

SULIT



**SOALAN PRAKTIS BESTARI  
PROJEK JAWAB UNTUK JAYA (JUJ) 2015**



**SIJIL PELAJARAN MALAYSIA  
4351/1  
Physics  
Kertas 1 Set A**

1¼ jam

Satu jam lima belas minit

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Calon dikehendaki membaca maklumat di halaman bawah.*

**MAKLUMAT UNTUK CALON**

*Kertas soalan ini mengandungi 50 soalan.*

*Jawab **semua** soalan.*

*Jawab setiap soalan dengan menghitamkan ruangan yang betul pada kertas jawapan.*

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

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

*Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.*

*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.*

*Satu senarai rumus disediakan di halaman 2.*

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Kertas soalan ini mengandungi **30** halaman bercetak.

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

1.  $a = \frac{v-u}{t}$
2.  $v^2 = u^2 + 2as$
3.  $s = ut + \frac{1}{2} at^2$
4. Momentum =  $mv$
5.  $F = ma$
6. Kinetic energy =  $\frac{1}{2} mv^2$
7. Gravitational potential energy =  $mgh$
8. Elastic potential energy =  $\frac{1}{2} Fx$
9. Power,  $P = \frac{\text{energy}}{\text{time}}$
10.  $\rho = \frac{m}{V}$
11. Pressure,  $p = \frac{F}{A}$
12. Pressure,  $p = h\rho g$
13. Heat,  $Q = mc\theta$
14. Heat,  $Q = ml$
15.  $\frac{PV}{T} = \text{constant}$
16.  $n = \frac{\text{Sini}}{\text{Sinr}}$
17.  $n = \frac{\text{real depth}}{\text{apparent depth}}$
18.  $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
19. Linear magnification,  $m = \frac{v}{u}$
20.  $v = f\lambda$
21.  $\lambda = \frac{ax}{D}$
22.  $Q = It$
23.  $E = VQ$
24.  $V = IR$
25. Power,  $P = IV$
26.  $\frac{N_s}{N_p} = \frac{V_s}{V_p}$
27. Efficiency =  $\frac{I_s V_s}{I_p V_p} \times 100\%$
28.  $E = mc^2$
29.  $g = 10 \text{ ms}^{-2}$
30.  $c = 3.0 \times 10^8 \text{ ms}^{-1}$



- 4 Diagram 1 shows an investigation about the relationship between the pressure of the fresh water and the volume of the air bubble.

*Rajah 1 menunjukkan satu penyiasatan tentang hubungan antara tekanan air tawar dan isipadu gelembung udara.*

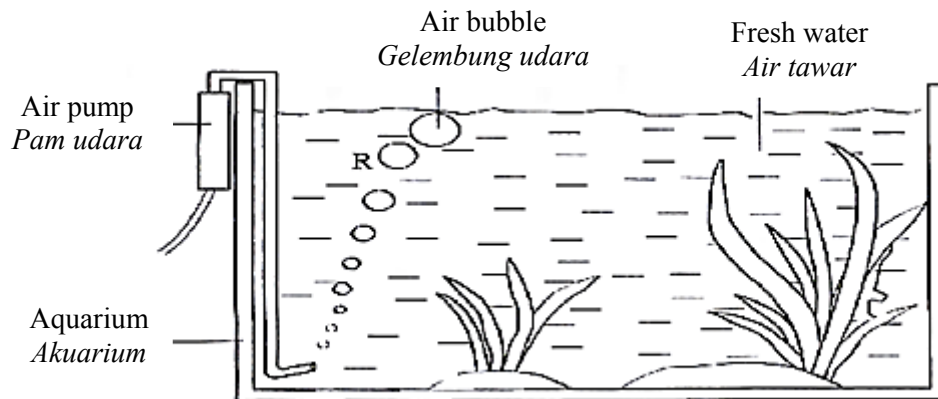


Diagram 1 / Rajah 1

Which of the following variables are correct?

*Antara pembolehubah berikut, yang manakah betul?*

	<b>Manipulated Variable</b> <i>Pembolehubah dimanipulasi</i>	<b>Responding variable</b> <i>Pembolehubah bergerak balas</i>	<b>Constant variable</b> <i>Pembolehubah dimalarkan</i>
<b>A</b>	Pressure of the fresh water <i>Tekanan air tawar</i>	Volume of the air bubble <i>Isipadu gelembung udara</i>	Density of the fresh water <i>Ketumpatan air tawar</i>
<b>B</b>	Volume of the air bubble <i>Isipadu gelembung udara</i>	Pressure of the fresh water <i>Tekanan air tawar</i>	Density of the fresh water <i>Ketumpatan air tawar</i>
<b>C</b>	Density of the fresh water <i>Ketumpatan air tawar</i>	Volume of the air bubble <i>Isipadu gelembung udara</i>	Pressure of the fresh water <i>Tekanan air tawar</i>
<b>D</b>	Pressure of the fresh water <i>Tekanan air tawar</i>	Density of the fresh water <i>Ketumpatan air tawar</i>	Volume of the air bubble <i>Isipadu gelembung udara</i>



The inertia of the cow is bigger than the boy because  
*Inersia bagi lembu adalah lebih besar daripada budak lelaki kerana*

- A the size of the cow is bigger than the boy  
*saiz lembu lebih besar daripada budak lelaki*
- B the mass of the cow is bigger than the boy  
*jisim lembu lebih besar daripada budak lelaki*
- C the height of the cow is more than the boy  
*tinggi lembu lebih besar daripada budak lelaki*

- 7 Diagram 4 shows two cars, P and Q with mass 4000 kg and 2500 kg respectively before and after collision.

*Rajah 4 menunjukkan dua buah kereta, P dan Q yang masing-masing berjisim 4000 kg dan 2500 kg sebelum dan selepas perlanggaran.*

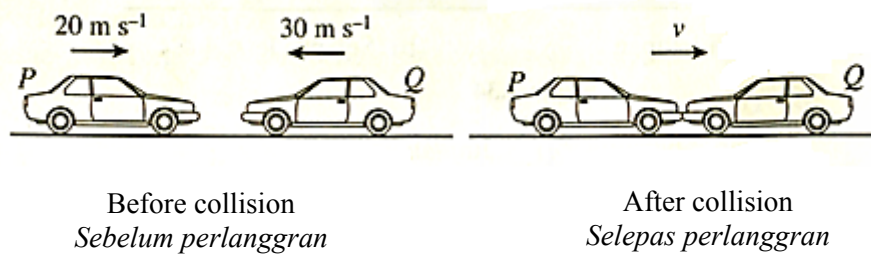


Diagram 4 / Rajah 4

What is the velocity of both cars after collision?

*Berapakah halaju kedua-dua kereta selepas perlanggaran?*

- A  $0.77 \text{ ms}^{-1}$
- B  $1.30 \text{ ms}^{-1}$
- C  $23.85 \text{ ms}^{-1}$
- D  $50.00 \text{ ms}^{-1}$

- 8 Diagram 5 shows a box full with flood relief aids that were dropped from a helicopter. The box were dropped on sand.  
*Rajah 5 menunjukkan sebuah kotak yang penuh dengan barang bantuan banjir dijatuhkan dari sebuah helikopter. Kotak itu dijatuhkan di atas permukaan pasir.*

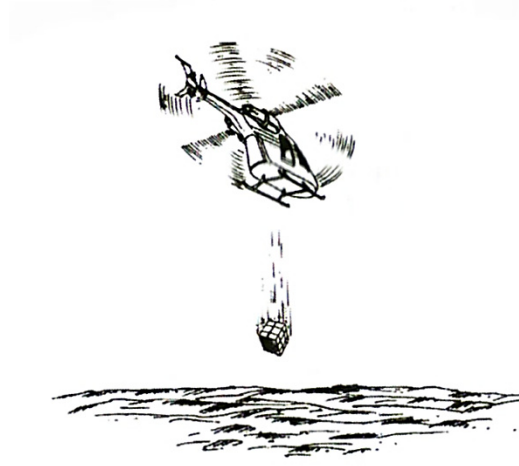


Diagram 5 / Rajah 5

Why does the box were dropped on sand?

*Mengapakah kotak itu dijatuhkan di atas permukaan pasir?*

- A to lengthen the time of impact of the box with the ground  
*untuk memanjangkan masa hentaman kotak dengan tanah*
- B to shorten the time of impact of the box with the ground  
*untuk memendekkan masa hentaman kotak dengan tanah*
- C to lengthen the time of falling to the ground  
*untuk memanjangkan masa jatuh ke tanah*
- 9 Diagram 6 and Diagram 7 show a mango and a coconut respectively falling from a tree.  
*Rajah 6 dan Rajah 7 masing-masing menunjukkan sebiji buah mangga dan sebiji buah kelapa jatuh dari sebatang pokok.*

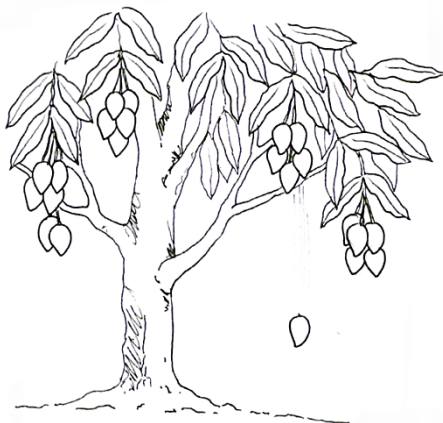


Diagram 6 / Rajah 6



Diagram 7 / Rajah 7

Which of the following statements is true when mango and coconut are in free fall?  
*Antara pernyataan berikut, yang manakah benar apabila buah mangga dan buah kelapa sedang jatuh bebas?*

- A The velocities of mango and coconut are the same  
*Halaju buah mangga dan buah kelapa adalah sama*
- B The acceleration of mango and coconut are the same  
*Pecutan buah mangga dan buah kelapa adalah sama*
- C The momentum of mango and coconut are the same  
*Momentum buah mangga dan buah kelapa adalah sama*
- D The gravitational forces acting on mango and coconut are the same  
*Daya graviti yang bertindak ke atas buah mangga dan buah kelapa adalah sama*

- 10 Diagram 8 shows a girl standing on a weighing scale in a stationary lift. The reading of the weighing scale is 500 N.

*Rajah 8 menunjukkan seorang budak perempuan berdiri di atas penimbang berat di dalam lif yang pegun. Bacaan penimbang berat itu ialah 500 N.*

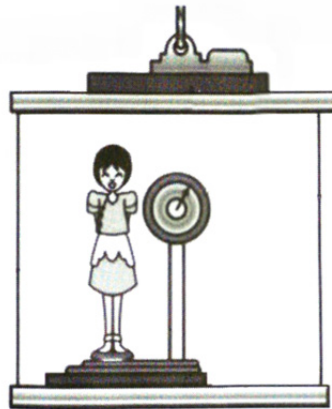


Diagram 8 / *Rajah 8*

What is the reading of the weighing scale when the lift moves up with an acceleration of  $2\text{ms}^{-2}$ ?

*Berapakah bacaan penimbang berat semasa lif itu bergerak ke atas dengan pecutan  $2\text{ms}^{-2}$ ?*

- A 50 N
- B 400 N
- C 600 N
- D 1000 N



- 11 Diagram 9 shows a worker carrying a gas tank.  
Rajah 9 menunjukkan seorang pekerja membawa sebuah tangki gas.

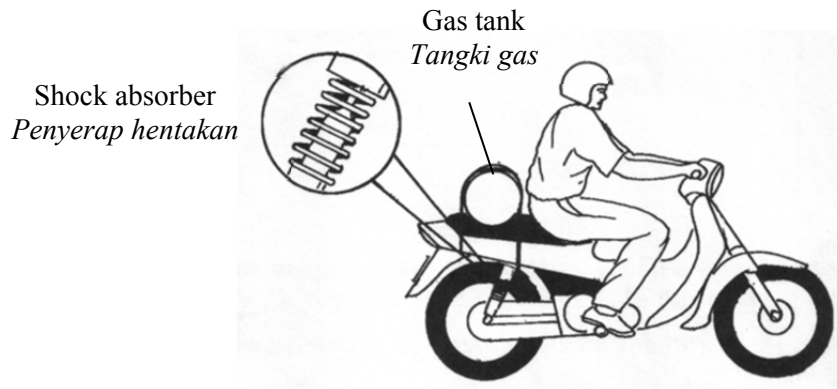


Diagram 9 / Rajah 9

- Which of the following spring that is suitable to be used as shock absorber?  
Antara yang berikut, spring manakah yang paling sesuai dijadikan penyerap hentakan?

	Length of the spring <i>Panjang spring</i>	Material used for the spring <i>Bahan diguna untuk buat spring</i>
A	50.0 cm	Steel <i>Keluli</i>
B	40.0 cm	Copper <i>Kuprum</i>
C	30.0 cm	Copper <i>Kuprum</i>
D	20.0 cm	Steel <i>Keluli</i>

- 12 Diagram 10 shows a thin wire is used to slice through a boiled egg.  
Rajah 10 menunjukkan satu dawai halus digunakan untuk memotong telur rebus.

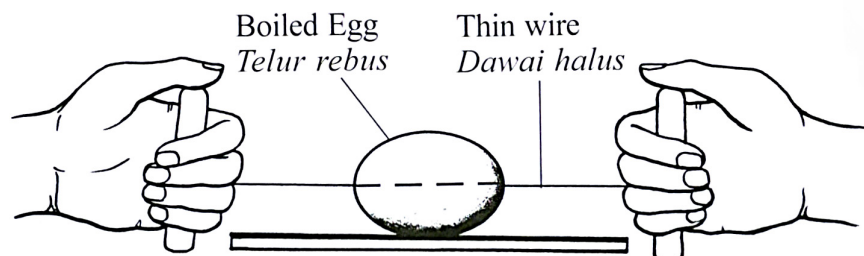
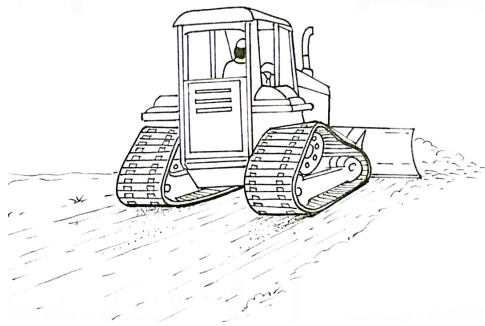


Diagram 10 / Rajah 10

- Which situation shows the same concept as Diagram 10?  
Situasi manakah yang menunjukkan konsep yang sama seperti Rajah 10?

A



C

Shoulder pad  
Pelapik bahu

B



D



- 13 Diagram 11 shows two containers filled with water and oil.  
Rajah 11 menunjukkan sebuah bekas berisi air dan minyak.

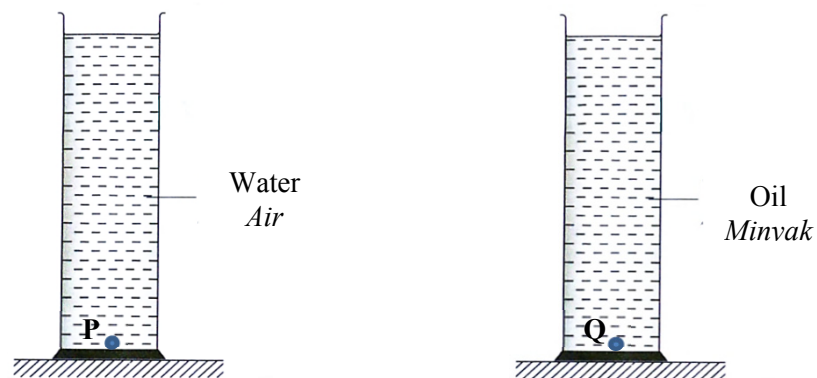


Diagram 11 / Rajah 11

Which is the correct comparison of the pressures at P and Q?  
Perbandingan manakah yang betul mengenai tekanan di P dan Q?

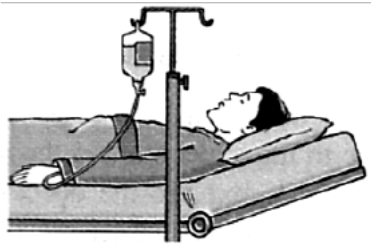
- A Pressure at P > pressure at Q  
Tekanan di P > tekanan di Q
- B Pressure at P = pressure at Q  
Tekanan di P = tekanan di Q
- C Pressure at P < pressure at Q  
Tekanan di P < tekanan di Q

- 14 What happens to the gas molecules in a balloon at room temperature when the balloon is placed inside a freezer?

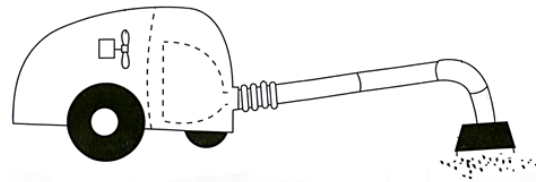
*Apakah yang terjadi kepada molekul gas di dalam sebiji belon pada suhu bilik apabila belon itu diletakkan ke dalam peti ais?*

- A The kinetic energy of the gas molecules decreases  
*Tenaga kinetik molekul gas berkurang*
- B The potential energy of the gas molecules increases  
*Tenaga keupayaan molekul gas bertambah*
- C The distance between the gas molecules increases  
*Jarak antara molekul gas bertambah*
- D The size of the gas molecules decreases  
*Saiz molekul gas berkurang*
- 15 Which of the following situations only occurs due to atmospheric pressure?  
*Antara situasi berikut, yang manakah hanya berlaku disebabkan oleh tekanan atmosfera?*

A



C



B



D



- 16 Diagram 12 shows a model of a hydraulic jack. The force  $F_1$  is applied on the small piston is able to support a car which placed on large piston.

*Rajah 12 menunjukkan sebuah model jek hidraulik. Daya  $F_1$  bertindak pada omboh kecil untuk menyokong beban yang diletakkan pada omboh besar.*

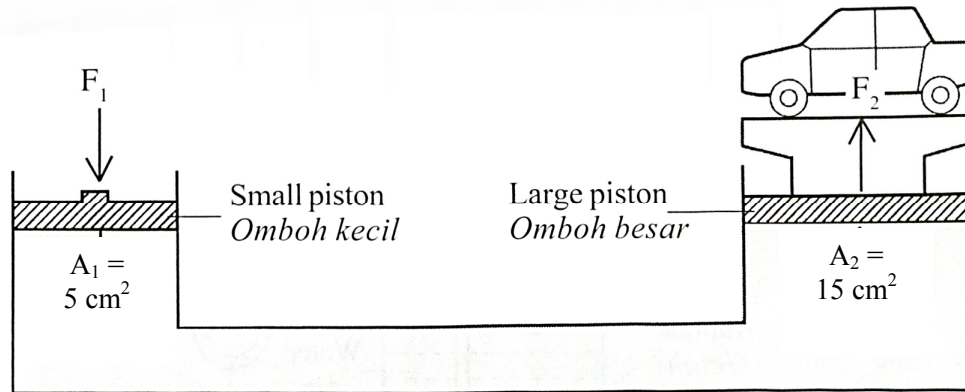


Diagram 12 / Rajah 12

If  $F_1 = 40.0 \text{ N}$ , calculate the magnitude of the force  $F_2$ .

*Jika  $F_1 = 40.0 \text{ N}$ , hitungkan magnitud daya  $F_2$ .*

- |                |                  |
|----------------|------------------|
| <b>A</b> 1.2 N | <b>C</b> 102.0 N |
| <b>B</b> 8.0 N | <b>D</b> 120.0 N |
- 17 Diagram 13 shows a hot air balloon floating at a constant height.  
*Rajah 13 menunjukkan sebuah belon udara panas terapung pada ketinggian yang tetap.*

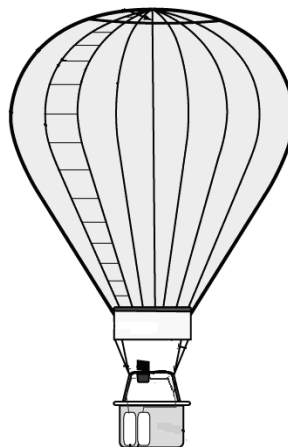


Diagram 13 / Rajah 13

The upthrust exerted on the hot air balloon is equal to  
*Daya tujah ke atas belon udara panas itu adalah sama dengan*

- A The mass of the hot air balloon  
*Jisim belon udara panas itu*
- B The weight of the hot air balloon  
*Berat belon udara panas itu*
- C The density of the hot air balloon  
*Ketumpatan belon udara panas itu*
- D *The volume of air displaced by the hot air balloon*  
*Isipadu udara yang disesarkan oleh belon udara panas itu*

- 18 Diagram 14 shows Azman on a raft at the surface of sea water  
*Rajah 14 menunjukkan Azman di atas sebuah rakit di permukaan air laut.*

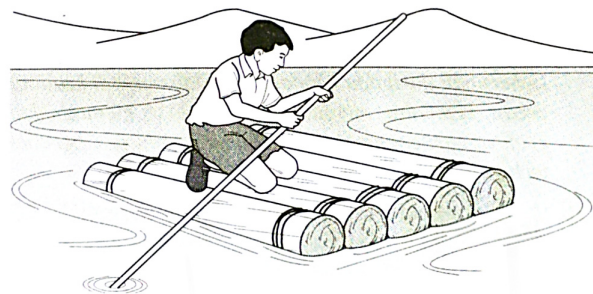


Diagram 14 / *Rajah 14*

The total weight of Azman and the raft is 1200 N and the density of sea water is  $1025\text{kgm}^{-3}$ . Calculate the volume of the raft which is submerged?  
*Jika jumlah berat Azman dan rakitnya ialah 1200 N dan ketumpatan air laut ialah  $1025\text{kgm}^{-3}$ . Hitung isipadu bahagian rakit yang tenggelam?*

- A  $0.12\text{ m}^3$
- B  $0.83\text{ m}^3$
- C  $1.20\text{ m}^3$
- D  $8.33\text{ m}^3$

- 19 Diagram 15 shows an insecticide sprayer.  
*Rajah 15 menunjukkan sebuah penyembur racun serangga.*

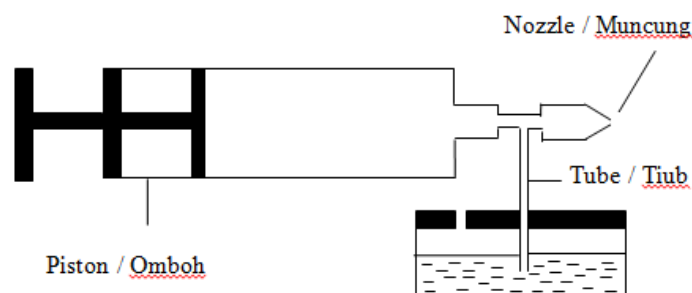


Diagram 15 / *Rajah 15*

Which principle is used in an insecticide sprayer ?

*Prinsip manakah yang digunakan pada penyembur racun serangga?*

- A Pascal's principle  
*Prinsip Pascal*
- B Bernoulli's principle  
*Prinsip Bernoulli*
- C Principle of equilibrium of forces  
*Prinsip keseimbangan daya*
- D Principle of conservation of momentum  
*Prinsip keabadian momentum*

20 Which of the following liquids, A, B, C and D can be used to make a liquid-in-glass thermometer to measure temperatures from  $-60^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  ?

*Antara cecair A, B, C dan D, yang manakah boleh digunakan dalam termometer untuk mengukur suhu dari  $-60^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  ?*

	Freezing point ( $^{\circ}\text{C}$ ) <i>Takat beku (<math>^{\circ}\text{C}</math>)</i>	Boiling point ( $^{\circ}\text{C}$ ) <i>Takat didih (<math>^{\circ}\text{C}</math>)</i>
A	-115	78
B	-39	357
C	0	100
D	17	118

21 At night, land cools down faster than sea. Which statement explains the situation ?

*Di waktu malam, darat menyejuk lebih cepat daripada laut. Pernyataan manakah yang menerangkan keadaan itu?*

- A Solid releases heat faster than liquid  
*Pepejal membebaskan haba lebih cepat daripada cecair*
- B Sea absorbs heat more than land during night  
*Laut menyerap haba lebih banyak daripada darat pada waktu malam*
- C The breeze blows from the sea to the land during night  
*Bayu bertiup dari laut ke darat pada waktu malam*
- D Specific heat capacity of sea water is greater than land  
*Muatan haba tentu air laut adalah lebih besar daripada darat*

- 22 Diagram 16 shows an experiment to study Pressure Law.  
Rajah 16 menunjukkan satu eksperimen untuk mengkaji Hukum Tekanan.

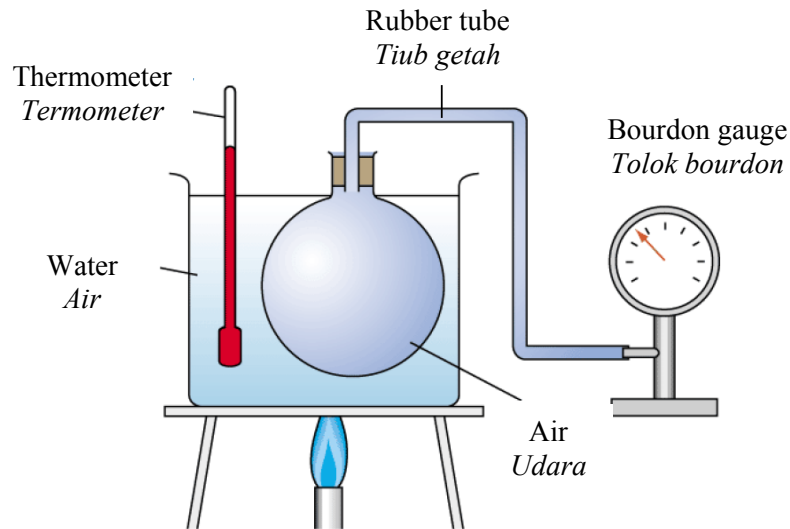
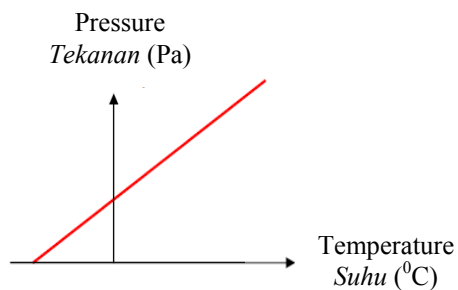


Diagram 16 / Rajah 16

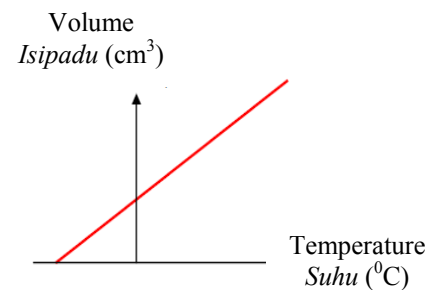
Based on the experiment set up in Diagram 16, which of the following graph represent the result of the experiment ?

Berdasarkan susunan radas eksperimen dalam Rajah 16, graf manakah yang mewakili hasil eksperimen itu?

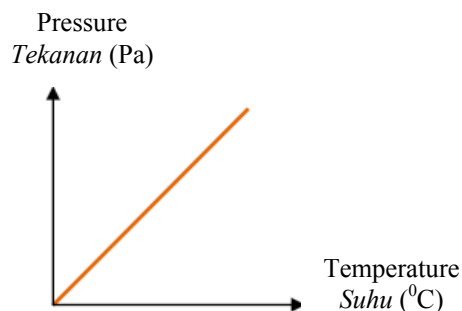
A



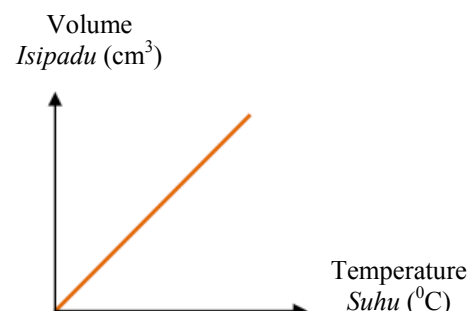
C



B



D



23 When the gas in air-tight container is compressed, what will remain **unchanged**?  
*Apabila gas dalam sebuah bekas kedap udara dimampatkan, apakah yang **tidak** berubah?*

- A The gas pressure.  
*Tekanan gas.*
- B The number of gas particles.  
*Bilangan zarah gas.*
- C The rate of change of momentum of gas particles  
*Kadar perubahan momentum zarah gas*
- D The frequency of collisions between the gas particles and the walls.  
*Kekerapan perlanggaran zarah gas dengan dinding bekas.*

24 Diagram 17 shows an object O placed in front of a concave mirror.  
*Rajah 17 menunjukkan suatu objek O diletakkan di hadapan sebuah cermin cekung.*  
 In which length, A, B, C or D, is focal length of a concave mirror?  
*Antara panjang A, B, C atau D, yang manakah panjang fokus bagi cermin cekung?*

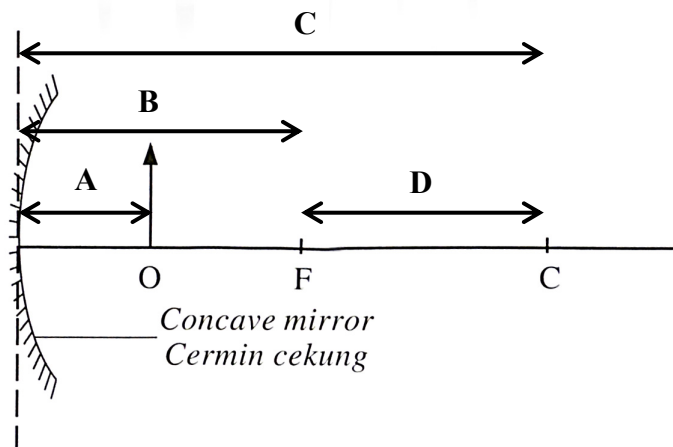


Diagram 17 / Rajah 17



- 25 Diagram 18 shows a ruler appeared bend in water.  
*Rajah 18 menunjukkan sebatang pembaris kelihatan bengkok di dalam air.*

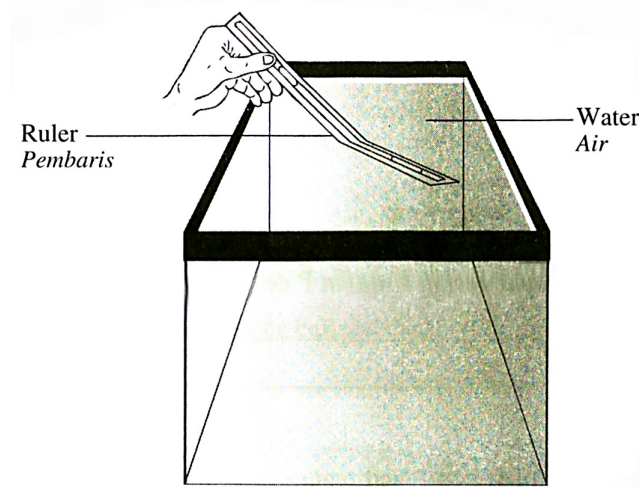


Diagram 18 / *Rajah 18*

Which light phenomenon explains this situation?  
*Fenomena cahaya manakah yang menerangkan situasi ini?*

- |                                  |  |
|----------------------------------|--|
| A Reflection<br><i>Pantulan</i>  | C Diffraction<br><i>Pembelauan</i>                         |
| B Refraction<br><i>Pembiasan</i> | D Total internal reflection<br><i>Pantulan dalam penuh</i> |
- 26 Diagram 19 shows a light experiences total internal reflection in an optical fibre which consists of two layers of glass with different refractive index. The refractive index of the outer layer X is higher than the refractive index of the inner core Y.  
*Rajah 19 menunjukkan cahaya mengalami pantulan dalam penuh dalam serabut optik yang terdiri daripada dua lapisan kaca yang mempunyai indeks biasan yang berbeza. Indeks biasan bagi lapisan luar X adalah lebih tinggi berbanding indeks biasan teras dalam Y.*

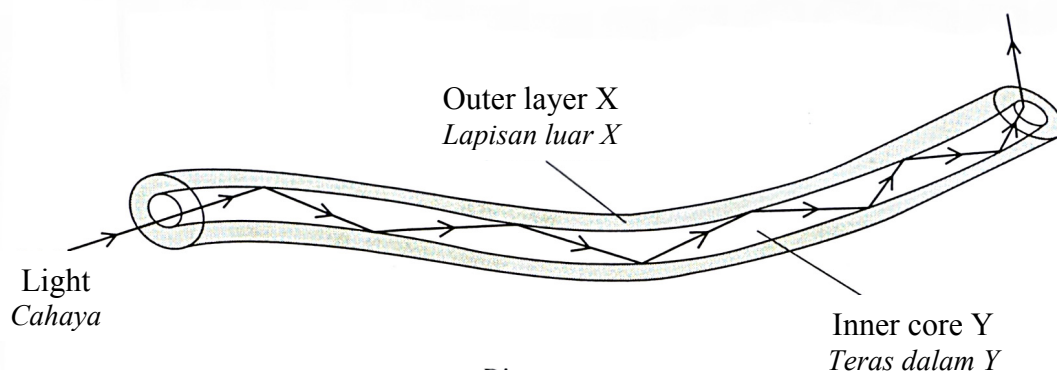


Diagram 19 / *Rajah 19*



- 29 Diagram 21 shows a ray diagram for an astronomical telescope with normal adjustment. *Rajah 21 menunjukkan gambar rajah sinar bagi teleskop astronomi dalam pelarasan normal.*

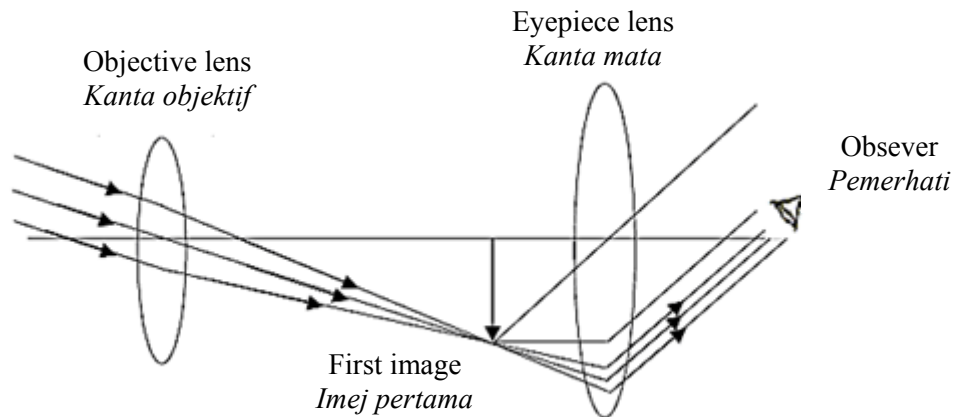


Diagram 21 / *Rajah 21*

What is the characteristics of final image formed compared to the first image?  
*Apakah ciri-ciri imej akhir yang dihasilkan berbanding imej pertama?*

- A virtual and upright  
*maya dan tegak*
  - B virtual and inverted  
*maya dan songsang*
  - C real and inverted  
*nyata dan songsang*
  - D real and upright  
*nyata dan tegak*
- 30 Diagram 22 shows the cross section of water waves. *Rajah 22 menunjukkan keratan rentas gelombang air.*

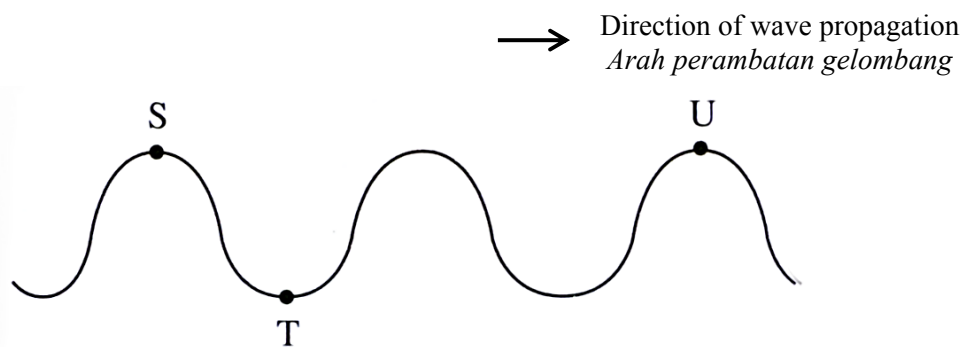


Diagram 22 / *Rajah 22*

Which of the following statements is true about the water waves?

*Antara pernyataan berikut, yang manakah benar mengenai gelombang air?*

- A T and U have the same phase  
*T dan U mempunyai fasa yang sama*
- B Wave energy is transferred from position S to U  
*Tenaga gelombang dipindahkan dari kedudukan S ke U*
- C The wavelength is the distance between S and U  
*Panjang gelombang adalah jarak antara S dan U*
- D The particle at U oscillates in a direction parallel to the direction of the wave propagation  
*Zarah di U berayun pada arah selari dengan arah perambatan gelombang*

- 31 Diagram 23 shows a water wave propagating through a small gap.  
*Rajah 23 menunjukkan gelombang air merambat melalui suatu celah yang kecil.*



Diagram 23 / *Rajah 23*

Which properties of the diffracted waves that **unchanged**?

*Ciri gelombang terbelau manakah yang **tidak berubah**?*

- A Direction of propagation, amplitude and frequency  
*Arah perambatan, amplitude dan frekuensi*
- B Amplitude, frequency and wavelength  
*Amplitude, frekuensi dan panjang gelombang*
- C Direction of propagation, wavelength and wave speed  
*Arah perambatan, panjang gelombang dan laju gelombang*
- D Frequency, wavelength and wave speed  
*Frekuensi, panjang gelombang dan laju gelombang*

- 32 Diagram 24 shows a wave phenomenon.  
Rajah 24 menunjukkan suatu fenomena gelombang.

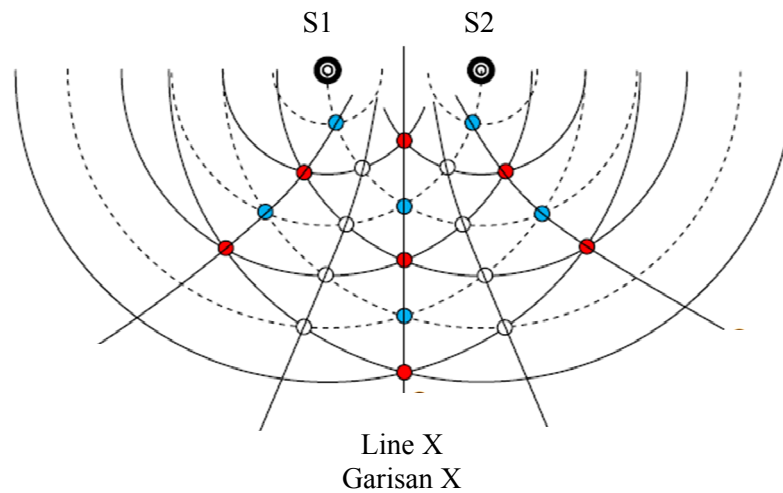


Diagram 24 / Rajah 24

What is the name of line X?  
Apakah nama bagi garisan X?

- |                                      |   |
|--------------------------------------|---|
| <b>A</b> Normal line<br>Garis normal | <b>C</b> Antinodal line<br>Garis antinod        |
| <b>B</b> Nodal line<br>Garis nod     | <b>D</b> Equilibrium line<br>Garis keseimbangan |
- 33 Siti screams in front of a high school building. She hears the echo of her voice 0.9 s later. How far is Siti from the building if velocity of sound in air is  $340 \text{ m s}^{-1}$ ?  
Siti menjerit di hadapan bangunan sekolah yang tinggi. Dia mendengar gema suaranya 0.9 s kemudian. Berapa jauhkah Siti dari bangunan itu jika halaju bunyi dalam udara ialah  $340 \text{ m s}^{-1}$ ?
- |                |                |
|----------------|----------------|
| <b>A</b> 756 m | <b>C</b> 306 m |
| <b>B</b> 680 m | <b>D</b> 153 m |

- 34 Diagram 25 shows a graph for the relationship between potential difference and current.  
*Rajah 25 menunjukkan satu graf bagi hubungan antara beza keupayaan dan arus.*

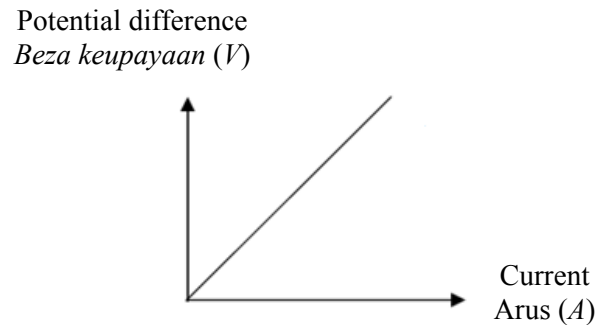


Diagram 25 / *Rajah 25*

Which of the following laws explains the relationship between potential difference and current?

*Antara hukum berikut, yang manakah menerangkan hubungan antara beza keupayaan dan arus?*

- |  |  |
|--|--|
| <b>A</b> Ohm's Law<br><i>Hukum Ohm</i>   | <b>C</b> Ampere's Law<br><i>Hukum Ampere</i>   |
| <b>B</b> Lenz's Law<br><i>Hukum Lenz</i> | <b>D</b> Faraday's Law<br><i>Hukum Faraday</i> |
- 35 What is the meaning of 12 W?  
*Apakah yang dimaksudkan dengan 12 W?*
- A** The rate of change of power is 12 W  
*Kadar perubahan kuasa ialah 12 W*
  - B** The rate of change of energy is 12 W  
*Kadar perubahan tenaga ialah 12 W*
  - C** The rate of change of voltage is 12 W  
*Kadar perubahan voltan ialah 12 W*
  - D** The rate of change of current is 12 W  
*Kadar perubahan arus ialah 12 W*



- 38 Diagram 28 shows the galvanometer pointer deflects when a magnet is pushed into a coil of wire.

*Rajah 28 menunjukkan jarum penunjuk sebuah galvanometer terpesong apabila sebatang magnet ditolak memasuki satu gegelung wayar.*

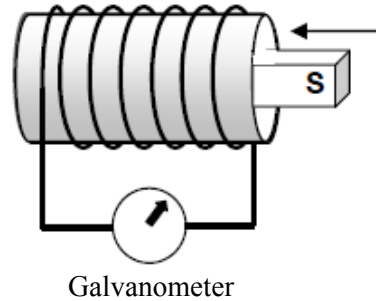


Diagram 28 / Rajah 28

Which actions will cause the deflection of galvanometer increases?

*Langkah yang manakah akan menyebabkan pesongan galvanometer bertambah?*

- A Increase the number of coil  
*Menambah bilangan lilitan*
- B Push the magnet slower towards the coil  
*Menolak magnet perlahan ke arah gegelung*
- C Use coil that is made from insulated wire  
*Menggunakan gegelung yang dibuat daripada wayar bertebat*
- D Reverse the magnetic pole of the magnet  
*Menyonsangkan kekutuban magnet*
- 39 Which of the option is correct about the electricity transmission from the power station to the consumers?  
*Antara pilihan berikut yang manakah betul tentang sistem penghantaran tenaga elektrik dari sistem kuasa ke rumah pengguna?*

	<b>Magnitude of current supply</b> <i>Magnitude arus yang dibekalkan</i>	<b>Type of current</b> <i>Jenis arus</i>
A	High <i>Tinggi</i>	Direct current <i>Arus terus</i>
B	High <i>Tinggi</i>	Alternating current <i>Arus ulangalik</i>
C	Low <i>Rendah</i>	Direct current <i>Arus terus</i>
D	Low <i>Rendah</i>	Alternating current <i>Arus ulangalik</i>







What is the component X and when will the buzzer buzz?  
 Apakah komponen X dan bilakah penggera akan berbunyi?

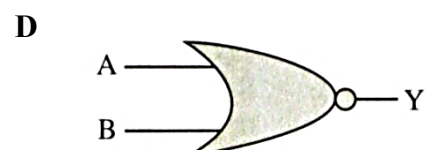
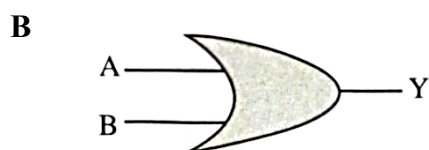
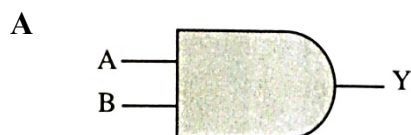
	<b>Component X</b> <i>Komponen X</i>	<b>The buzzer buzz during</b> <i>Penggera berbunyi apabila</i>
<b>A</b>	Light dependent resistor <i>Perintang peka cahaya</i>	High temperature <i>Suhu tinggi</i>
<b>B</b>	Light dependent resistor <i>Perintang peka cahaya</i>	Low temperature <i>Suhu rendah</i>
<b>C</b>	Heat dependent resistor <i>Perintang peka haba</i>	High temperature <i>Suhu tinggi</i>
<b>D</b>	Heat dependent resistor <i>Perintang peka haba</i>	Low temperature <i>Suhu rendah</i>

- 45 Table 2 shows the truth table of a type of logic gate.  
 Jadual 2 menunjukkan jadual kebenaran bagi satu get logik.

<b>Input</b>		<b>Output</b>
<b>A</b>	<b>B</b>	<b>Y</b>
0	0	1
0	1	1
1	0	1
1	1	0

Table 2 / Jadual 2

What is the logic gate for this truth table?  
 Get logik manakah yang mematuhi jadual kebenaran ini?



- 46 Diagram 33 shows a nuclide notation of radioactive element X.  
Rajah 33 menunjukkan notasi nuklid bagi suatu unsur radioaktif X.

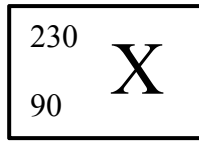


Diagram 33 / Rajah 33

Which of the following is correct about X?  
Antara berikut, manakah yang benar tentang X?

	Proton number <i>Nombor proton</i>	Nucleon number <i>Nombor nukleon</i>	Number of neutron <i>Bilangan neutron</i>
<b>A</b>	90	140	90
<b>B</b>	90	230	140
<b>C</b>	230	90	140
<b>D</b>	230	140	230

- 47 Diagram 34 shows a radioactive decay curve of a radioactive substance.  
Rajah 34 menunjukkan lengkung reputan bagi suatu bahan radioaktif.

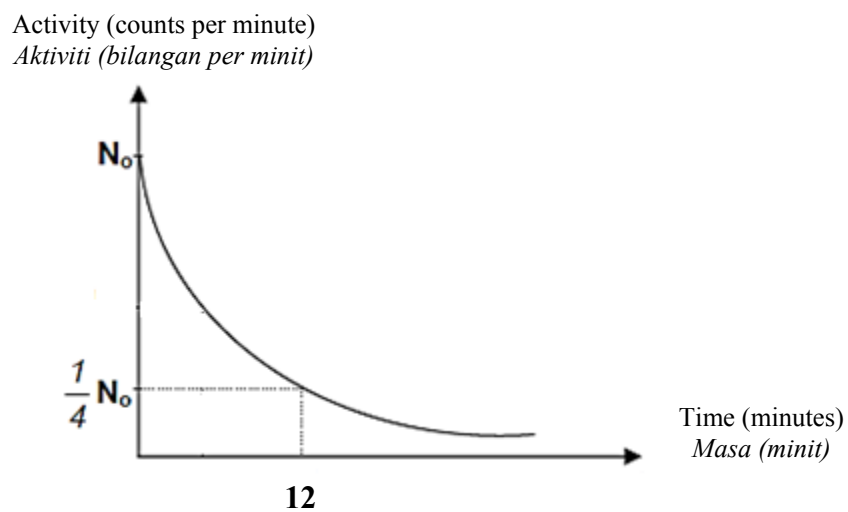


Diagram 34 / Rajah 34

What is the half-life of the radioactive substance?  
Berapakah separuh hayat bagi bahan radioaktif tersebut?

- |   |   |
|---|---|
| <p><b>A</b> 6 minutes<br/><i>6 minit</i></p> <p><b>B</b> 12 minutes<br/><i>12 minit</i></p> | <p><b>C</b> 18 minutes<br/><i>18 minit</i></p> <p><b>D</b> 24 minutes<br/><i>24 minit</i></p> |
|---|---|

- 48 Diagram 35 shows a process to produce nuclear energy.  
Rajah 35 menunjukkan suatu proses penghasilan tenaga nuklear.

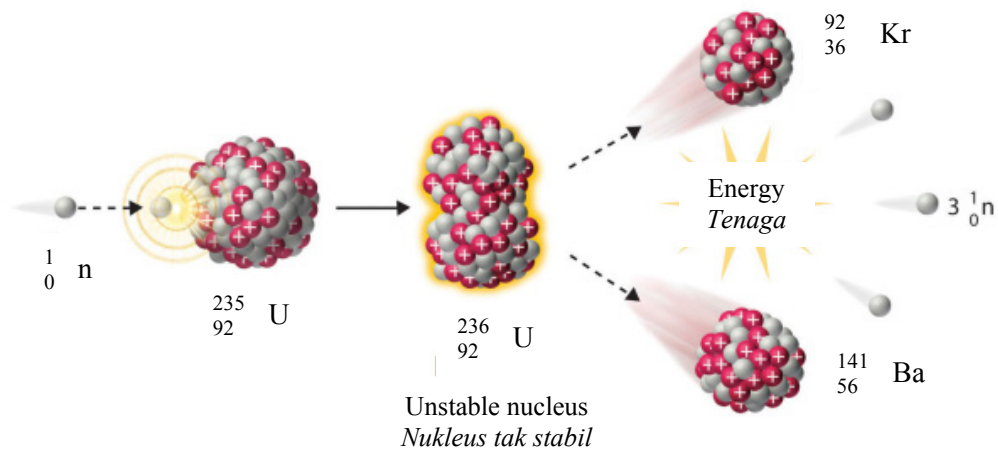


Diagram 35 / Rajah 35

What is the name of this process?  
Apakah nama bagi proses ini?

- |   |   |
|---|---|
| <p><b>A</b> Nuclear fusion<br/><i>Pelakuran nukleus</i></p> <p><b>B</b> Nuclear fission<br/><i>Pembelahan nukleus</i></p> | <p><b>C</b> Chain reaction<br/><i>Tindak balas rantai</i></p> <p><b>D</b> Radioactive decay<br/><i>Pereputan radioaktif</i></p> |
|---|---|
- 49 An unstable  ${}_{92}^{238}\text{U}$  nucleus decays to a stable  ${}_{88}^{226}\text{Ra}$  nucleus.

Suatu nukleus  ${}_{92}^{238}\text{U}$  yang tidak stabil mereput kepada nukleus  ${}_{88}^{226}\text{Ra}$  yang stabil.

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

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

- 50** What is the radioisotope that can be used to determine the age of a fossil?  
*Apakah radioisotop yang boleh digunakan untuk menentukan usia suatu fosil?*
- |  |  |
|--|--|
| <b>A</b> Iodine-131<br><i>Iodin-131</i>    | <b>C</b> Carbon-14<br><i>Karbon-14</i> |
| <b>B</b> Uranium-238<br><i>Uranium-238</i> | <b>D</b> Radon-22<br><i>Radon-22</i>   |

**END OF QUESTION PAPER**  
***KERTAS SOALAN TAMAT***