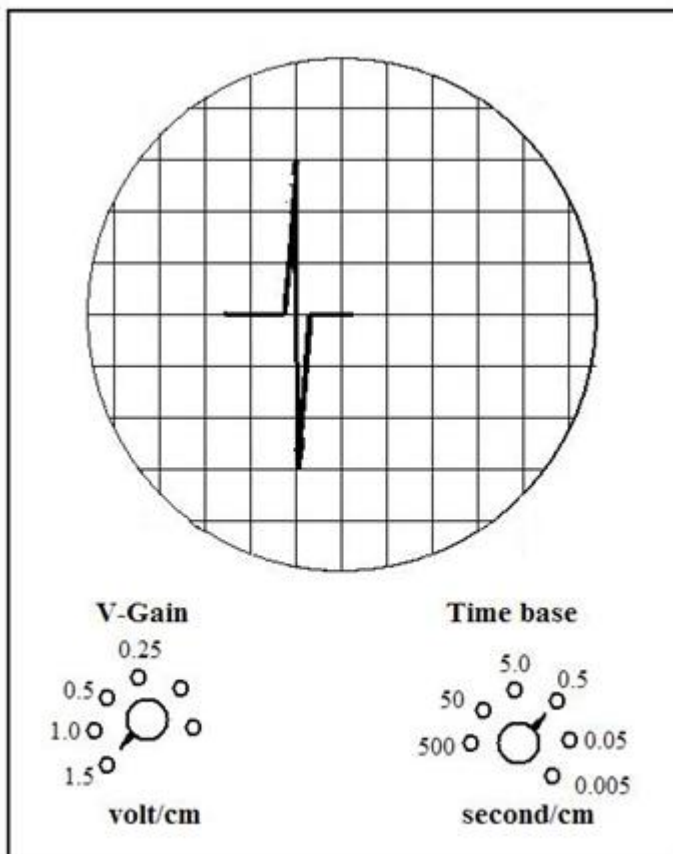


Diagram 4.2

On diagram 4.2 draw the pulses of the wave received by the submarine after 1.5 seconds later. Given the time base of the CRO is 0.5 s/cm.

[2 marks]

TOTAL

6 marks

TRIAL SBP 2009

1. Diagram 1 shows a stopwatch.

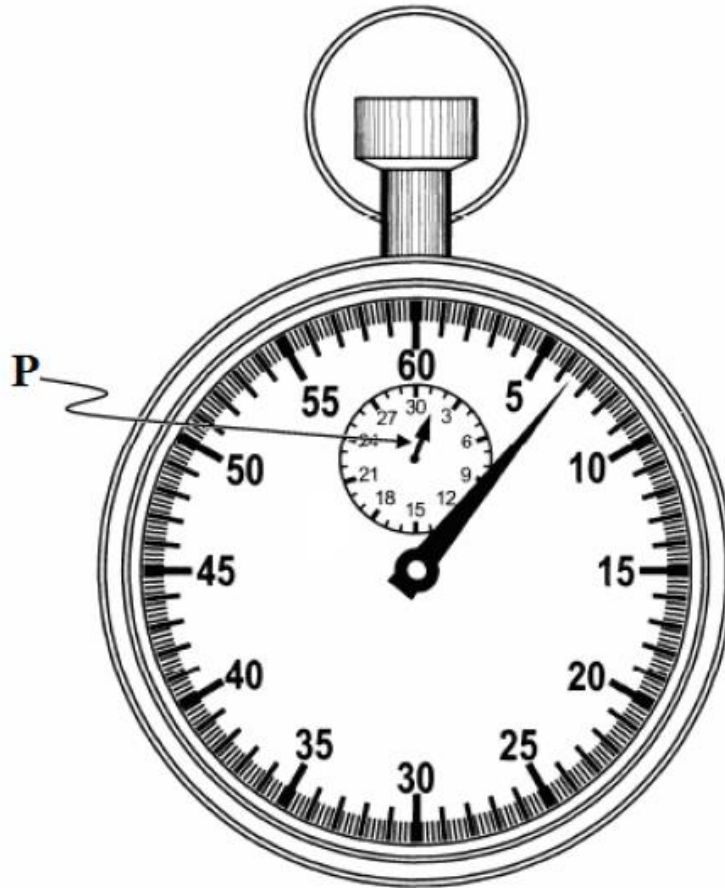


Diagram 1

- (a) Name the physical quantity measured by the stopwatch.
..... [1 mark]
- (b) State the unit used by this stopwatch.
..... [1 mark]
- (c) What does the pointer P indicate?
..... [1 mark]
- (d) What is the reading of the stopwatch?
..... [1 mark]

TOTAL 4 marks

2. Diagram 2 shows a bar magnet is being pushed towards a solenoid.

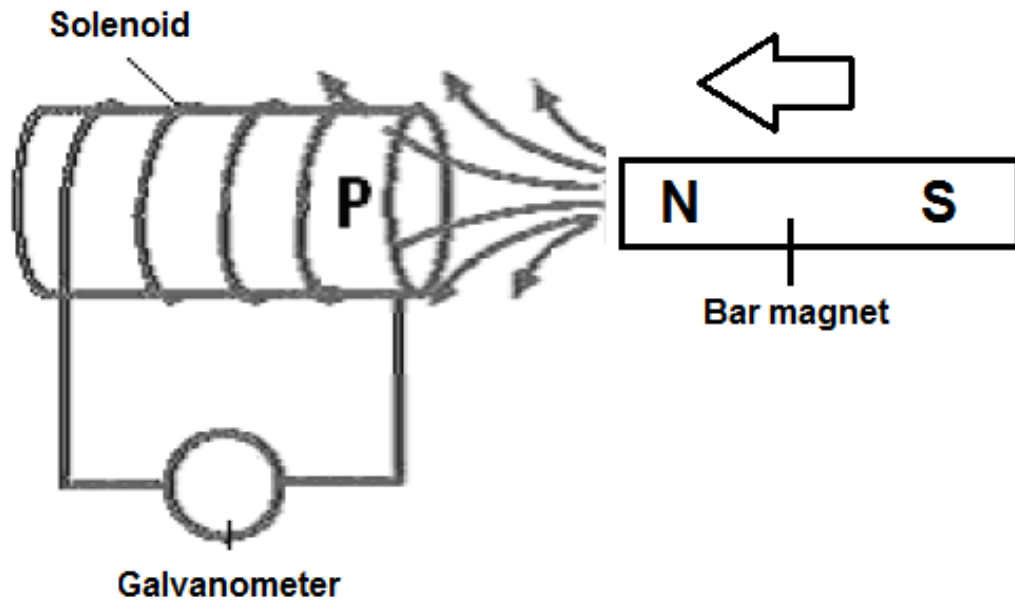


Diagram 2

- (a) State the magnetic pole at P when the magnet is moved towards the solenoid.
.....
[1 mark]
- (b) In Diagram 2, when the magnet is pushed towards the solenoid;
(i) mark the direction of induced current on the solenoid
[1 mark]
(ii) show the direction of pointer on the zero centered galvanometer.
[1 mark]
- (c) Name the physics law involved in determining the poles in (a) above.
.....
[1 mark]
- (d) State one method to increase the induced current in the solenoid.
.....
[1 mark]

TOTAL 5 marks

3. Diagram 3.1 shows a metal P at 100°C being placed in a beaker of water at 28°C . After a few minutes thermal equilibrium state is achieved. The mass of metal P and the water are 0.4 kg and 0.2 kg respectively.

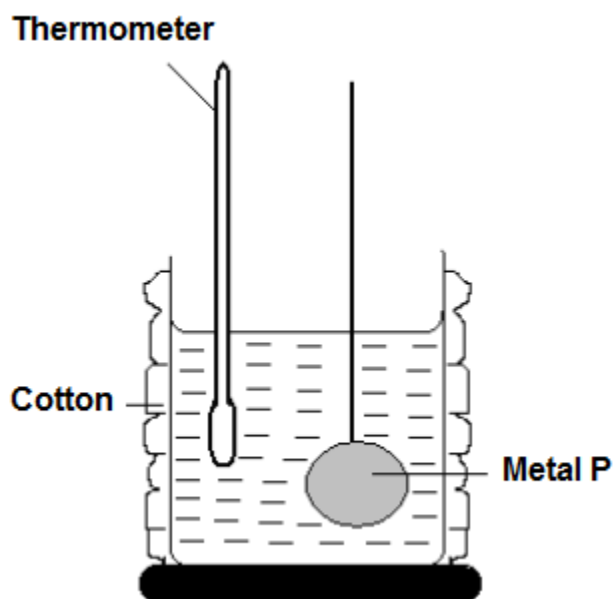


Diagram 3.1

Diagram 3.2 shows a temperature against time graph of the water in the beaker.

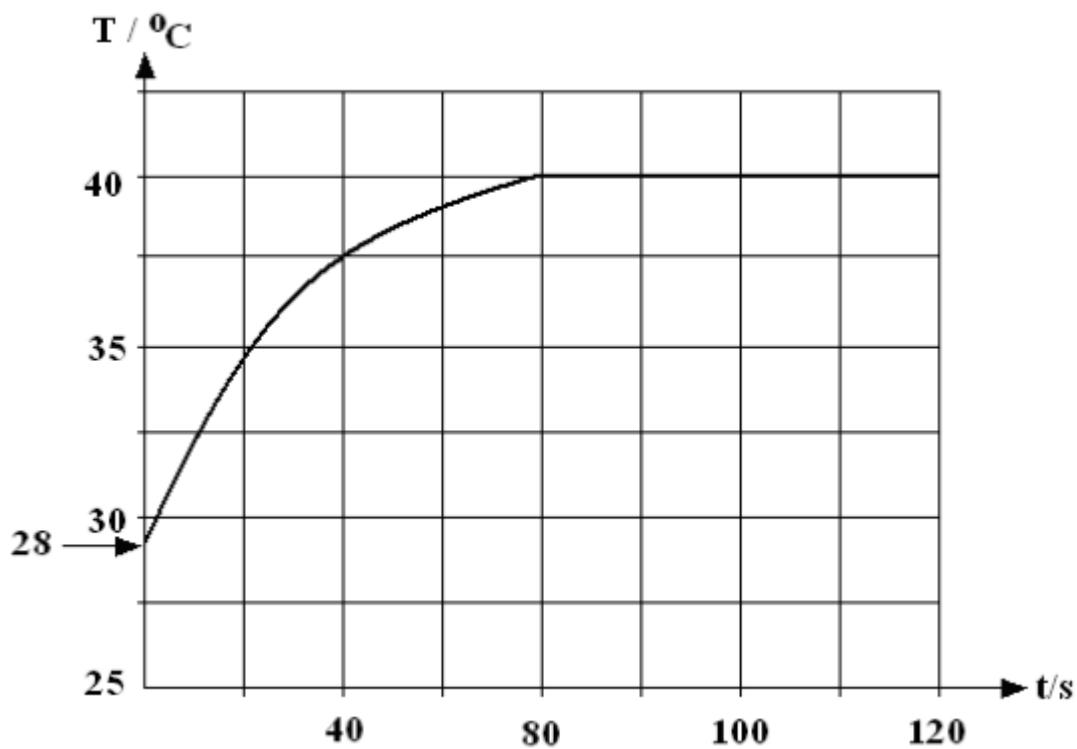


Diagram 3.2

4. Diagram 4 shows a simple control system using logic gates which can switch on an air conditioner automatically.

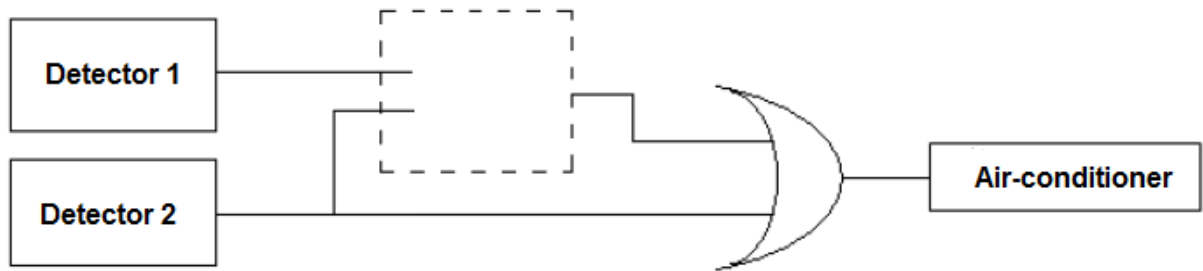


Diagram 4

- (a) What is logic gates?

.....
[1 mark]

- (b) The air conditioner only switches on during hot days **or** hot nights.
(i) Complete the truth table to show the operation of the logic gates in the circuit above. Use the keys below to complete your truth table.

Keys:

Detector 1		Detector 2		Air Conditioner	
In the day	1	Hot	1	Switch on	1
At night	0	Cool	0	Switch off	0

Detector 1	Detector 2	Air Conditioner
0	0	
0	1	
1	0	
1	1	

Truth table

[2 marks]

- (ii) Using diagram 4 and your answer in b(i), name a suitable logic gate which can carry out the required operation

.....
[1 mark]

- (iii) In Diagram 4, draw the logic gate in the box provided.

[1 mark]

(c) Suggest suitable electrical components that can be used as detector 1 and detector 2 in the circuit above.

(i) Detector 1

..... [1 mark]

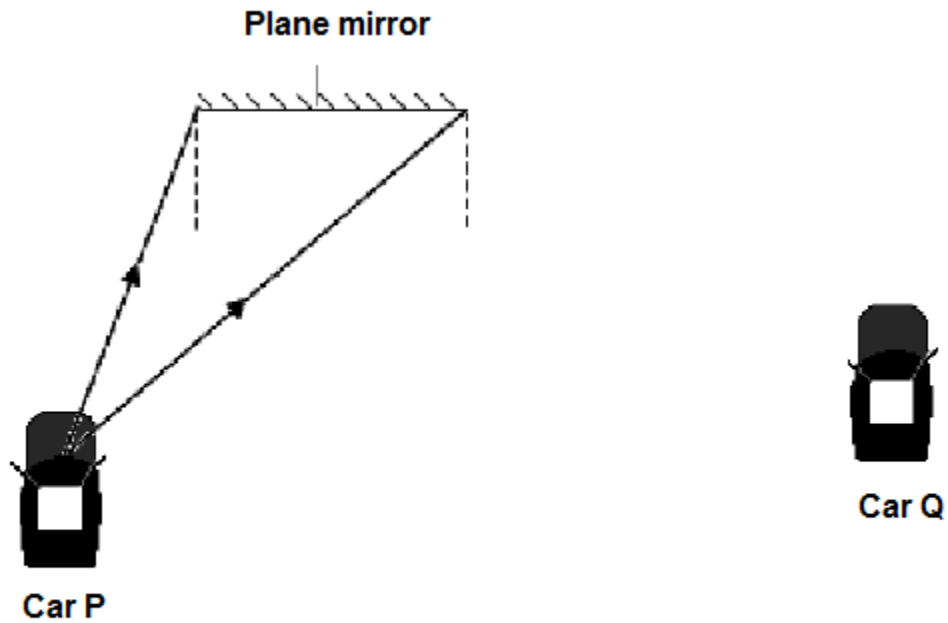
(ii) Detector 2

..... [1 mark]

TOTAL 5 marks

TRIAL PAHANG SET B 2015

1. Diagram 1 shows Car P in front of a plane mirror and Car Q at different location.



Line R

Diagram 1

- (a) Based on Diagram 1,
- (i) Tick the correct answer in the box provided.
Phenomenon involved is
- | | | |
|--------------------------|---------------------|----------|
| <input type="checkbox"/> | Refraction of light | |
| <input type="checkbox"/> | Reflection of light | [1 mark] |
- (ii) On Diagram 1, complete the ray diagram from Car P until Line R. [2 marks]
- (b) Suggest one way to make the driver from Car P can see Car Q without moving the cars or the mirror.
- [1 mark]

TOTAL 4 marks

2. Diagram 2 shows a strip of ticker tape which is produced by a moving object through a ticker-timer of frequency 50 Hz.

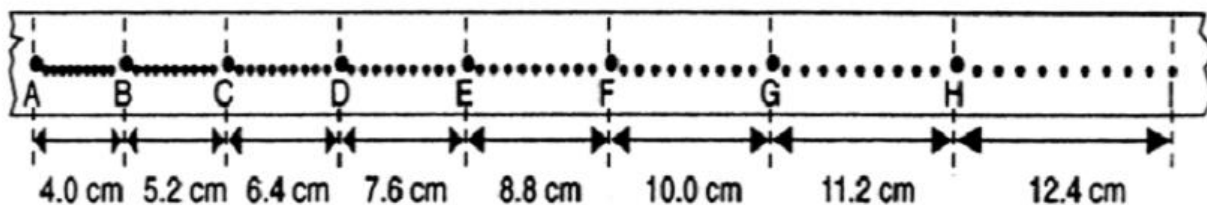


Diagram 2

- (a) Based on Diagram 2,
- (i) State the type of current used by the ticker-timer.
- [1 mark]
- (ii) What is the meaning of one tick on ticker tape?
- [1 mark]
- (b) (i) Sketch a velocity-time graph on the space below to show the movement of the object.



[2 marks]

- (ii) State the rate of change of velocity of the object.
- [1 mark]

TOTAL 5 marks

3. The data in Table 1 shows a series of observation and record made by Halim of a melting process of an ice cube in a metal plate.

Mass of ice: 12.5 g
Initial temperature of metal plate: 21 °C

Time / s	Observation	Temperature of ice/ice water °C
0 s	none	0
38 s	Ice to start melting	0
58 s	Nearly half of ice change to ice water	0
97 s	All ice change to ice water and some water droplets seen outside the metal plate	0

Diagram 2

- (a) (i) **Underline the correct** answer in the sentence below.
Heat energy to melt the ice cube from the above observation is obtained from the surrounding and (ice itself / metal plate).

[1 mark]

- (ii) Name the physics quantity that is involved when ice cube change to water at constant temperature.

.....
[1 mark]

- (iii) Why the temperature is remain constant when ice melts to water?

.....
[1 mark]

- (b) If the amount of heat absorbed by the ice cube is 4.4×10^3 J, calculate the specific latent heat of fusion of ice.

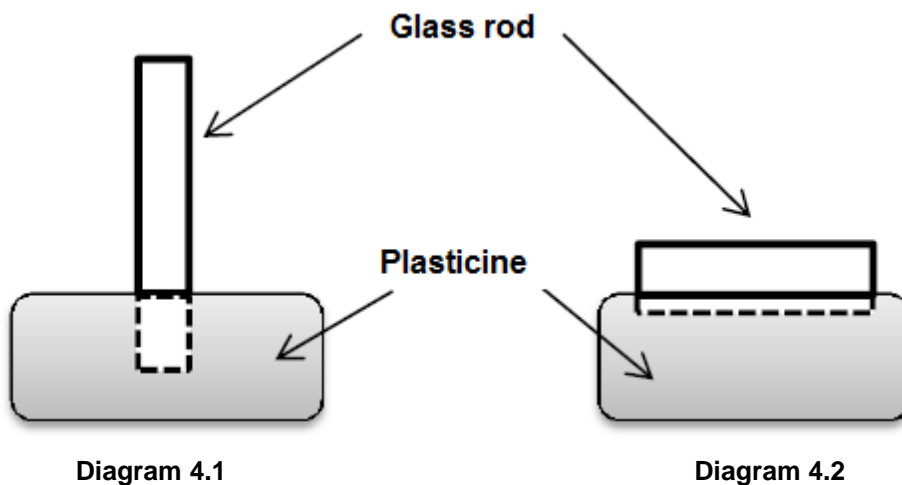
[2 marks]

- (c) Why water droplets are formed on the outer surface of the metal plate?

.....
[1 mark]

TOTAL 6 marks

4. Diagram 4.1 and Diagram 4.2 show a student pushes a glass rod into plasticine in two ways with equal forces.



- (a) (i) What is the meaning of pressure?
- [1 mark]
- (ii) Explain why the depth penetrated by the glass rod is not the same.
- [1 mark]
- (iii) State the relationship between pressure and one other physical quantity to explain the above situations.
- [1 mark]
- (b) A four wheel drive (4WD) vehicle can move in a muddy road. It has four tires and the area in contact with the muddy road for each tire is 0.45 m^2 .
- (i) Calculate the total area of the tires that contact to the muddy road.
- [1 mark]
- (ii) Calculate the pressure act to the muddy road if the total mass of the vehicle is 7623 kg .

[2 marks]

- (c) Explain why a normal car with smaller mass still cannot use in muddy road?
Use your knowledge regarding pressure.

.....
[1 mark]

TOTAL

7 marks

TRIAL SBP 2015

1. Diagram 1 shows a measuring instrument to measure mass of a cup.

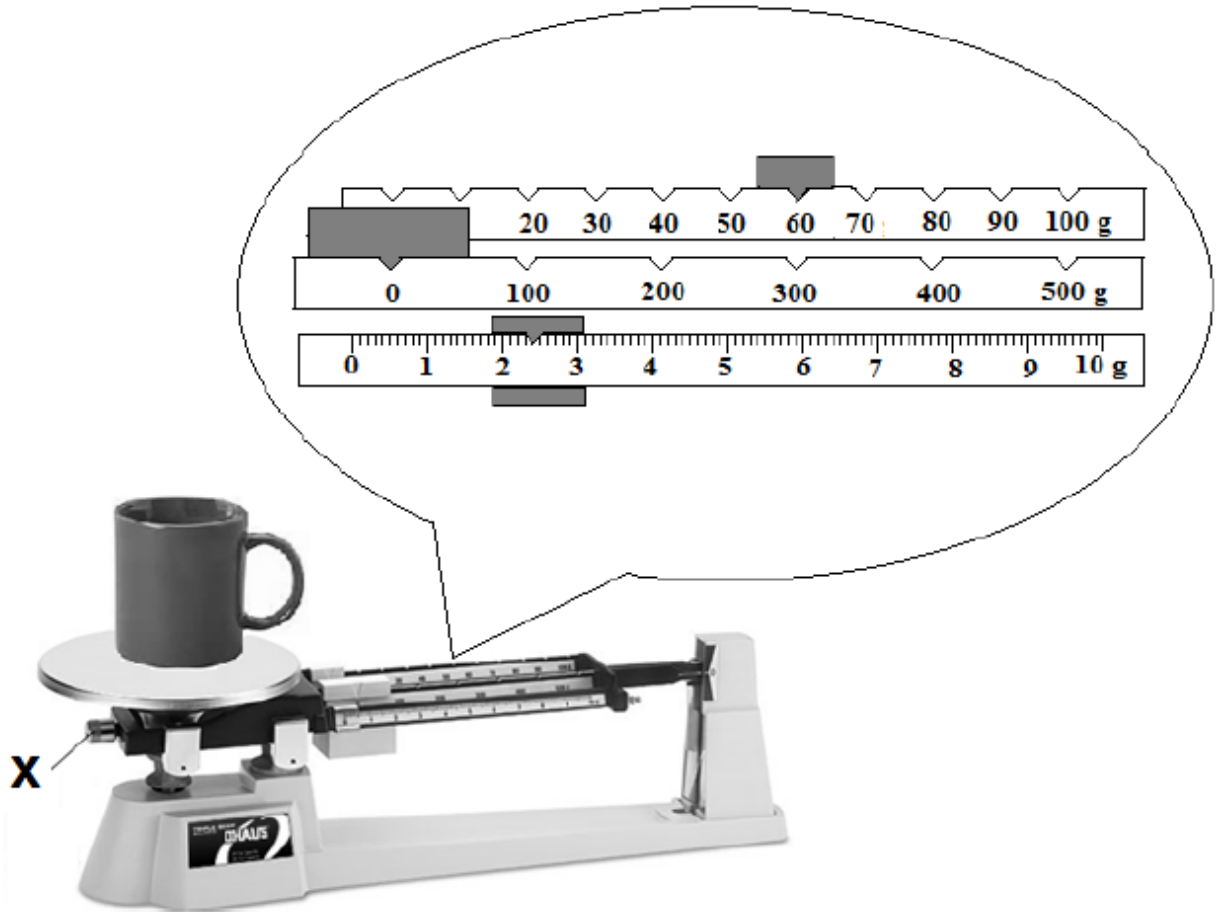


Diagram 1

- (a) Name the measuring instrument shown in Diagram 1.
..... [1 mark]
- (b) (i) Name the part labelled X.
..... [1 mark]
- (ii) What is the function of X?
..... [1 mark]
- (c) What is the mass of the cup?
..... [1 mark]

TOTAL 4 marks

2. Diagram 2.1 shows a spring mattress which has elasticity properties.

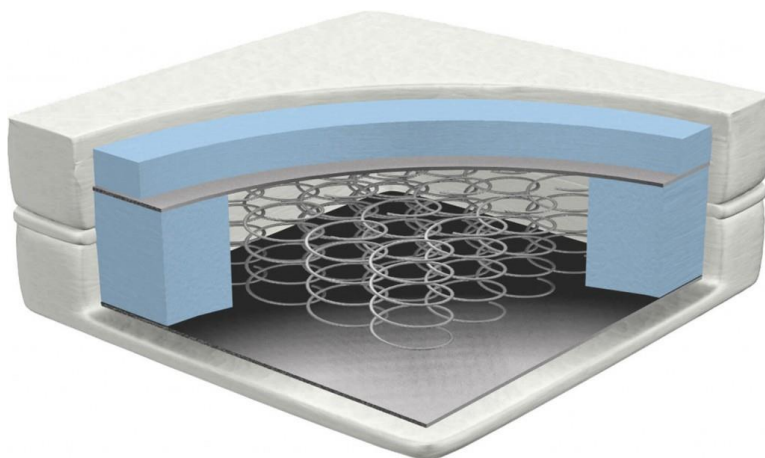


Diagram 2.1

- (a) (i) What is the meaning of elasticity?

..... [1 mark]

- (ii) Give one reason why a spring will not return to its original length when extended to a certain length.

..... [1 mark]

- (b) Diagram 2.2 shows a spring with original length of 10 cm extended to 15 cm when 100 g load is attached to the spring.

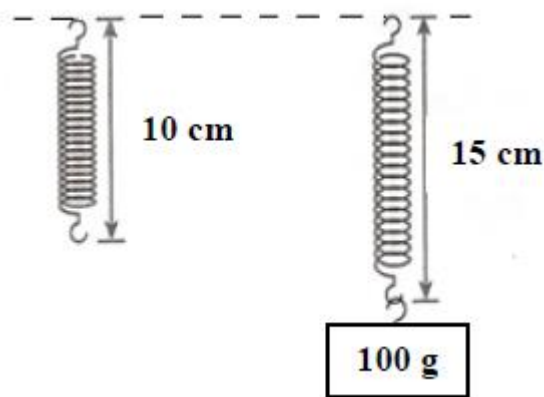


Diagram 2.2

- (i) What is the extension of the spring?

..... [1 mark]

- (ii) Diagram 2.3 shows a spring system which consists of three identical springs and 100 g load attached.

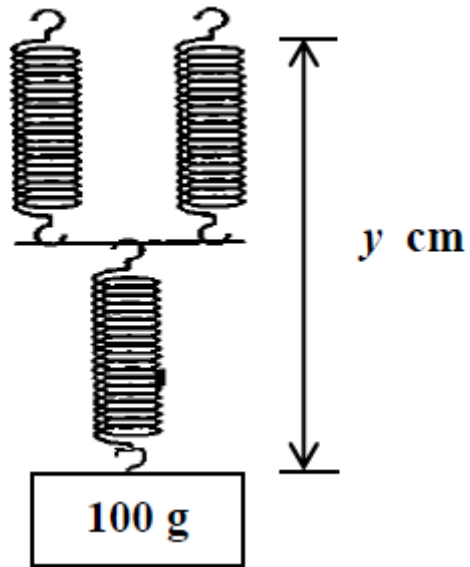


Diagram 2.3

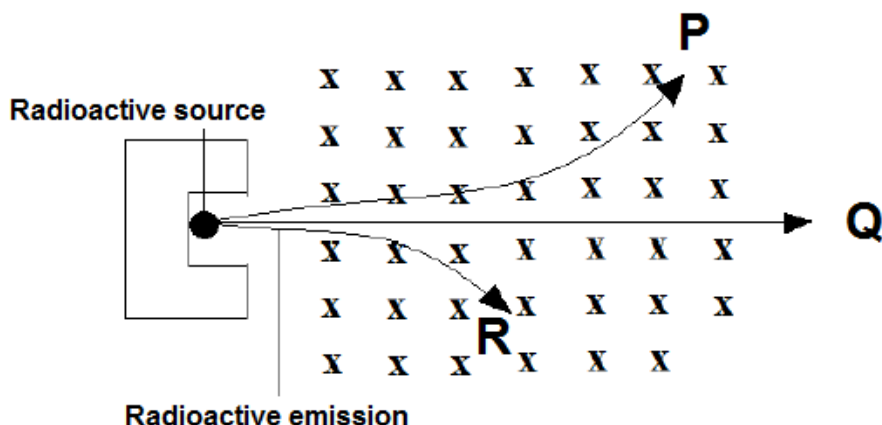
Calculate the value of y .

[2 marks]

TOTAL

5 marks

3. Diagram 3 shows paths of three types of radioactive emission in a magnetic field.



Key: X - Direction of magnetic field inwards

Diagram 3

(a) Name the radioactive emission Q.

..... [1 mark]

(b) Give reason why the path of radioactive emission
(i) Q is straight

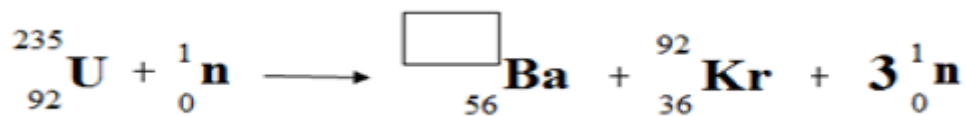
..... [1 mark]

(ii) P and R is curve

..... [1 mark]

(c) In a nuclear reactor, Uranium-235 is bombarded by a neutron produces Barium-141 and Krypton-92 and released three neutrons.

(i) Complete the equation of the reaction by writing the appropriate number in the boxes provided.



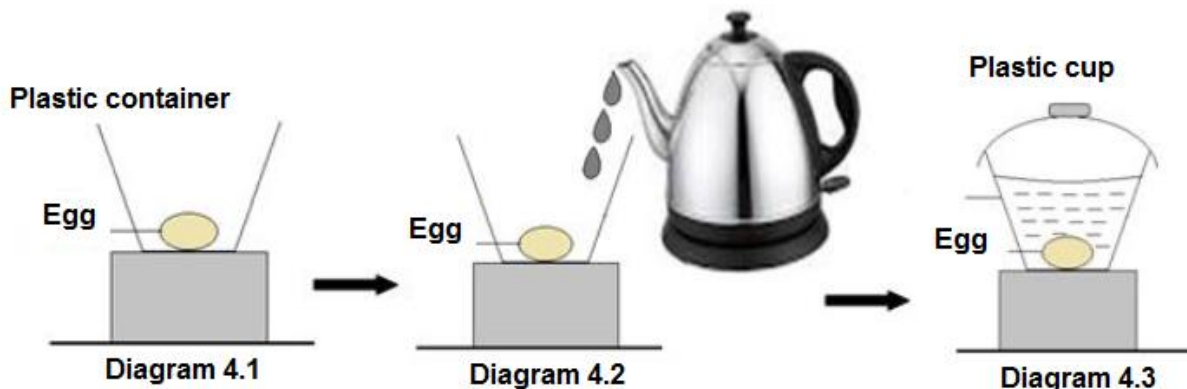
[1 mark]

(ii) The nuclear reaction of one nucleus of Uranium-235 experiences a mass defect of 2.988×10^{-28} kg.
Calculate the energy released in the nuclear reaction.
The velocity of light, $c = 3 \times 10^8 \text{ ms}^{-1}$

[2 marks]

TOTAL 6 marks

4. Diagram 4.1 shows a process to prepare half boiled egg of mass 50 g with initial temperature of 27°C. Diagram 4.2 shows 600 g of hot water of temperature 95°C being poured from a kettle into a plastic container containing the egg. Diagram 4.3 shows that the plastic container was covered with plastic cap to complete the process. After a while, a thermal equilibrium has achieved.



- (a) (i) What is the meaning of thermal equilibrium?

.....
[1 mark]

- (ii) In the process of preparing a half boiled egg, explain how thermal equilibrium occurs.

.....
.....

[2 marks]

- (b) (i) Calculate the final temperature of the water in the plastic container.
[Specific heat capacity of egg = 3 320 J kg⁻¹ °C⁻¹]
[Specific heat capacity of water = 4 200 J kg⁻¹ °C⁻¹]

[3 marks]

- (ii) State one assumption that you have made in 4(b)(i).

.....
[1 mark]

TOTAL 7 marks

TRIAL PERAK 2015

1. Two boats A and B are anchored at a distance of 21 m from each other on the surface of a lake. Water waves produced by the wind cause boat A to be at the crest and boat B to be at the trough of the same water wave, as shown in Diagram 1.

Each boat vibrates up and down 25 times in 10 seconds.

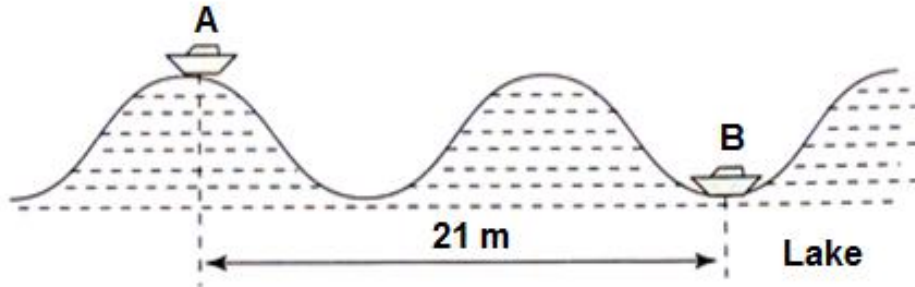


Diagram 1

- (a) Calculate
(i) the wavelength of the water waves.

[1 mark]

- (ii) the frequency of the water waves.

[1 mark]

- (b) State one factor which can affect the speed of the water waves on the lake surface.

.....
[1 mark]

- (c) If the vertical height of boat A from the level of boat B is 1.0 m, what is the amplitude of the water waves?

[1 mark]

TOTAL 4 marks

2.

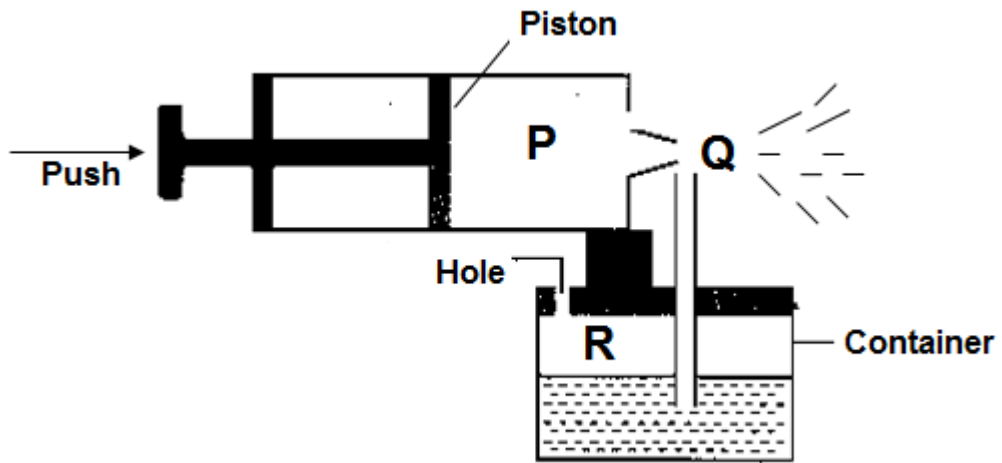


Diagram 2

- (a) (i) Which of the region P, Q or R will experience low pressure?

..... [1 mark]

- (ii) Why does the region experience low pressure?

..... [1 mark]

- (b) Suggest one modification that can be made to the insecticide sprayer to produce a bigger spray. Give reason to your answer.

.....
..... [2 marks]

- (c) State the physics principle used

..... [1 mark]

TOTAL 5 marks

3. Diagram 3.1 shows a graph of temperature against time taken for heating 750 g of a liquid by using a heater of 60 W.

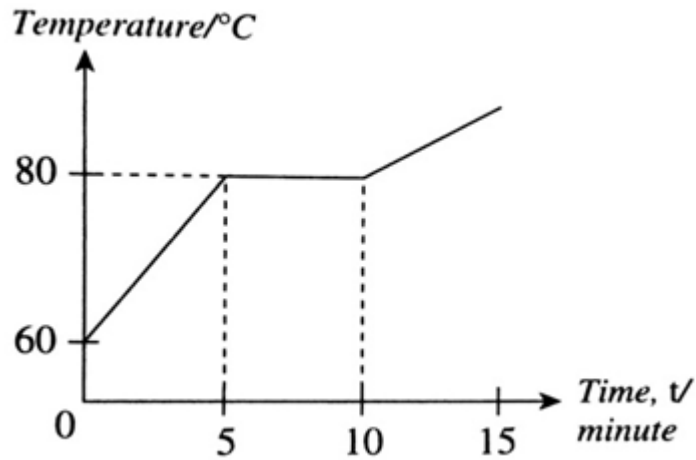


Diagram 3.1

- (a) (i) What is meant by boiling?

 [1 mark]
- (ii) Based on Diagram 3.1, the boiling point is 80°C. Explain what will happen if surface area of container for boiling is reduced.

 [1 mark]
- (iii) If this heating process is done in high altitude, predict what is the new boiling point of the liquid?

 [1 mark]
- (b) Calculate the specific latent heat of vaporization of the liquid.

 [2 marks]
- (c) Petroleum consists of a number of hydrocarbons that have different boiling points. Based on the information given, name the process that produces petrol, kerosene, and diesel.

 [1 mark]

TOTAL 6 marks

4. Diagram 4 shows a stone on top of a smooth slope.

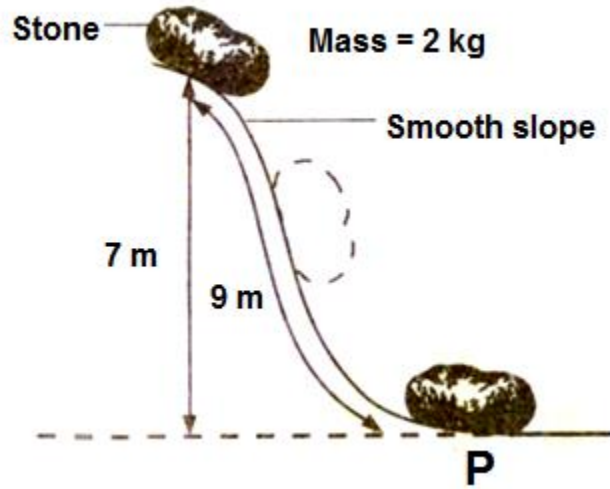


Diagram 4

The stone slides down the slope and stops at point P.

- (a) What is meant by work?

.....
[1 mark]

- (b) Calculate work done by the stone.

[2 marks]

- (c) Based on physics principle, conversion of energy occurs when the stone slides down the slope. State the physics principle and conversion of energy that occurs.

.....
.....
[2 marks]

- (d) Calculate velocity of the stone right before reach point P.

[2 marks]

TOTAL 7 marks

5. Diagram 5.1 shows monochromatic source pass through lens L with focal length 5 cm and glass prism.

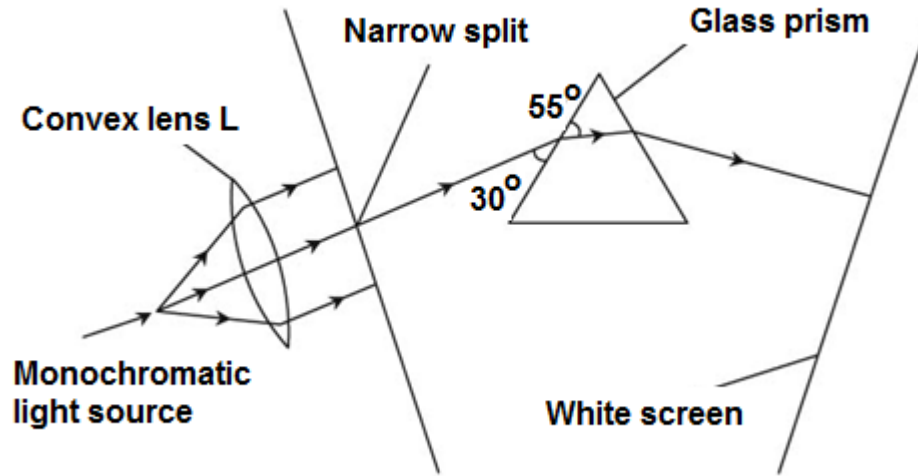


Diagram 5.1

- (a) What is the lens power in unit of diopter?
- [2 marks]

- (b) Convex lens, L is used to produce parallel light rays as shown in Diagram 5.1. What is the distance between the light source and the convex lens, L?
-
- [1 mark]

- (c) Determine angle of incidence and angle of refraction when the light pass through the prism?
- [2 marks]

- (d) Calculate the speed of light in prism if light speed in vacuum is $3 \times 10^8 \text{ ms}^{-1}$.

[2 marks]

TOTAL 7 marks

6. Diagram 6.1 shows a solar car.



Diagram 6.1

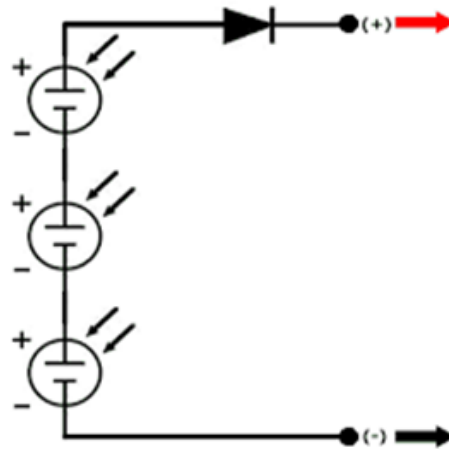


Diagram 6.2

Diagram 6.2 is a solar car that has been completely built by a student in the circuit has been granted.

(a) (i) Underline the **correct** answer in the bracket to complete the sentence below.
 The solar panel in Diagram 6.2 are connected in (series, parallel). [1 mark]

(ii) What happens to these solar car when a solar cell is damaged?
 [1 mark]

(b) (i) If you supplied 6 pieces of solar cells each of which has a 5 V and 50 mA?
 Sketch the circuit diagram can be built so as to move a solar car which has 10 V and 150 mA.
 [3 marks]

(ii) With the structure diagram sketched, shown the calculation steps.
 [3 marks]

TOTAL 8 marks

7. Diagram 7.1 shows two transformers, P and Q.

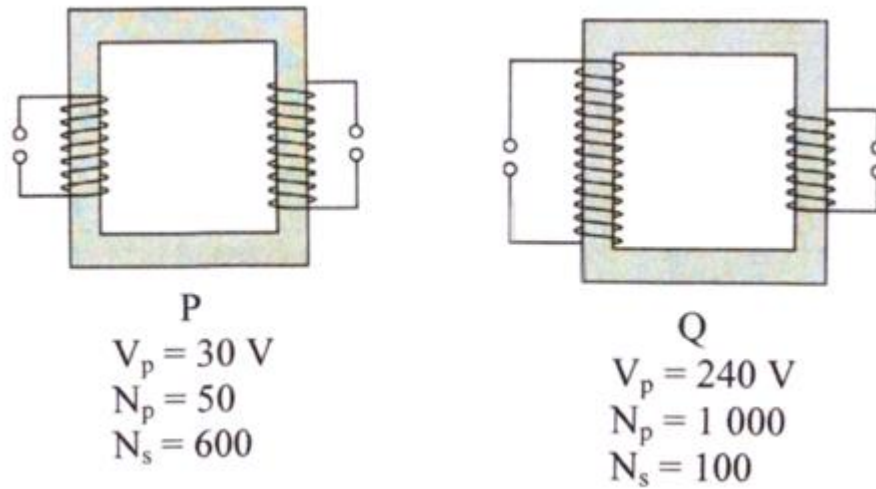


Diagram 7.1

(a) (i) What is a transformer?

.....
[1 mark]

(ii) Based on Diagram 7, which transformer is a step-down transformer?
Give one reason for your answer.

.....
.....
[2 marks]

(iii) Calculate the output voltage of transformer P.

[2 marks]

- (b) Diagram 7.2 shows the arrangement of a transformer which consists of two iron cores. A 6 V bulb is used and the voltage supply is 240 V.

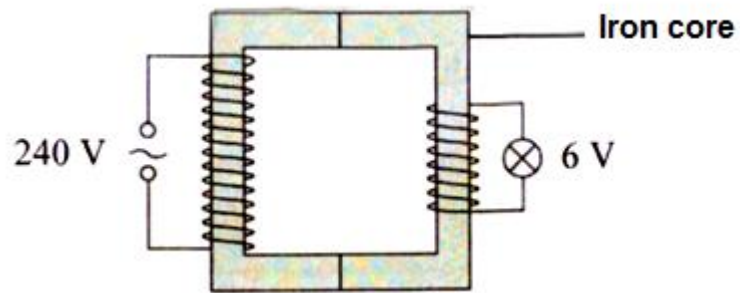


Diagram 7.2

- (i) State the ratio of the number of turns of the secondary coil to the number of turns of the primary coil.

.....
[1 mark]

- (ii) It is not easy to separate the two pieces of iron core. Explain the reason.

.....
.....
[2 marks]

- (iii) When the two pieces of iron core are separated, what happens to the brightness of the bulb? Give a reason for your answer.

.....
.....
[2 marks]

TOTAL 10 marks

8. Diagram 8 shows paper being made in a mill.

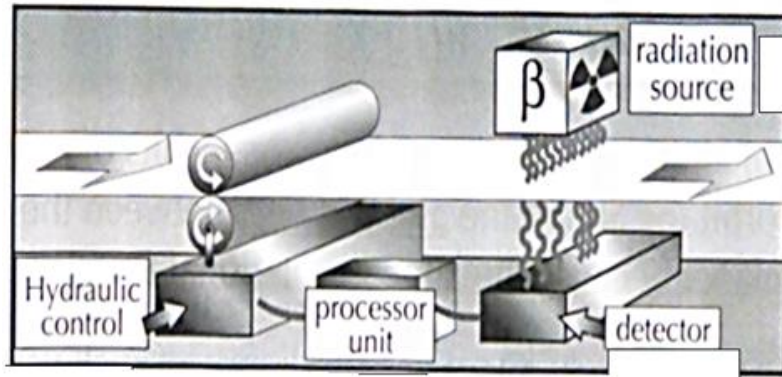


Diagram 8

(a) Describe how the thickness of the paper is controlled using beta radiation.

.....

[2 marks]

(b) Why alpha source is not used with this machinery?

.....

[1 mark]

(c) Why isn't gamma radiation used for this purpose?

.....

[1 mark]

(d) A sample of a highly ionizing radioactive gas has a half-life of 10 minutes.

(i) What does 'half-life' mean?

.....

[1 mark]

(ii) What fraction of the radioactive atoms currently present will be left after forty minute?

[2 marks]

(e) When an atom of the gas decays, it releases an electron.
 What type of nuclear radiation does this gas emit?

.....

[1 mark]

TOTAL 8 marks

ESSAY SECTION B

TRIAL SBP 2014

9. Diagram 9.1(a) show a metal cylinder hung on a spring balance in air. The reading of the spring balance in Diagram 9.1(a) is the actual weight of the metal cylinder.

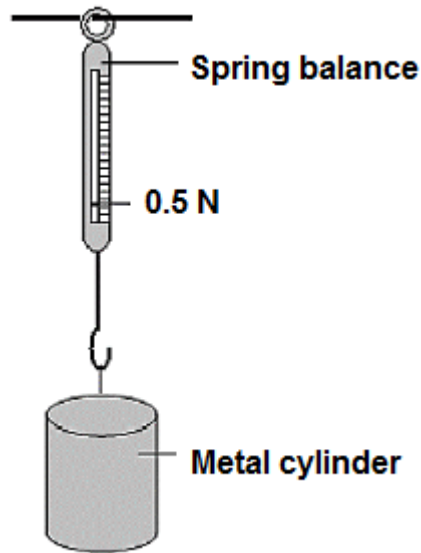


Diagram 9.1(a)

Diagram 9.1(b) and Diagram 9.1(c) show the metal cylinder immersed in cooking oil and water. The reading of the spring balance in Diagram 9.1(b) and 9.1(c) are known as the apparent weight.

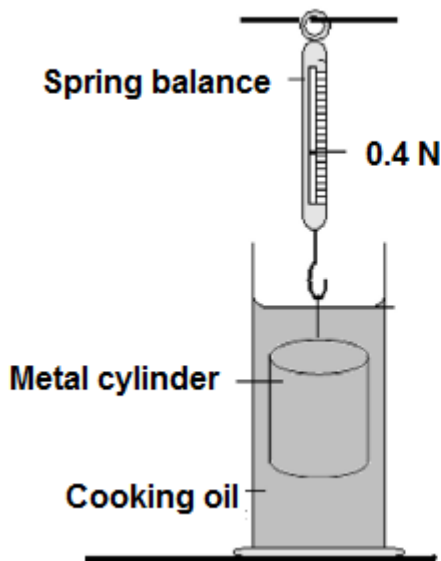


Diagram 9.1(b)

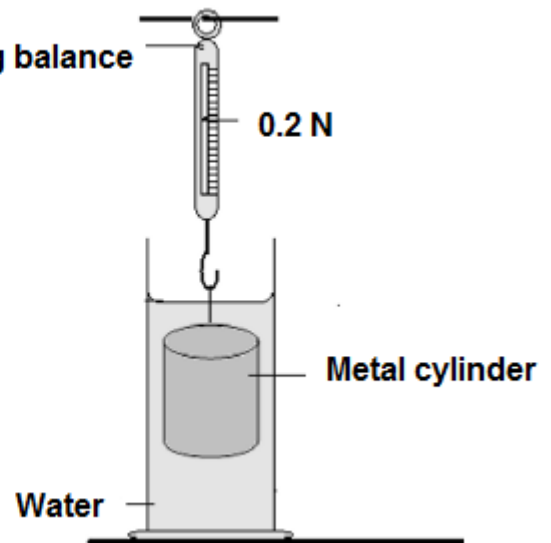


Diagram 9.1(c)

- (a) State an equation involving apparent weight, actual weight and buoyant force? [1 mark]
- (b) (i) Using Diagram 9.1(b) and Diagram 9.1(c), compare the apparent weight, the density of the cooking oil and water, and the buoyant force in cooking oil and water. [3 marks]
- (ii) State the relationship between the buoyant force with:
 - The density of liquid.
 - The apparent weight. [2 marks]
- (c) Diagram 9.2 shows rod A and rod B of different densities are immersed in water.

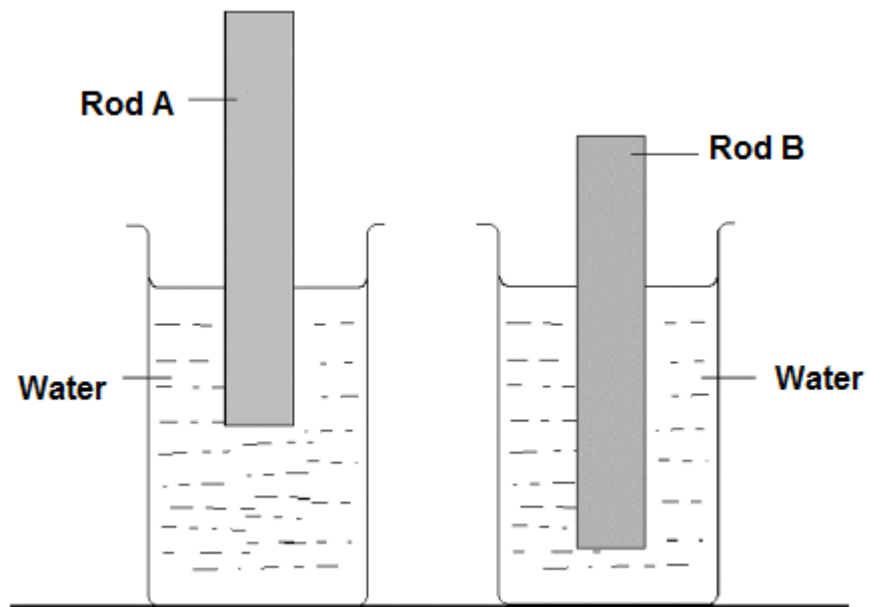


Diagram 9.2

Explain why both rods float in water and rod B floats lower than rod A.

[4 marks]

- (d) The Ministry of Defence is organizing a competition among the Engineering students to build a submarine.
 As a team leader, you are required to give some suggestions to design the submarine.

Using the appropriate physics concepts, suggest and explain suitable characteristics of the material and design of a submarine that is safe, fast and can travel deep underwater.

[10 marks]

TOTAL

20 marks

10. Diagram 10.1 and Diagram 10.2 show two circuits with battery P and battery Q which are used to determine the electromotive force, E and the internal resistance, r of each battery. Table 10.1 and Table 10.2 show the readings of the voltmeter and ammeter when the switch in each circuit is off and on.

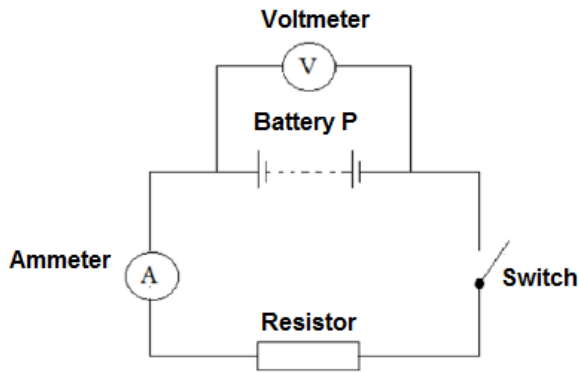


Diagram 10.1

	Circuits with battery P	
	Switch off	Switch on
Voltmeter reading	15.0 V	12.0 V
Ammeter reading	0.0 A	2.0 A

Table 10.1

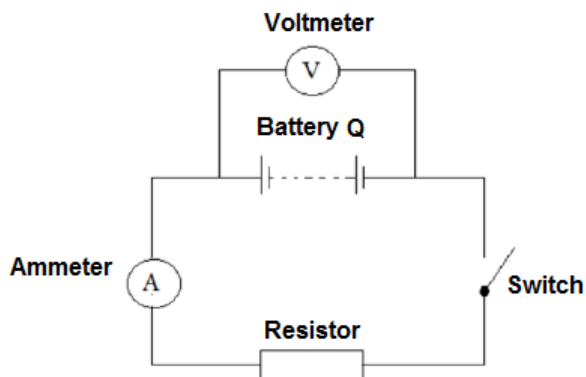


Diagram 10.2

	Circuits with battery P	
	Switch off	Switch on
Voltmeter reading	15.0 V	10.0 V
Ammeter reading	0.0 A	1.5 A

Table 10.2

- (a) (i) What is meant by electromotive force? [1 mark]
- (ii) Based on Table 10.1 and Table 10.2, compare the electromotive force, and the reading of voltmeter and ammeter when the switch is on. State the relationship between the voltage losses with the ammeter's reading and internal resistance. [5 marks]

- (b) Batteries with internal resistance connected in series and in parallel as shown in Diagram 10.3 will affect the brightness of the bulbs. Explain why.

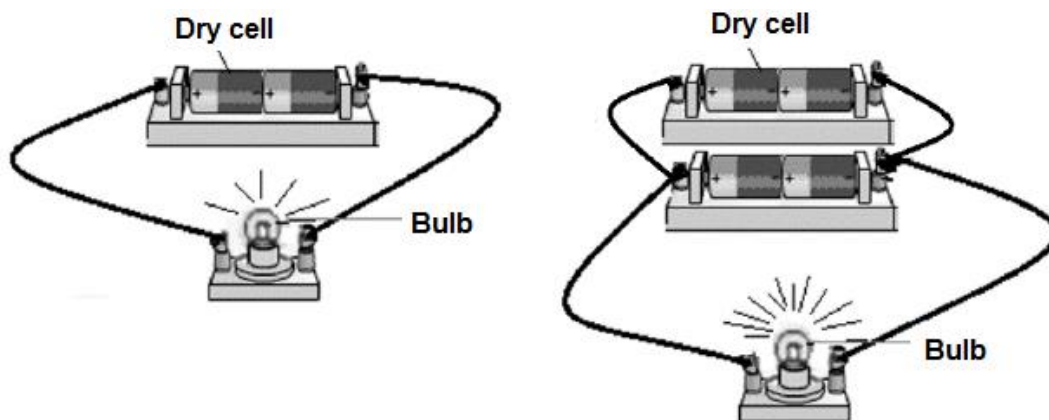


Diagram 10.3

[4 marks]

- (c) Diagram 10.4 shows a stove coil that contains heating filament. Suzanna uses the stove to cook.



Diagram 10.4

By using the concepts in physics, suggest and explain suitable modifications to the heating filament to increase its efficiency.

[10 marks]

TOTAL

20 marks

ESSAY SECTION C

TRIAL SBP 2014

11. Diagram 11.1 shows a prism periscope in a submarine.



Diagram 11.1

- (a) What is the light phenomena occurs in prism periscope? [1 mark]
- (b) (i) Copy Diagram 11.2 and draw the ray path to show the formation of image by a prism periscope.

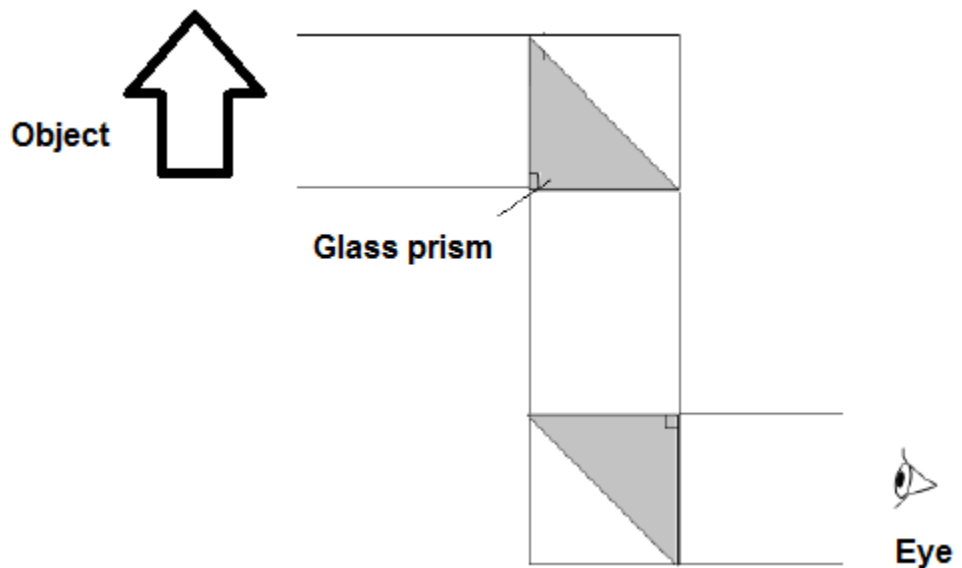


Diagram 11.2

[2 marks]

(ii) State the characteristics of the image formed.

[2 marks]

(c) Diagram 11.3 shows an incomplete light ray path entering a glass prism. The refractive index of the glass prism is 1.5.

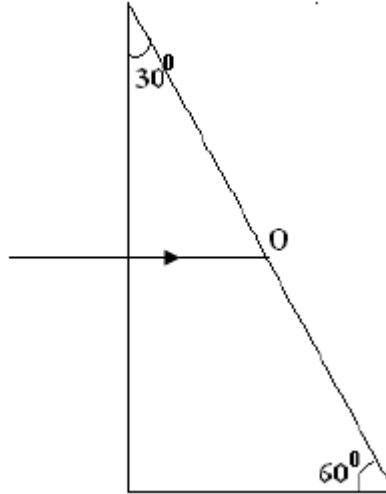


Diagram 11.3

(i) Calculate the critical angle of the glass prism.

[1 mark]

(ii) Copy Diagram 11.3 and complete the ray path and state the incident angle.

[2 marks]

(iii) Calculate the refracted angle after the light pass through point O.

[2 marks]

(d) Diagram 11.4 shows Farah is using an astronomical telescope to see a distant object.



Diagram 11.4

Table 11 shows the specifications of four simple astronomical telescopes, J, K, L and M. You are required to determine the most suitable telescope to see clearer distant object. Study the specifications of all the four telescopes in Table 11 below:

Telescope	Type of lenses	Focal length of objective lens, f_o / Focal length of eyepiece lens, f_e	Distance between two lenses, L (cm)	Power of eyepiece
J	Concave	80 cm / 2 cm	$L > f_o + f_e$	high
K	Concave	6 cm / 2 cm	$L = f_o + f_e$	low
L	Convex	80 cm / 2 cm	$L = f_o + f_e$	high
M	Convex	6 cm / 2 cm	$L > f_o + f_e$	low

Table 11

Explain the suitability of each characteristic and then determine the most suitable telescope used to see distant object clearly.

Give reason for your choice.

[10 marks]

TOTAL

20 marks

12. Diagram 12.1 shows a wave is formed on the screen of a cathode ray oscilloscope (CRO). The time base of the CRO is set at 1 ms cm^{-1} .

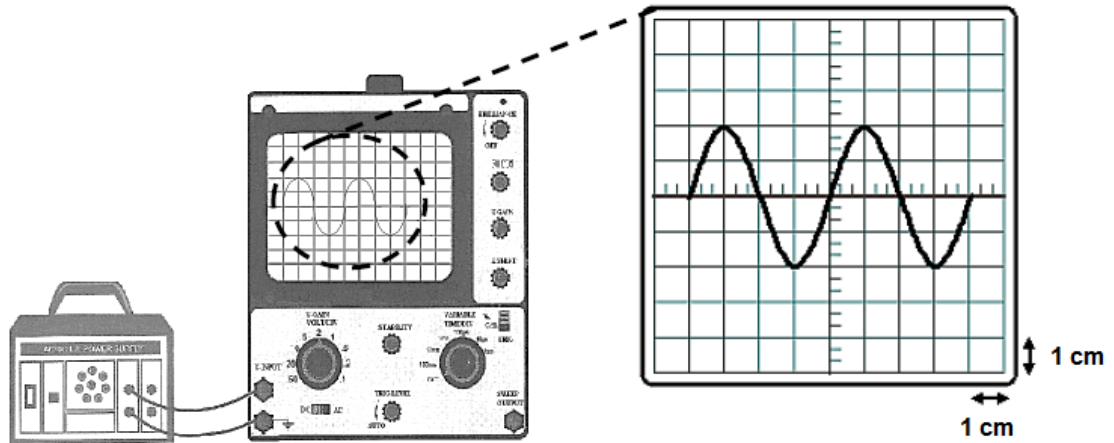


Diagram 12.1

- (a) What is the meaning of cathode ray? [1 mark]
- (b) Explain how the CRO can be used to determine a short time interval. [4 marks]
- (c) Based on the wave on CRO in Diagram 12.1, Calculate [5 marks]
- the period of the wave
 - the frequency of the wave
 - the wave length of the wave if the speed of sound wave is 330 m s^{-1} .
- (d) Diagram 12.2 shows a row of street lamps. The lamps will be automatically switched on at night or when the surrounding is dark. The lamps will be automatically switched off at day time or the surrounding is bright.



Diagram 12.2

Diagram 12.3 shows four transistor circuits that will be used in the street lighting circuit. You are required to determine the most suitable circuit to switch on the street lamps automatically at night. Study the specifications of the four circuits based on the following aspects:

- (i) Number of resistors in series used
- (ii) Position of light dependent resistor, LDR
- (iii) Type of transistor used
- (iv) Additional component used to light the lamp connected to 240V a.c. supply

Explain the suitability of each aspect and determine the most suitable circuit to be used. Give reasons for your choice.

[10 marks]

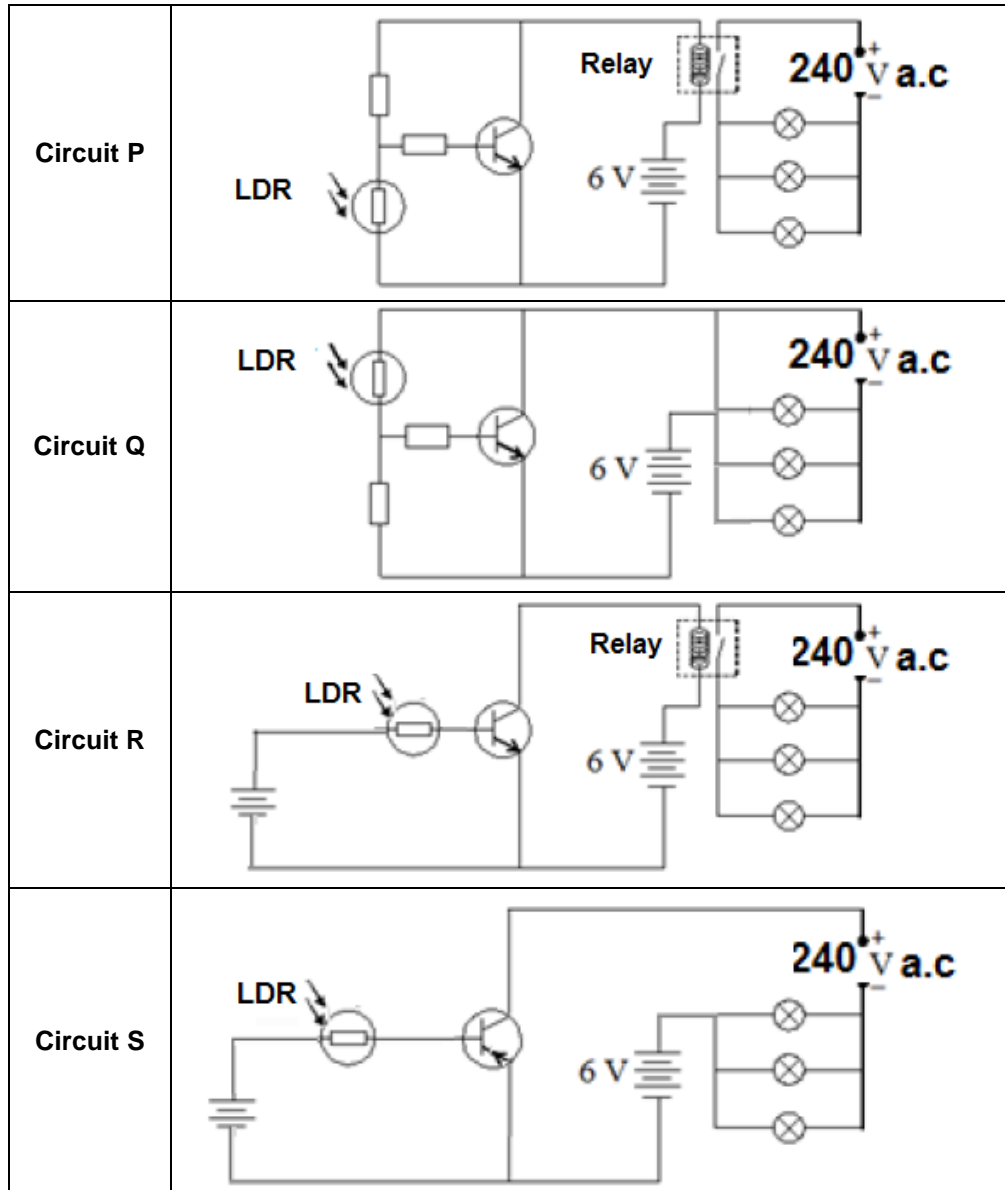


Diagram 12.3

TOTAL 20 marks

To infinity and beyond...

