

4531/1  
Fizik  
Kertas 1  
OGOS  
2011  
1 ¼ jam



**BAHAGIAN PENGURUSAN  
SEKOLAH BERASRAMA PENUH DAN SEKOLAH KLUSTER  
KEMENTERIAN PELAJARAN MALAYSIA**

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**PEPERIKSAAN PERCUBAAN  
SIJIL PELAJARAN MALAYSIA 2011**

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**FIZIK**

**KERTAS 1**

**Satu jam lima belas minit**

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Kertas soalan ini mengandungi 50 soalan.*
  2. *Jawab semua soalan.*
  3. *Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.*
  4. *Bagi setiap soalan hitamkan satu ruangan sahaja.*
  5. *Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat.*
  6. *Kemudian hitamkan jawapan yang baru.*
  7. *Satu senarai rumus disediakan di halaman 2.*
  8. *Penggunaan kalkulator saintifik yang tidak boleh diprogramkan adalah dibenarkan.*
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Kertas soalan ini mengandungi 29 halaman bercetak

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

1.  $a = \frac{v-u}{t}$
2.  $v^2 = u^2 + 2as$
3.  $s = ut + \frac{1}{2}at^2$
4. Momentum =  $mv$
5.  $F = ma$
6. Kinetic energy =  $\frac{1}{2}mv^2$   
 (Tenaga kinetik)  
 Tenaga keupayaan
7. Potential energy =  $mgh$   
 Tenaga keupayaan
8. Elastic potential energy =  $\frac{1}{2}Fx$   
 (Tenaga keupayaan kenyal)
9.  $\rho = \frac{m}{V}$
10. Pressure,  $\rho = hpg$ .  
 Tekanan
11. Pressure,  $\rho = \frac{F}{A}$   
 Tekanan
12. Heat,  $Q = mc\theta$   
 Haba
13.  $PV = \text{Constant}$  (*pemalar*)
14.  $E = mc^2$
15.  $v = f\lambda$
16. Power,  $P = \frac{\text{energy}}{\text{time}}$
17.  $V = IR$
18. Power,  $P = IV$   
 kuasa
19.  $\frac{N_s}{N_p} = \frac{V_s}{V_p}$
20. Efficiency =  $\frac{I_s V_s}{I_p V_p} \times 100\%$   
 (kecekapan)
21.  $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
22.  $n = \frac{\sin i}{\sin r}$
23.  $n = \frac{\text{Real depth}}{\text{Apparent depth}}$
24.  $\lambda = \frac{ax}{D}$
25.  $Q = It$
26.  $E = I(R + r)$
27.  $eV = \frac{1}{2}mv^2$
28.  $g = 10 \text{ ms}^{-2}$

Answer all questions. Each question is followed by either three or four options. Choose the best option for each question then blacken the correct space on the answer sheet.

Jawab semua soalan. Tiap – tiap soalan diikuti oleh sama ada tiga atau, empat pilihan jawapan. Pilih satu jawapan yang terbaik bagi setiap soalan dan hitamkan ruangan yang sepadan pada kertas jawapan objektif anda

1. Which of following is a derived quantity?  
*Di antara berikut yang manakah adalah kuantiti terbitan?*

- A. Length / *panjang*
- B. Mass / *jisim*
- C. Weight / *berat*
- D. Temperature / *Suhu*

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

A.



B.



C.



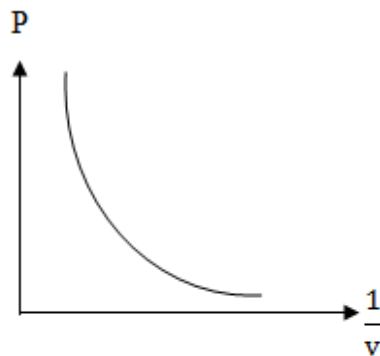
D.



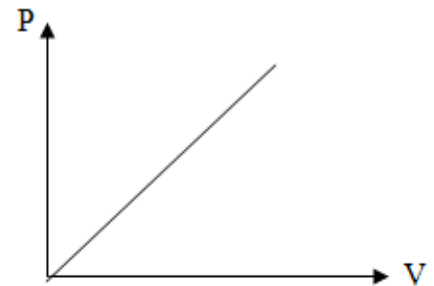
3. The pressure,  $P$  of gas is inversely proportional to the volume,  $V$  when mass and temperature is kept constant. Which graph shows the correct relationship between  $P$  and  $V$ ?

*Tekanan gas,  $P$  berkadar songsang dengan Isipadu,  $V$  apabila jisim dan suhu tetap. Graf yang manakah menunjukkan hubungan  $P$  dan  $V$ ?*

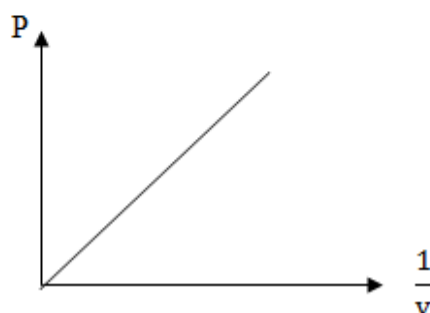
A.



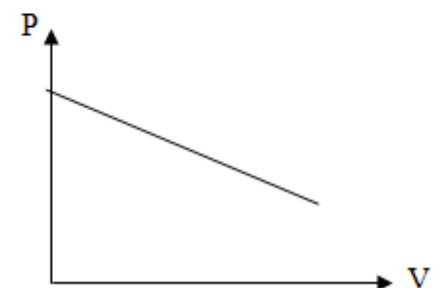
B.



C.



D.



4. Diagram 1 shows spring P is compressed to a distance  $x$ , when a load of mass,  $m$  is placed onto it.  
 Another identical spring is then arranged parallel to spring P and a load of mass  $2m$  is placed onto the spring system as shown in Diagram 2.

*Rajah 1 menunjukkan keadaan spring P dimampatkan pada jarak  $x$  apabila beban berjisim,  $m$  diletakkan di atasnya..  
 Spring lain yang serupa kemudiannya disusun secara selari dengan spring P dan beban berjisim  $2m$  diletakkan ke atas sistem spring itu seperti yang ditunjukkan dalam Rajah 2.*

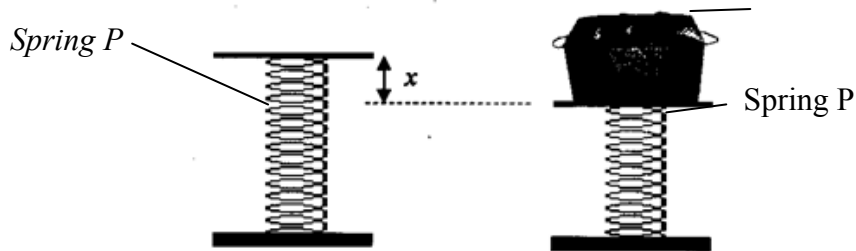


Diagram 1 / Rajah 1



Diagram 2 / Rajah 2

What is the compression of the spring system in Diagram 2 ?  
 Berapakah mampatan bagi sistem spring dalam Rajah 2?

- A.  $\frac{1}{2} x$
- B.  $x$
- C.  $2x$
- D.  $4x$

5. Diagram 3 shows a coconut is falling from a certain height to the ground.  
*Rajah 3. menunjukkan sebiji buah kelapa sedang jatuh daripada suatu ketinggian ke tanah.*

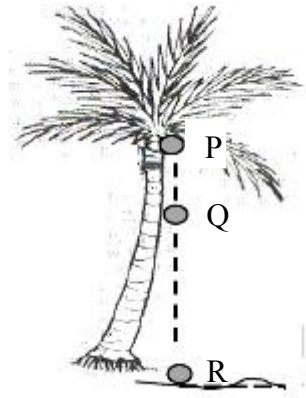


Diagram 3/ *Rajah 3*

At which position, **P**, **Q** or **R**, the coconut has the highest gravitational potential energy?  
*Pada kedudukan manakah, **P**, **Q** atau **R**, buah kelapa itu mempunyai tenaga keupayaan graviti yang paling tinggi?*

- A. P  
 B. Q  
 C. R
6. Diagram 4 shows a man is pulling a sledge with a rope.  
*Rajah 4. menunjukkan seorang lelaki sedang menarik sebuah kereta luncur salji dengan menggunakan se utas tali.*

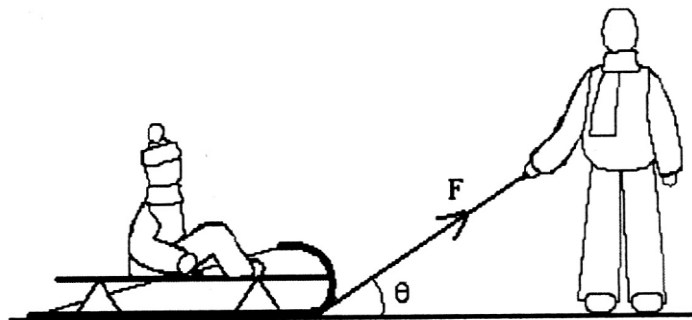


Diagram 4 / *Rajah 4*

Which of the following will move the sledge forward with the maximum acceleration?  
*Yang manakah berikut akan menggerakkan kereta luncur ke hadapan dengan pecutan maksimum ?*

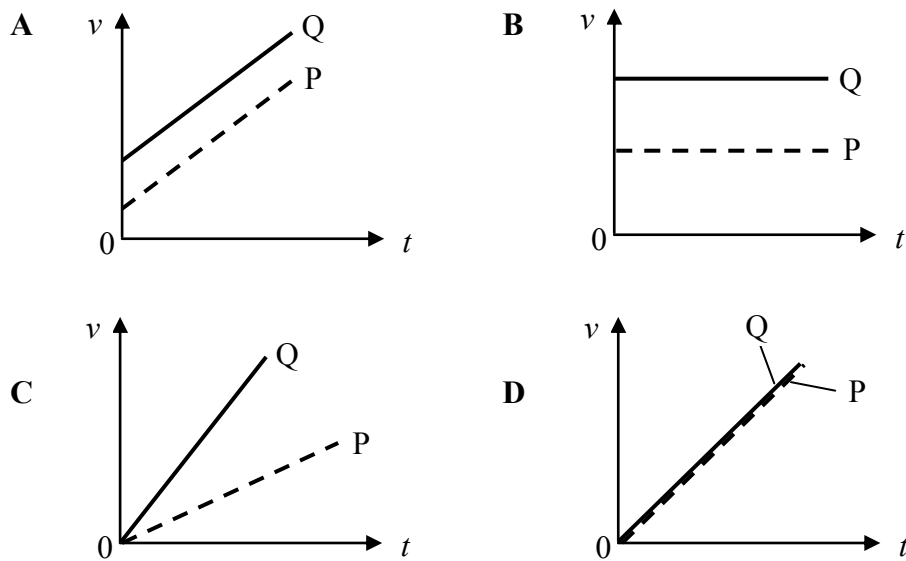
	<u>Angle, <math>\theta</math> / Sudut, <math>\theta</math></u>	<u>Force, <math>F</math> / Daya, <math>F</math></u>
A.	Small/ <i>Kecil</i>	Small / <i>Kecil</i>
B.	Small/ <i>Kecil</i>	Big/ <i>Besar</i>
C.	Big/ <i>Besar</i>	Small/ <i>Kecil</i>
D.	Big/ <i>Besar</i>	Big/ <i>Besar</i>

7. Diagram 5 shows two steel ball bearings, P and Q, being dropped near the surface of the earth.  
*Rajah 5 menunjukkan dua biji bebola keluli, P dan Q, dijatuhkan berhampiran dengan permukaan bumi.*



DIAGRAM 5 / RAJAH 5

Which velocity-time graph shows the correct motion of P and Q?  
*Antara graf halaju-masa berikut, yang manakah betul bagi gerakan P dan Q?*



8. Diagram 6 shows two trolleys, M and N of the same mass before and after collision.  
*Rajah 6 menunjukkan dua troli M dan N yang berjisim sama sebelum dan selepas perlanggaran.*

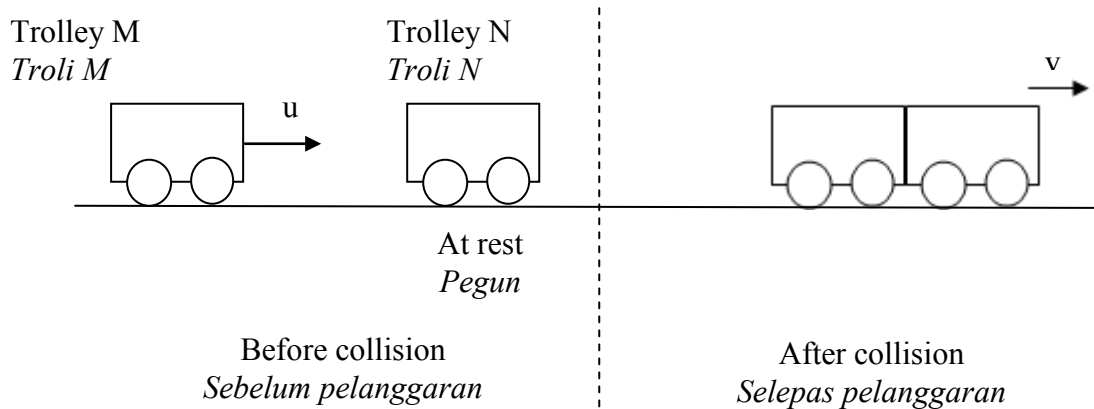


Diagram 6/ Rajah 6

Which is true about  $u$  and  $v$ ?

*Yang manakah benar mengenai  $u$  dan  $v$ ?*

- A.  $v = u$
- B.  $v > u$
- C.  $v = \frac{1}{2} u$
- D.  $v = 2u$

9. Diagram 7 shows a load of mass 5 kg being pulled by force, 80 N.  
*Rajah 7 menunjukkan suatu beban berjisim 5 kg ditarik oleh daya, 80 N.*

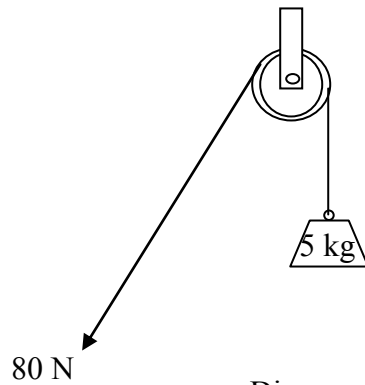


Diagram 7 / *Rajah 7*

What is the acceleration of the load?

*Berapakah pecutan bagi beban itu?*

- A.  $0.6 \text{ ms}^{-2}$
  - B.  $6.0 \text{ ms}^{-2}$
  - C.  $15.0 \text{ ms}^{-2}$
  - D.  $16.0 \text{ ms}^{-2}$
10. Diagram 8 shows a man lift up a 10 kg object.  
*Rajah 8 menunjukkan seorang lelaki mengangkat objek berjisim 10 kg.*

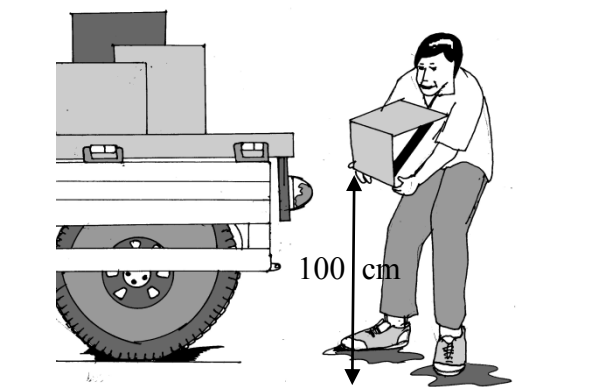


Diagram 8 / *Rajah 8*

What is the work done by the man?  
*Berapakah kerja yang dilakukan oleh lelaki itu?*

- A 10 J
- B 100J
- C 1000 J
- D 10000 J

11. Diagram 9 shows two students skating towards P.  
*Rajah 9 menunjukkan dua pelajar sedang meluncur ke arah P.*



Diagram 9/ *Rajah 9*

What happens to the girl when the boy releases her hand?  
*Apakah akan terjadi kepada pelajar perempuan bila pelajar lelaki melepaskan pegangan tangannya.*

- A. Stays stationary/ *Menjadi pegun*
  - B. Moves towards P/ *Bergerak ke P*
  - C. Moves towards Q/ *Bergeak ke Q*
12. Which statement is true about the Kinetic Theory of gasses?  
*Kenyataan yang manakah benar tentang Teori Kinetik gas?*
- A. The pressure in a gas is caused by collision between the molecules  
*Tekanan di dalam gas disebabkan oleh perlanggaran antara molekul.*
  - B. The collisions between the gas molecules and the walls of the container are inelastic  
*Perlanggaran antara molekul gas dan dinding bekas adalah tidak kenyal*
  - C. At absolute zero temperature, the velocity of gas molecules is zero  
*Pada suhu sifar mutlak, halaju molekul gas adalah sifar*
  - D. When the gas temperature increase, kinetic energy of gas molecules decrease.  
*Apabila suhu gas meningkat, tenaga kinetik molekul gas berkurang*

13. Diagram 10 shows a stream of fluid flowing through a tube.  
*Gambarajah 10 menunjukkan aliran bendalir melalui sebuah tiub*

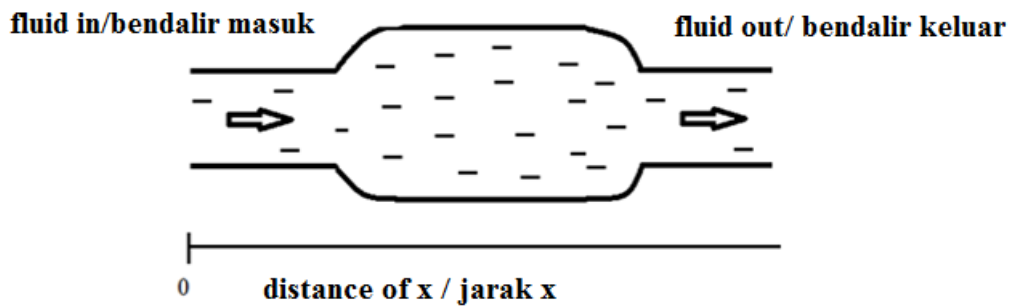
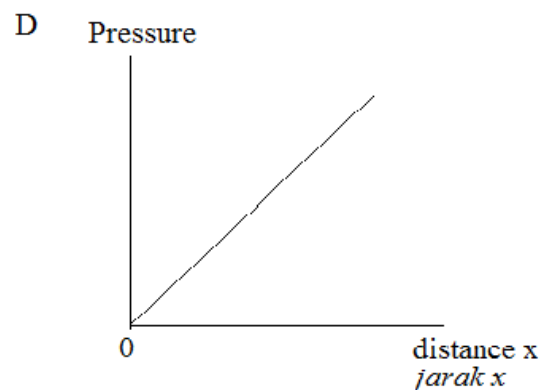
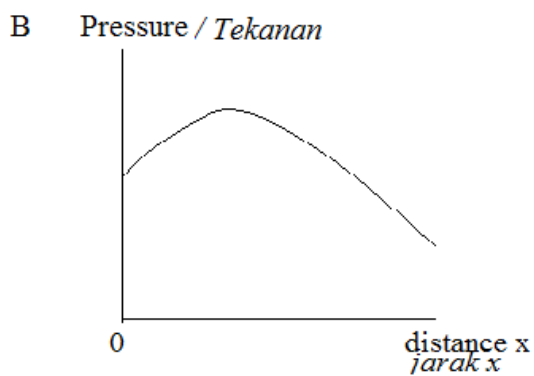
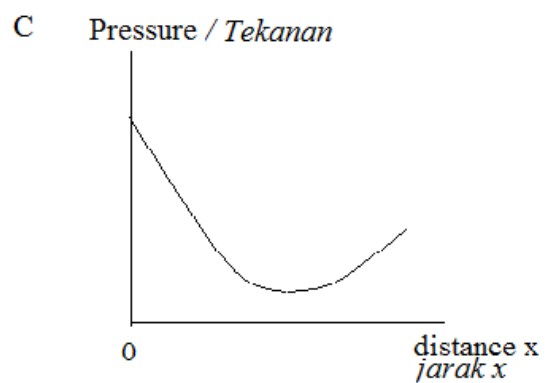
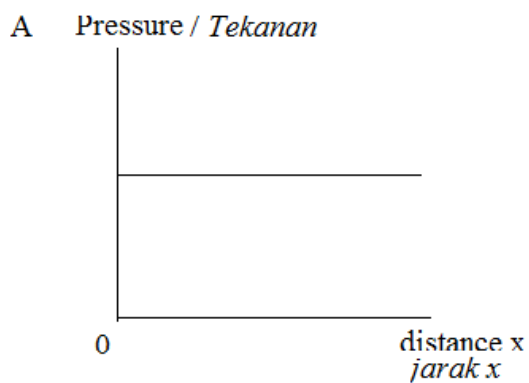


Diagram 10/ *Rajah 10*

Which graph best describe the change in pressure to the distance of  $x$ ?  
*Graf yang manakah yang paling tepat menjelaskan perubahan tekanan terhadap jarak  $x$ ?*



14. Diagram 11 shows a container of 3 different shapes are filled with oil at the same level. The pressure caused by the oil at point X , Y and Z are  $P_x$  ,  $P_y$  and  $P_z$  respectively.

*Gambarajah 11 menunjukkan sebuah bekas yang berbeza bentuk diisikan dengan minyak pada paras yang sama. Tekanan yang disebabkan oleh minyak pada titik X, Y dan Z adalah  $P_x$ ,  $P_y$  dan  $P_z$ .*

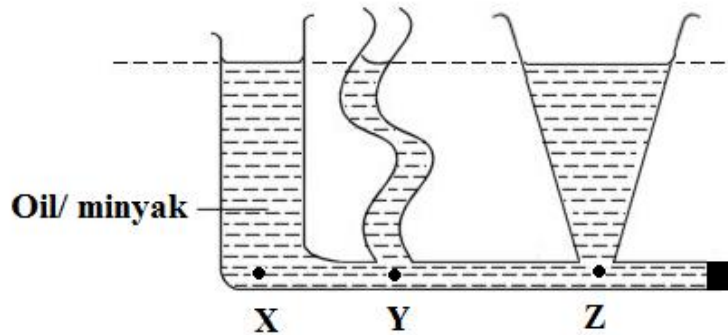


Diagram 11/ Rajah 11

Which comparison is correct ?  
Perbandingan yang manakah benar?

- A.  $P_y < P_x < P_z$
- B.  $P_x < P_y > P_z$
- C.  $P_y = P_x = P_z$
15. A metal block is immersed in water as shown in Diagram 12. If the water pressure exerted on top,  $P_1$  and at the bottom,  $P_2$  are  $1.0 \times 10^5$  Pa and  $1.2 \times 10^5$  Pa respectively.  
Satu bongkah logam direndamkan ke dalam air seperti ditunjukkan Rajah 12. Jika tekanan air dikenakan pada permukaan atas,  $P_1$  dan permukaan bawah,  $P_2$  adalah masing-masing  $1.0 \times 10^5$  Pa dan  $1.2 \times 10^5$  Pa.

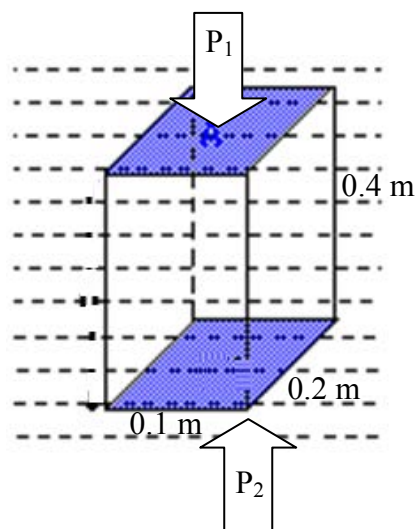


Diagram 12/ Rajah 12

Calculate the buoyant force acting on the metal block?

*Hitung daya julangan yang dikenakan ke atas bongkah logam itu?*

- A. 160 N
- B. 400 N
- C. 800 N
- D.  $1.0 \times 10^5$  N

16. Diagram 13 shows a floating object.

*Rajah 13 menunjukkan suatu objek yang sedang terapung.*

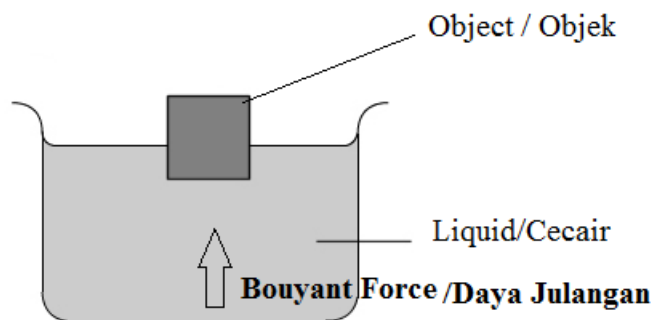


Diagram 13/ *Rajah 13*

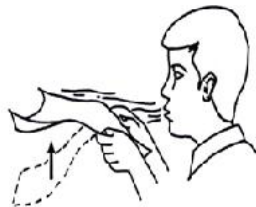
The buoyant force acting on the object will decrease when the  
*Daya julangan yang bertindak ke atas objek itu berkurang jika*

- A. weight of the object decrease/ *berat objek itu berkurang*
- B. depth of the liquid decrease / *kedalaman cecair itu berkurang*
- C. density of the liquid decrease/ *ketumpatan cecair itu berkurang*
- D. volume of the object increase/ *isipadu objek itu meningkat*

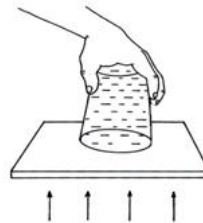
17. Which diagram operates based on the Pascal's principle?

*Yang manakah antara berikut beroperasi berlandaskan Prinsip Pascal?*

A



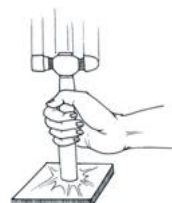
C



B



D



18. Diagram 14 shows a U-tube filled with two types of liquid of different densities.  
*Rajah 14 menunjukkan tiub U yang diisi dengan dua jenis cecair yang berbeza ketumpatannya.*

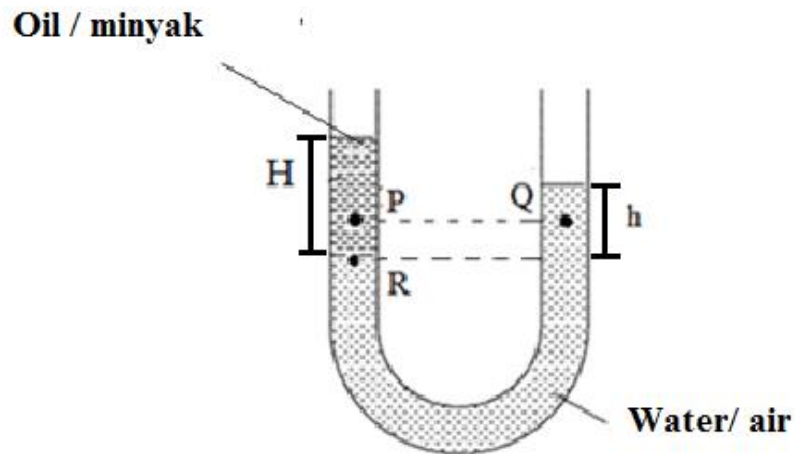


Diagram 14/ *Rajah 14*

Which statement is true? / *Yang manakah antara pernyataan berikut adalah benar?*

- A . Pressure at point P is equal to point Q  
*Tekanan pada titik P adalah sama dengan titik Q*
- B . Atmospheric pressure exerted double at the surface of water than oil  
*Tekanan atmosfera dikenakan dua kali ganda pada permukaan air berbanding minyak*
- C . Pressure at point R is the pressure exerted only by height of oil ,H  
*Tekanan yang dikenakan pada titik R adalah tekanan yang disebabkan oleh ketinggian minyak sahaja.*
- D . Pressure that is caused by the height H, of oil is equal to pressure that is exerted by the height ,h of water.  
*Tekanan yang disebabkan oleh ketinggian minyak, H adalah sama dengan tekanan yang disebabkan oleh ketinggian air, h*

19. Some distilled water is heated in a beaker until it boils. After a few seconds of heating, the temperature will  
*Sedikit air suling dipanaskan sehingga mendidih. S selepas beberapa saat dipanaskan suhu air akan*
- A. increase./ *bertambah*
- B. decrease./ *berkurang*
- C. not change/ *tidak berubah*

20. Diagram 15 shows a process when water is changed into steam  
*Rajah 15 menunjukkan proses di mana air bertukar kepada stim*

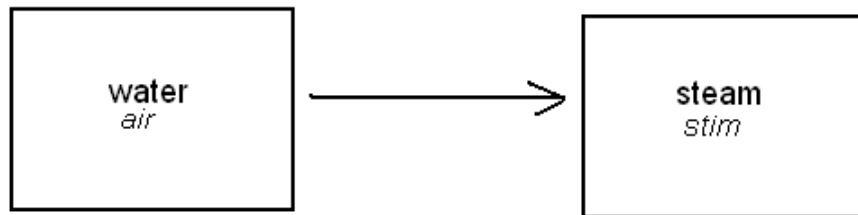


Diagram 15  
*Rajah 15*

What is the name of the heat absorbed during the process?  
*Apakah nama haba yang diserap semasa proses ini?*

- A. specific heat capacity / *muatan haba tentu*  
 B. latent heat of fusion/ *haba pendam pelakuran*  
 C. latent heat of vaporisation./ *haba pendam pengewapan*  
 D. latent heat of condensation/ *haba pendam pelakuran*
- 21 A 60 W immersion heater is used to boil liquid X. After boiling for 3 minutes, 5 g of the liquid X changes to steam.  
*Pemanas rendam 60 W memanaskan cecair X sehingga mendidih. Setelah mendidih selama 3 minit, 5 g cecair X berubah menjadi stim.*  
 Which expression determines the specific latent heat of vaporization of liquid X?  
*Ungkapan yang manakah menentukan haba pendam tentu pengewapan cecair X?*
- A.  $(60 \times 3) / 0.005 \text{ J kg}^{-1}$   
 B.  $(60 \times 3 \times 60 \times 0.005) \text{ J kg}^{-1}$   
 C.  $0.005 / (60 \times 3 \times 60) \text{ J kg}^{-1}$   
 D.  $(60 \times 3 \times 60) / 0.005 \text{ J kg}^{-1}$
- 22 Table 16 shows the characteristics of water when boiled at two different sea levels.  
*Jadual 16 menunjukkan ciri air apabila dididihkan pada dua paras laut yang berbeza.*

Altitude	At sea level	At 30m above sea level
Time taken to boil	10 minutes	5 minutes
Energy used	1000 J	1000 J

Table 16/jadual 16

Based on the table 16, which statement is true at high altitude ?  
*Berdasarkan jadual di atas, pernyataan manakah benar pada altitude tinggi?*

- A. the temperature is lower / *suhu lebih rendah*
- B. the atmospheric pressure is lower / *tekanan atmosfera lebih rendah*
- C. the air is less damp / *kelembapan udara lebih rendah*
- D. the rate of heat lost is faster / *kadar pembebasan haba lebih cepat*

23. The air pressure in a car tyre is 210 kPa at a temperature of 27°C . What is the air pressure in the tyre when the temperature is 37°C?

*Tekanan udara dalam tayar kereta ialah 210 kPa pada suhu 27°C. Berapakah tekanan dalam tayar tersebut pada suhu 37°C?*

[Assume the volume of the air in the tyre is constant]

*[Anggap isipadu udara dalam tayar adalah tetap]*

- A. 153 kPa
- B. 203 kPa
- C. 217 kPa
- D. 288 kPa

24. Which diagram 17 shows the correct reflection of light by a concave mirror?

*Rajah 17 manakah menunjukkan pantulan cahaya yang betul oleh sebuah cermin cekung?*

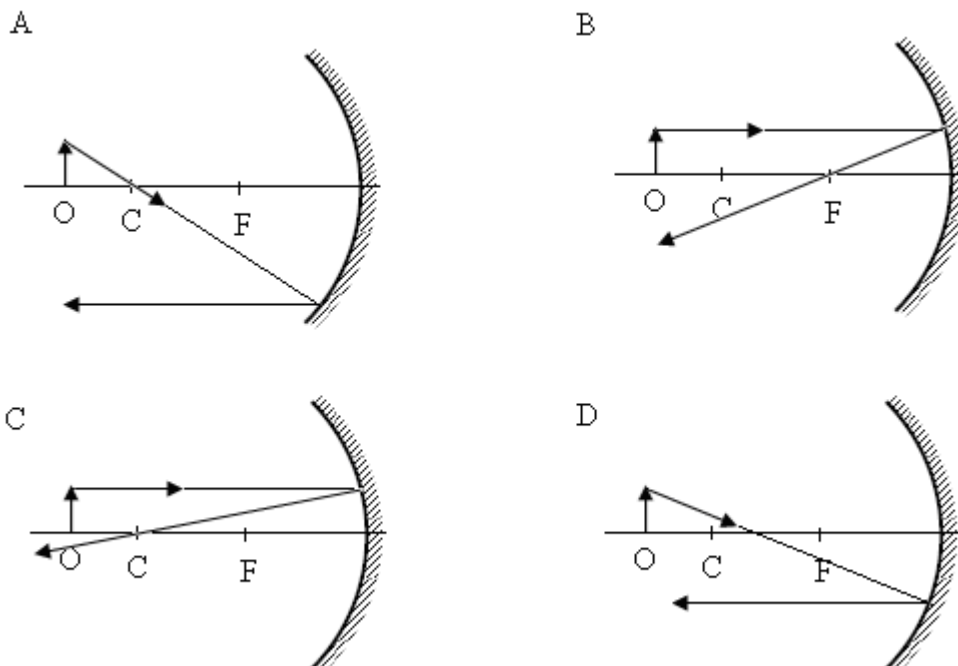


Diagram 17/ *raja 17*

25. Diagram 18 shows an object placed at the base of a swimming pool. The object is 8 m from the surface of the water.  
*Rajah 18 menunjukkan satu objek yang berada di dasar sebuah kolam renang. Jarak objek daripada permukaan air ialah 8 m.*

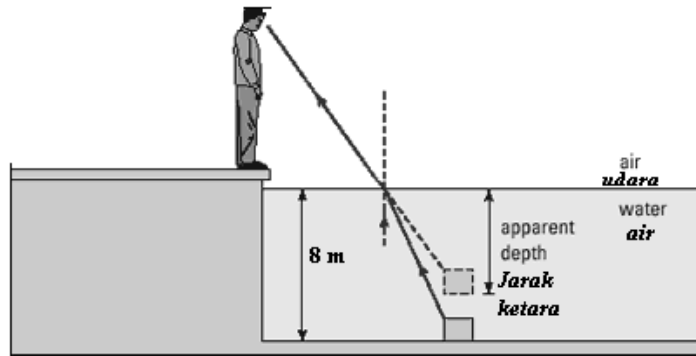


Diagram 18/ Rajah 18

What is the apparent depth of the object ?

*Berapakah dalam ketara objek tersebut ?*

[ The refractive index of water = 1.33 ]

*[Indeks biasan air = 1.33]*

- A. 6 m  
 B. 7 m  
 C. 10 m  
 D. 11 m
26. Which pair of lenses can be used to construct a telescope?  
*Pasangan kanta yang manakah boleh digunakan untuk membina teleskop?*
- A. Two concave lenses with focal lengths of 6 cm and 9 cm.  
*Dua kanta cekung dengan jarak fokus 6 cm dan 9 cm*
- B. Two convex lenses with focal lengths of 10 cm and 80 cm.  
*Dua kanta cembung dengan jarak fokus 10 cm dan*
- C. Two concave lenses with focal lengths of 10 cm and 80 cm.  
*Dua kanta cekung dengan jarak fokus 10 cm dan 80 cm*
- D. A convex lens with focal lengths of 6 cm and a concave with focal length 9 cm.  
*kanta cembung dengan jarak fokus 6 cm dan kanta cekung dengan jarak fokus 9 cm.*

- 27 Diagram 19 shows the image I of an object O that is formed by a convex lens.  
*Rajah 19 menunjukkan pembentukan imej I bagi satu objek O oleh suatu kanta cembung.*

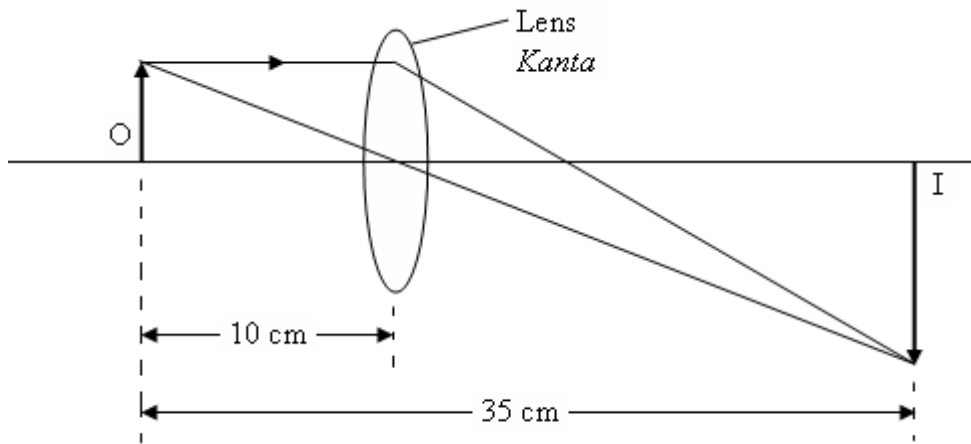


Diagram19/Rajah 19

What is the magnification of the image ?

*Apakah pembesaran bagi imej itu ?*

- A. 0.3
  - B. 0.4
  - C. 2.5
  - D. 3.5
28. Diagram 20 shows the image of an insect seen under a magnifying glass.  
*Rajah 20 menunjukkan imej suatu serangga yang dilihat dibawah kanta pembesar.*



Diagram 20/ Rajah 20

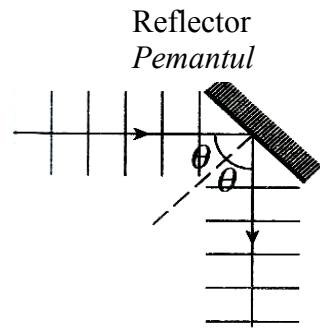
The position of the insect from the magnifying glass must be

*Kedudukan serangga itu daripada kanta pembesar adalah*

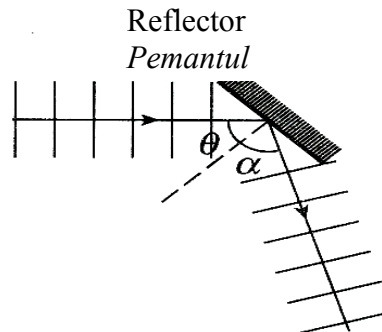
- A. less than  $f$  / kurang daripada  $f$
- B. between  $f$  and  $2f$  / antara  $f$  dan  $2f$
- C. equal to  $2f$  / sama dengan  $2f$
- D. more than  $2f$  / lebih daripada  $2f$

29. Which diagram shows the correct pattern of reflected water waves?  
*Rajah yang manakah menunjukkan corak pantulan gelombang air yang betul?*

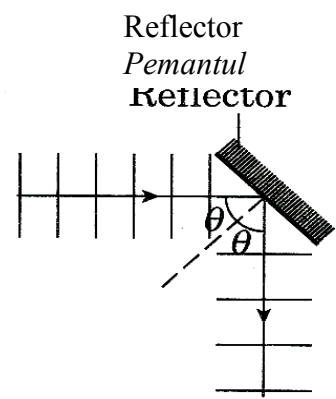
A.



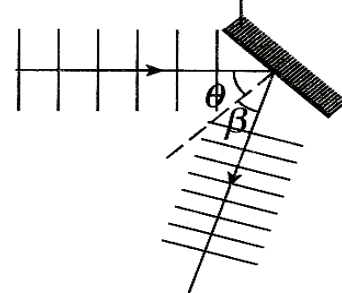
B.



C.



D. Reflector  
 Pemantul  
 Reflector



30. Diagram 21 shows the interference pattern of water waves.  
*Rajah 21 menunjukkan corak interferen gelombang air.*

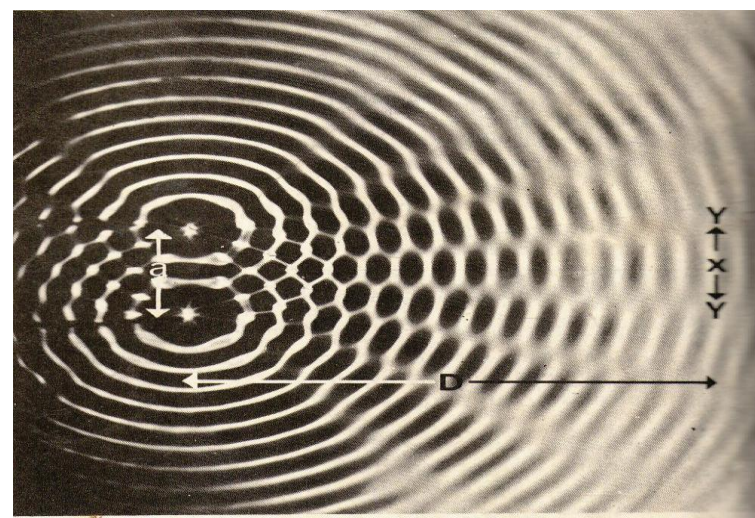


Diagram 21/Rajah 21

What happens to the separation between two consecutive nodal lines,  $x$ , if the depth of water in the ripple tank is increased?

*Apakah yang akan berlaku kepada jarak pemisahan 2 garisan nodal berturutan,  $x$ , jika kedalaman air dalam tangki riak meningkat?*

- A. Unchanged / Tidak berubah
- B. Increase / Bertambah
- C. Decrease / Berkurang

31. Which is the correct example of a longitudinal wave and of a transverse wave ?

*Contoh yang manakah betul bagi gelombang membujur dan gelombang melintang ?*

Longitudinal Wave

Transverse Wave

*Gelombang Membujur*

*Gelombang Melintang*

- |    |                               |                               |
|----|-------------------------------|-------------------------------|
| A. | Gamma Ray/ <i>Sinar Gamma</i> | Light/ <i>Cahaya</i>          |
| B. | Sound / <i>Bunyi</i>          | Gamma Ray/ <i>Sinar Gamma</i> |
| C. | Light / <i>Cahaya</i>         | Radio / <i>Radio</i>          |
| D. | Radio / <i>Radio</i>          | Sound / <i>Bunyi</i>          |

32. The diagram 22 shows a displacement-distance graph of a wave.

*Rajah menunjukkan graf sesaran-jarak bagi suatu gelombang.*

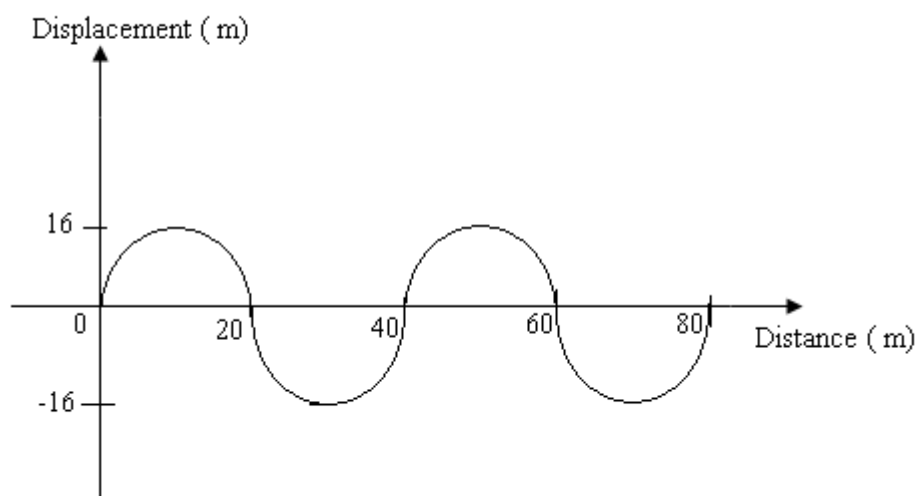


Diagram 22/Rajah 22

What is the amplitude of the wave,?

*Berapakah nilai amplitud gelombang tersebut ?*

- A. 16 m
- B. 20 m
- C. 32 m
- D. 40 m

33. Diagram 23 shows a ball floating in a water tank.

*Rajah 23 menunjukkan sebiji bola terapung di dalam sebuah tangki air.*

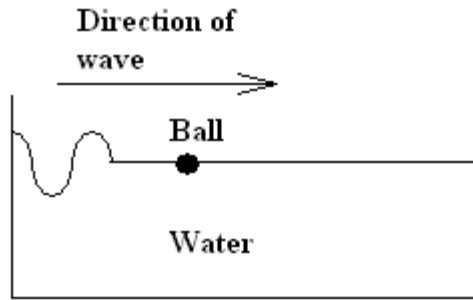
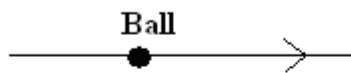


Diagram 22 / Rajah 22

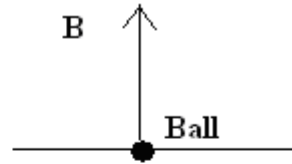
Which is the correct movement of the ball, when the wave propagates ?

*Pergerakan yang manakah benar mengenai bola apabila gelombang merambat?.*

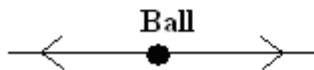
A



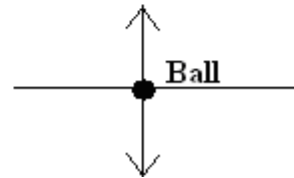
B



C



D



34. A system is oscillated at a frequency equivalent to its natural frequency by an external force.

*Suatu system diayunkan pada satu frekuensi yang setara dengan frekuensi aslinya oleh satu daya luar.*

This phenomenon is called

*Fenomena ini dikenali sebagai*

- A. Damping / Pelembapan
- B. Resonance / Resonans
- C. Rectification / Rektifikasi
- D. Pitching / Kelangsingan

35. Diagram 23 shows a candle flame placed between two metal plates, P and Q.  
*Rajah 23 menunjukkan nyalaan lilin diletakkan antara dua plat logam, P dan Q.*

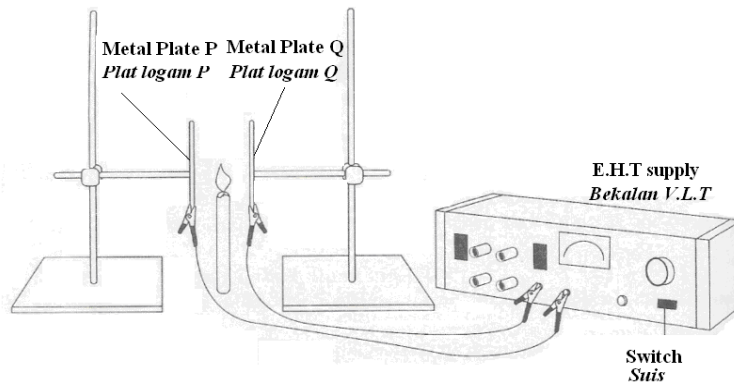
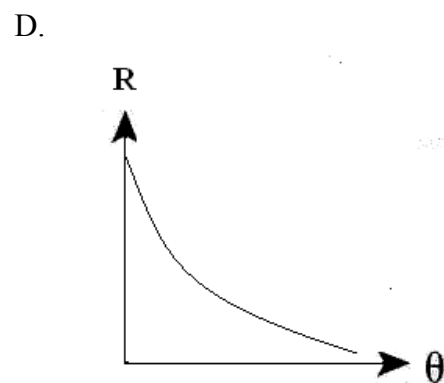
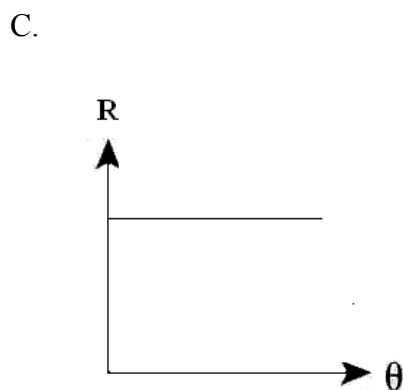
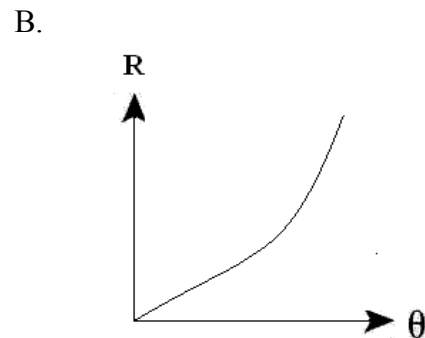
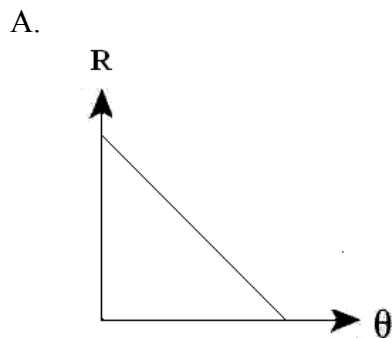


Diagram 23 / *Rajah 23*

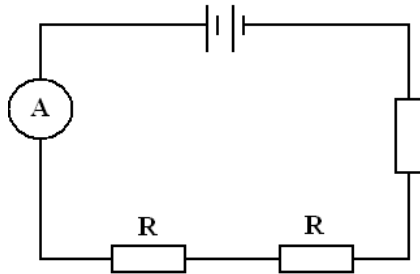
What happens to the candle flame when the switch is switched on?  
*Apakah yang berlaku kepada nyalaan lilin itu apabila suis dihidupkan?*

- A. moved to the right only./ *bergerak ke sebelah kanan sahaja*  
 B. moved to the left only./ *bergerak sebelah kiri sahaja*  
 C. will spread to both plates./ *akan tersebar kedua-dua plat*  
 D. will remain unchanged / *akan kekal tidak berubah*
36. Which graph of resistance,  $R$  against temperature,  $\theta$ , for a thermistor is true?  
*Graf rintangan,  $R$  melawan suhu,  $\theta$ , yang manakah benar bagi satu termistor?*

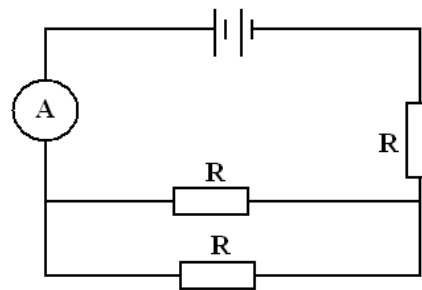


37. Which circuit produces the highest ammeter reading?  
*Litar manakah yang menghasilkan bacaan ammeter yang paling tinggi?*

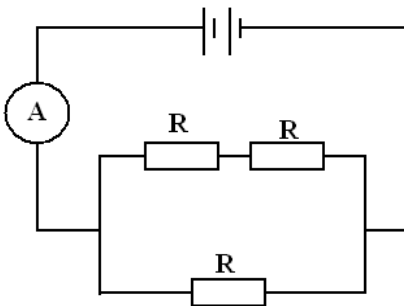
A.



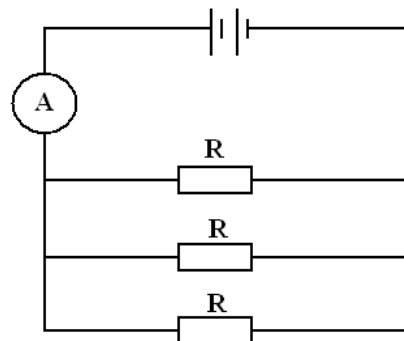
B.



C.



D.



38. Diagram 24 shows an electric circuit consisting of a battery with e.m.f 1.5 V and internal resistance  $0.5 \Omega$  is connected to a resistor  $2 \Omega$ .  
*Rajah 24 menunjukkan satu litar elektrik yang mengandungi sebuah bateri dengan d.g.e 1.5 V dan rintangan dalam  $0.5 \Omega$  disambung kepada sebuah perintang  $2 \Omega$ .*

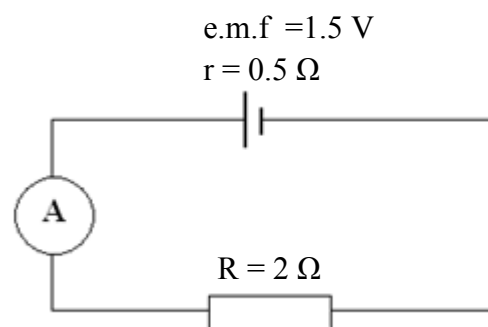


Diagram 24 / Rajah 24

What is the reading of the ammeter in the circuit?  
*Berapakah bacaan ammeter di dalam litar itu?*

- A. 0.3 A
- B. 0.5 A
- C. 0.6 A
- D. 0.8 A

39. Diagram 25 shows the arrangement of a solenoid and a moving magnet to produce an induced e.m.f in the solenoid.

Rajah 25 menunjukkan susunan solenoid dan magnet yang bergerak menghasilkan d.g.e aruhan dalam solenoid.

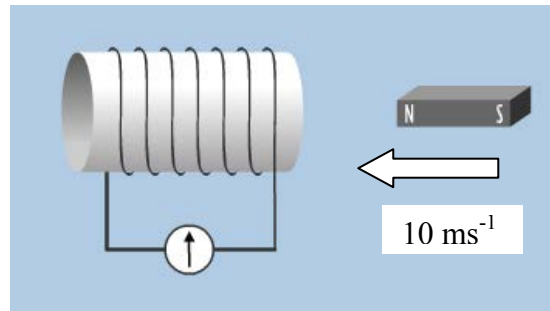


Diagram 25 / Rajah 25

Which action can increase the magnitude of the induced e.m.f?

Tindakan yang manakah boleh menambahkan magnitude d.g.e aruhan?

A. A solenoid connected to a galvanometer. A bar magnet with its North (N) pole facing the solenoid is moving to the left towards the solenoid. An arrow below the magnet indicates its velocity is  $5 \text{ ms}^{-1}$ .

B. A solenoid connected to a galvanometer. A bar magnet with its North (N) pole facing the solenoid is moving to the right away from the solenoid. An arrow above the magnet indicates its velocity is  $10 \text{ ms}^{-1}$ .

C. A solenoid connected to a galvanometer. A bar magnet with its North (N) pole facing the solenoid is moving to the left towards the solenoid. An arrow above the solenoid indicates its velocity is  $10 \text{ ms}^{-1}$  to the left. An arrow below the magnet indicates its velocity is  $10 \text{ ms}^{-1}$  to the left.

D. A solenoid connected to a galvanometer. A bar magnet with its North (N) pole facing the solenoid is moving to the left towards the solenoid. An arrow above the solenoid indicates its velocity is  $10 \text{ ms}^{-1}$  to the right. An arrow below the magnet indicates its velocity is  $10 \text{ ms}^{-1}$  to the left.

40. Diagram 26 shows a bar magnet is being pushed into a solenoid.  
*Rajah 26 menunjukkan satu magnet bar di tolak ke dalam solenoid.*

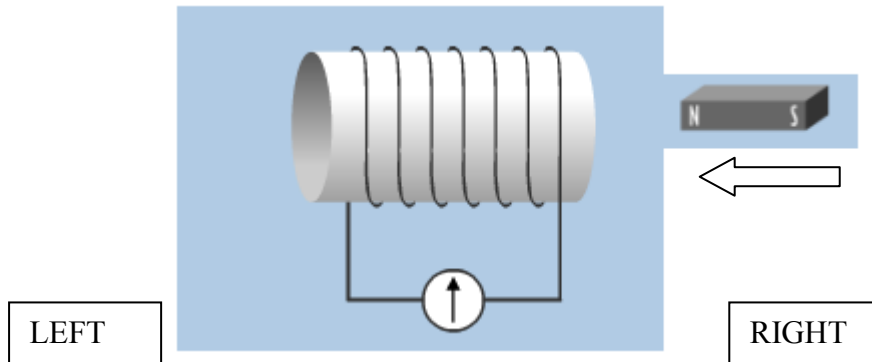


Diagram 26 / rajah 26

Towards which direction will the galvanometer pointer deflect?  
*Ke arah manakah jarum galvanometer itu terpesong?*

- A. Deflect to the left / *Terpesong ke kiri*
  - B. Deflect to the right / *Terpesong ke kanan*
  - C. Deflect to the left and right / *Terpesong ke kiri dan ke kanan*
41. Diagram 27 shows an ideal transformer.  
*Rajah 27 menunjukkan litar sebuah transformer unggul.*

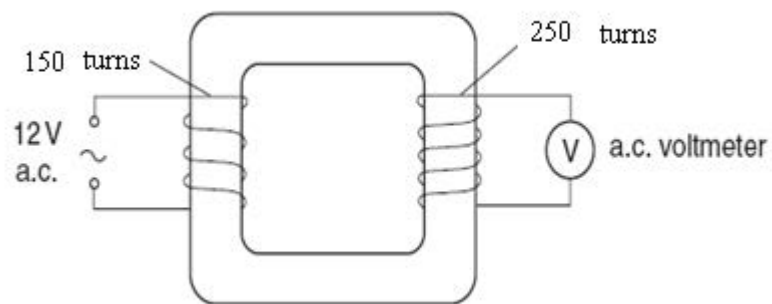


Diagram 27/ rajah 27

What is the value of the output voltage?  
*Apakah nilai voltan output?*

- A. 7.2 V
- B. 20 V
- C. 200 V
- D. 3125 V

42. Diagram 28 shows the deflection of four compass needles when the compasses are placed near a wire. What is the direction of current flow in the wire?  
*Rajah 28 menunjukkan pesongan empat jarum kompas yang diletakkan berdekatan dengan seutas dawai. Apakah arah aliran arus dalam dawai itu?*

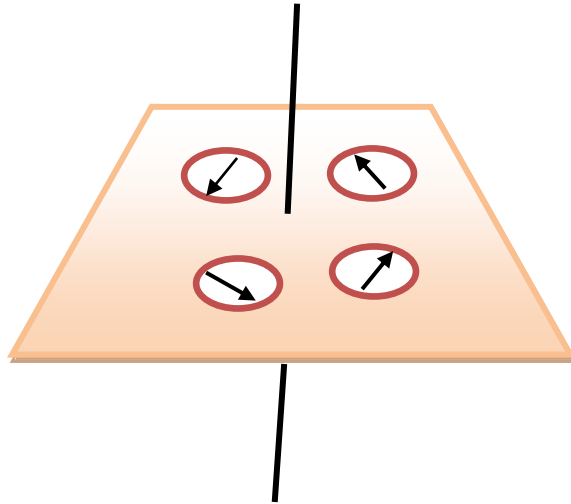


Diagram 28 / rajah 28

- A. Current flows from the top to the bottom. / *Arus mengalir dari atas ke bawah*  
 B. Current flows from the bottom to the top / *Arus mengalir dari bawah ke atas*  
 C. There is no flow of current / *Tiada arus mengalir*
43. Diagram 29 shows an electric generator connected to a cathode ray oscilloscope (CRO).  
*Rajah 29 menunjukkan sebuah penjana elektrik disambungkan kepada osiloskop sinar kato (OSK).*

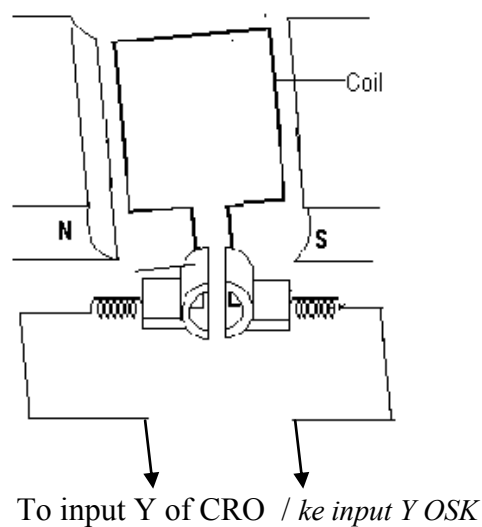
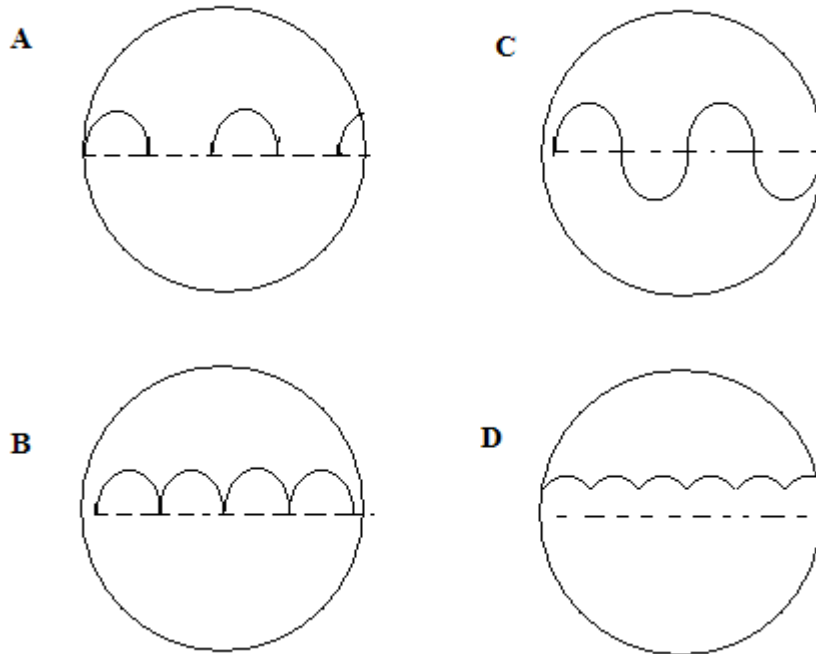


Diagram 29 / Rajah 29

Which trace represents the e.m.f. induced in the generator when the coil is rotated at a constant speed.

*Surihan yang manakah mewakili d.g.e. yang teraruh dalam penjana itu apabila gegelung diputarakan dengan kelajuan seragam.*



44. Diagram 30 shows a trace seen on a Cathode Ray Oscilloscope (CRO) screen.  
*Rajah 30 menunjukkan surihan di atas skrin Osiloskop Sinar Katod (OSK).*

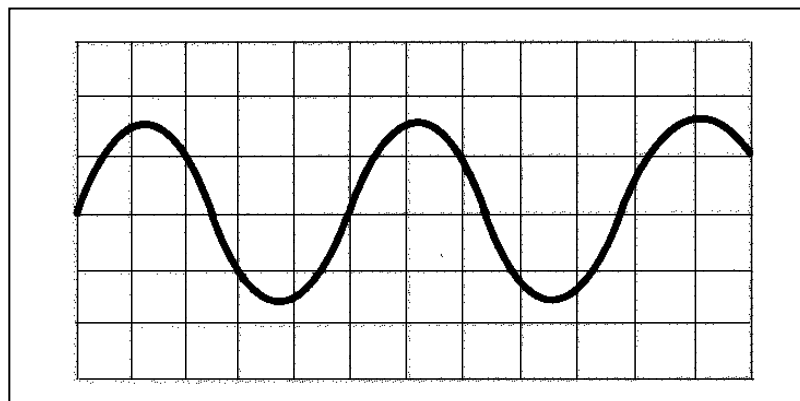


Diagram 30 / *Rajah 30*

The Y-gain and the time-base are set at 1.5 volt / division and 5 ms / division respectively. What is the frequency of the alternating current power supply that is connected to the C.R.O?  
*Gandaan-Y dan dasar masa telah disetkan pada 3 volt / bahagian dan 5 ms / bahagian masing-masing. Hitung frekuensi arus ulang alik yang disambungkan ke OSK?*

Frequency / frekuensi

- A. 0.025 Hz
- B. 0.04 Hz
- C. 25 Hz
- D. 40 Hz

45. A cathode ray oscilloscope (CRO) is connected to a circuit as shown in Diagram 31.  
*Sebuah osiloskop sinar katod (OSK) disambungkan kepada sebuah litar seperti yang ditunjukkan dalam Rajah 31.*

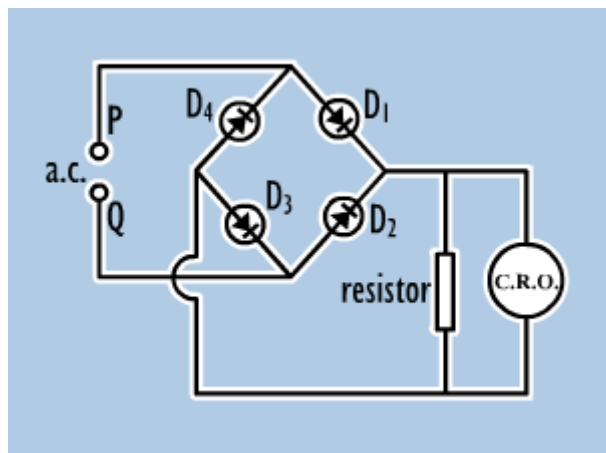
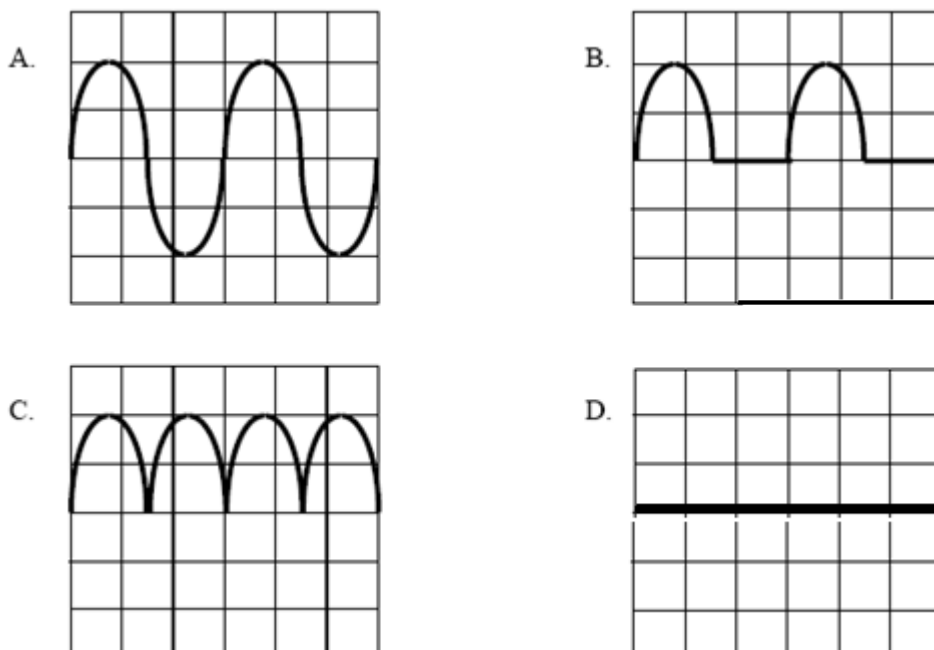
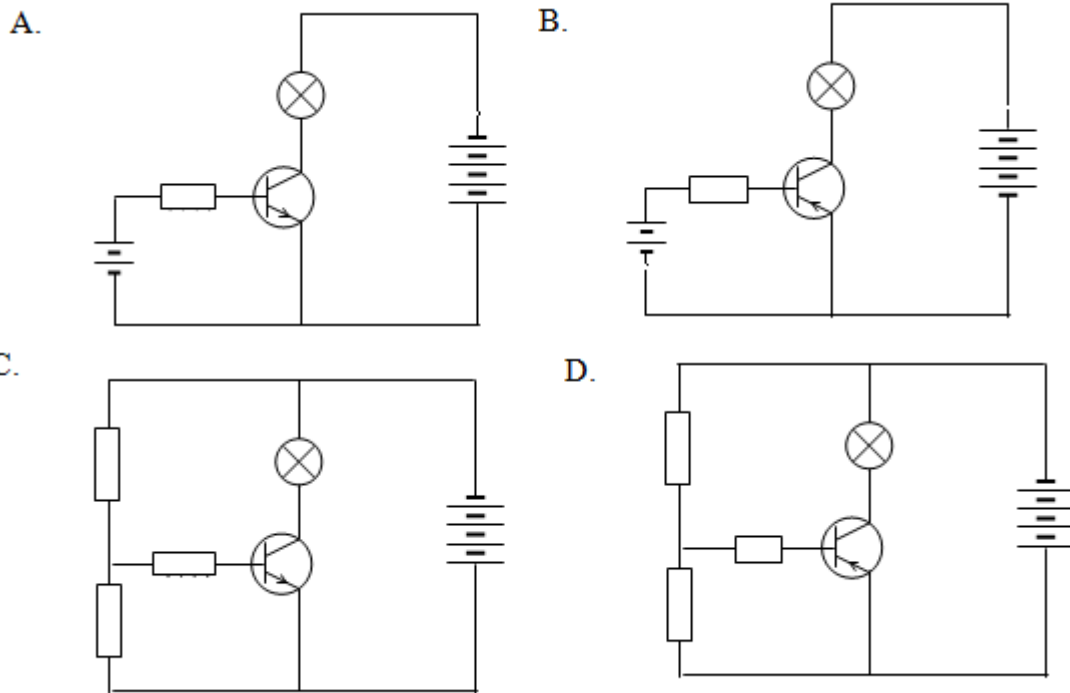


Diagram 31/Rajah 31

Which trace is produced by the Cathode Ray Oscilloscope (CRO) shown in Diagram 31?  
*Surihan yang manakah dihasilkan pada skrin Osiloskop Sinar Katod (OSK) yang ditunjukkan dalam Rajah 31?*



46. Which circuit will light up the bulb? / Litar yang manakah menyalakan mentol?



47. The diagram 32 shows a combination circuit of four logic gates .

Rajah menunjukkan kombinasi empat gate logik .

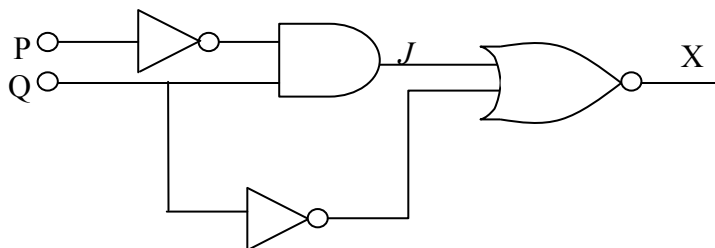


Diagram 32 / Rajah 32

The correct truth table for output X is...

Jadual kebenaran untuk output X adalah...

A.

P	Q	X
0	0	0
0	1	0
1	0	0
1	1	1

B.

P	Q	X
0	0	0
0	1	1
1	0	0
1	1	1

C.

P	Q	X
0	0	1
0	1	0
1	0	1
1	1	0

D.

P	Q	X
0	0	1
0	1	0
1	0	0
1	1	1

48. Which correctly describe the ionising power of  $\alpha$ ,  $\beta$  and  $\gamma$  radiation in descending order?  
 Yang manakah menerangkan kuasa pengionan bagi pancaran  $\alpha$ ,  $\beta$  dan  $\gamma$  mengikut susunan menurun?

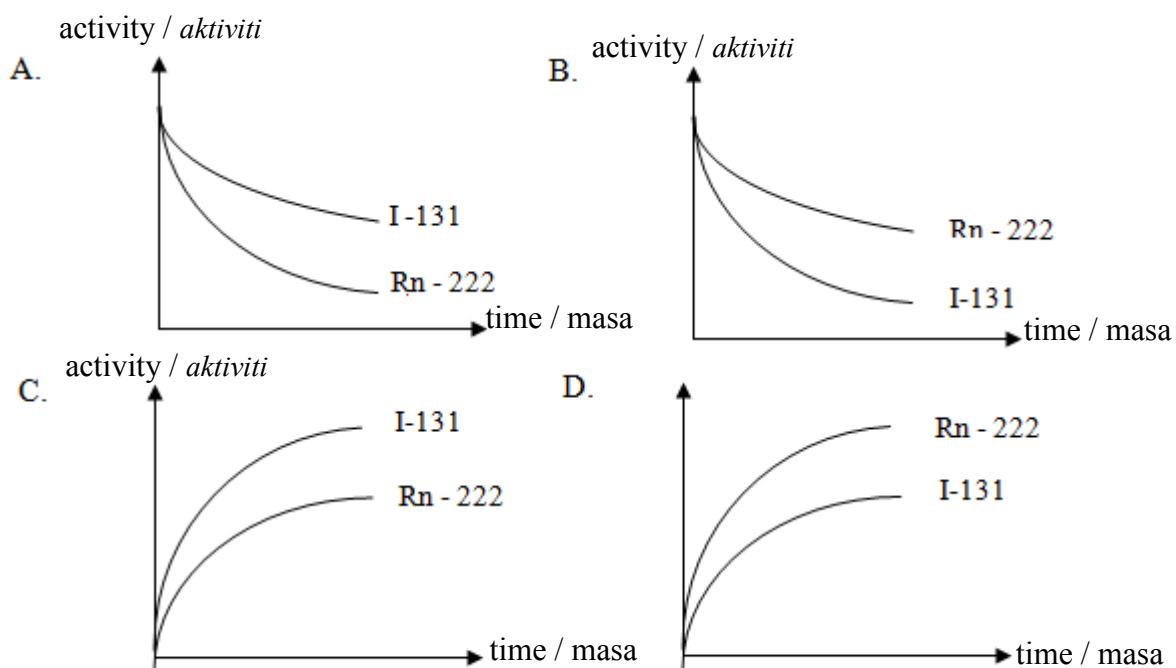
- A.  $\alpha$ ,  $\beta$ ,  $\gamma$   
 B.  $\gamma$ ,  $\beta$ ,  $\alpha$   
 C.  $\alpha$ ,  $\gamma$ ,  $\beta$   
 D.  $\beta$ ,  $\gamma$ ,  $\alpha$

49.  ${}_{92}^{238}\text{U}$  decays and emits an  $\alpha$  particle followed by a  $\beta$  particle to become more stable.  
 The nucleon number and proton number of the daughter nuclide is

${}_{92}^{238}\text{U}$  mereput dan memancar zarah  $\alpha$  diikuti oleh zarah  $\beta$  untuk menjadi lebih stabil.  
 Nombor nucleon dan nombor proton bagi nucleus anak ialah

- A.  ${}_{88}^{238}\text{Ra}$   
 B.  ${}_{90}^{234}\text{Th}$   
 C.  ${}_{91}^{234}\text{Pa}$   
 D.  ${}_{90}^{230}\text{Th}$

50. Which graph best represent the decay curves for the same amount of Rn – 222 and I-131 ? (Half-lives of Rn – 222 and I-131 are 4 days and 8 days respectively)  
 Graf yang manakah terbaik mewakili lengkung reputan untuk jumlah yang sama Rn – 222 and I-131? (Separuh hayat Rn – 222 and I-131 adalah masing-masing 4 hari dan 8 hari)



END OF QUESTION PAPER  
 KERTAS SOALAN TAMAT