

SULIT

NAMA : \_\_\_\_\_

KELAS : \_\_\_\_\_



**JABATAN PELAJARAN NEGERI SABAH**

**SIJIL PELAJARAN MALAYSIA 2010  
EXCEL 2  
SAINS  
Kertas 1  
OGOS 2010**

**1511/1**

1 Jam 15 minit

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. *Hitamkan satu ruangan sahaja bagi setiap soalan.*
5. *Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat dan hitamkan jawapan yang baru.*
6. *Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.*
7. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*

Kertas soalan ini mengandungi 23 halaman bercetak.

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**[Lihat sebelah]  
SULIT**

1. Diagram 1 shows the human nervous system. Which of the part A, B, C and D is the cranium nerve?  
*Rajah 1 menunjukkan sistem saraf manusia. Bahagian mana A, B, C dan D merupakan saraf kranium?*

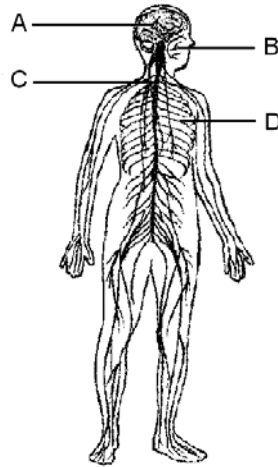


Diagram 1  
*Rajah 1*

2. Diagram 2 shows the position of proprioceptors in the muscle.  
*Rajah 2 menunjukkan kedudukan reseptor regang di dalam otot.*

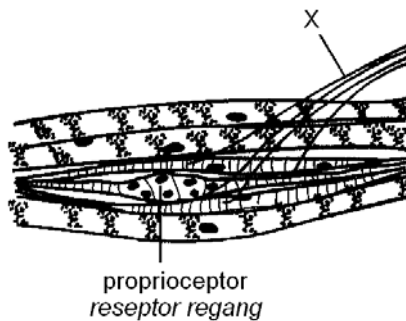


Diagram 2  
*Rajah 2*

What is the function of structure X?

*Apakah fungsi struktur X?*

- A Sending impulse from the receptor to effector.  
*Menghantar impuls dari reseptor ke efektor.*
- B Sending impulse from the receptor to brain.  
*Menghantar impuls dari reseptor ke otak.*
- C Sending impulse from the brain to effector.  
*Menghantar impuls dari otak ke efektor.*
- D Sending impulse from the receptor to muscle  
*Menghantar impuls dari reseptor ke otot.*

3. Diagram 3 shows a part of the human nervous system.  
*Rajah 3 menunjukkan sebahagian daripada sistem saraf manusia.*

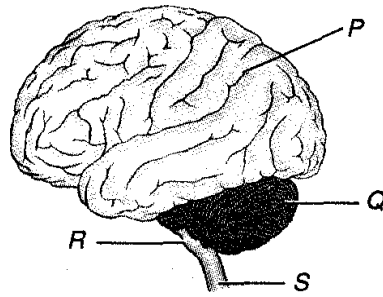


Diagram 3  
*Rajah 3*

Which part of the structure controls voluntary action?  
*Manakah bahagian struktur yang mengawal tindakan terkawal?*

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

4. Diagram 4 shows an effect of hormone imbalance in the human body.  
 Which of the following endocrine glands causes the effect?  
*Rajah 4 menunjukkan kesan ketidakseimbangan hormon ke atas badan.  
 Manakah yang kelenjar endokrin berikut yang menyebabkan kesan tersebut?*

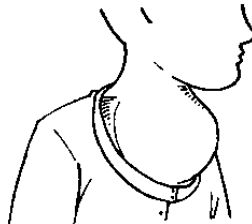


Diagram 4  
*Rajah 4*

- A Pituitary gland  
*Kelenjar pituitari*
- B Thyroid gland  
*Kelenjar tiroid*
- C Adrenal glands  
*Kelenjar adrenal*
- D Pancreas  
*Pankreas*

5. When Ahmad was caught cheating during the test and questioned by the Discipline Master, he started to sweat profusely. Which gland caused this to happen?  
*Apabila Ahmad ditangkap akibat meniru dan disoal-siasat oleh Guru Disiplin, dia mula berpeluh dengan banyaknya.*  
*Manakah kelenjar yang menyebabkan keadaan itu?*
- A Pancreas  
*Pankreas*
- B Thyroid gland  
*Kelenjar tiroid*
- C Adrenal glands  
*Kelenjar adrenal*
- D Pituitary gland  
*Kelenjar pituitari*
6. Diagram 5 shows a process that takes place during a cell division.  
*Rajah 5 menunjukkan satu proses yang berlaku semasa pembahagian sel.*

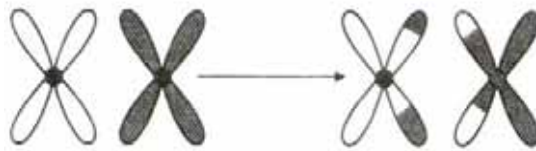
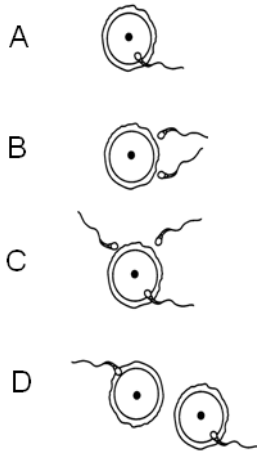


Diagram 5  
*Rajah 5*

What is the process shown in Diagram 5 ?  
*Apakah proses yang ditunjukkan dalam Rajah 5?*

- A Mutation  
*Mutasi*
- B Variation  
*Variasi*
- C Duplication  
*Duplikasi*
- D Crossing over  
*Pindah silang*

7. Which of the following will result the formation of identical twins?  
 Manakah antara berikut akan menghasilkan pembentukan kembar seiras?



8. Diagram 6 shows the set of chromosomes in a cell of a person who suffers from a condition resulting from a genetic abnormality.  
 Rajah 6 menunjukkan set kromosom di dalam sel seorang yang mengalami suatu keadaan disebabkan suatu kecacatan genetik.

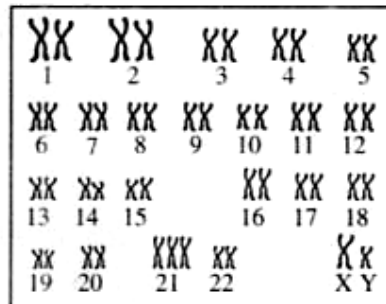


Diagram 6  
 Rajah 6

What is the disorder and which pair of chromosomes is abnormal?  
 Apakah kecacatan tersebut dan pasangan kromosom manakah yang tidak normal?

	Disease <i>Penyakit</i>	Pair of chromosome <i>Pasangan kromosom</i>
A	Down's syndrome <i>Sindrom Down</i>	21
B	Turner's syndrome <i>Sindrom Turner</i>	21
C	Klinefelter's syndrome <i>Sindrom Klinefelter</i>	23
D	Down's syndrome <i>Sindrom Down</i>	22

9. What is variation?  
*Apakah variasi?*
- A The differences in characteristics between different species.  
*Perbezaan sifat di antara spesis berbeza.*
- B The changes in characteristics of an organism with time.  
*Perubahan sifat dalam organisma terhadap masa.*
- C Different effects of an environmental factor on an organism.  
*Kesan factor persekitaran berbeza ke atas suatu organism.*
- D The differences in characteristics among individuals of the same species.  
*Perbezaan sifat di antara individu dari spesis yang sama.*

10. Diagram 7 shows a change in the states of matter.  
*Rajah 7 menunjukkan suatu perubahan keadaan jirim*

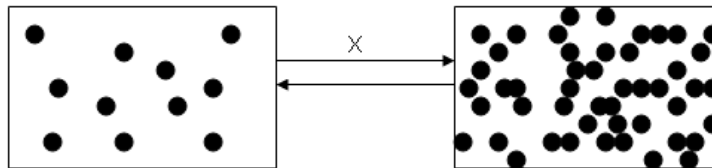


Diagram 7  
*Rajah 7*

- What is process X?  
*Apakah proses X?*
- A Boiling  
*Pendidihan*
- B Freezing  
*Pembekuan*
- C Sublimation  
*Pemejalwapan*
- D Condensation  
*Kondensasi*

11. Table 1 shows particles X and Y and their number of protons and neutrons.  
*Jadual 1 menunjukkan zarah X dan Y dengan bilangan proton dan neutronnya*

Particle <i>Zarah</i>	Number of protons <i>Bilangan proton</i>	Number of neutrons <i>Bilangan neutron</i>
X	7	7
Y	7	8

Table 1

*Jadual 1*

Which of the following statement is **true**?

*Antara pernyataan yang berikut, yang manakah benar?*

- A The nucleon number is the number of nucleus in a particle  
*Nombor nukleon adalah bilangan nukleus dalam suatu zarah*
- B The number of electrons of X and Y are different  
*Nombor elektron X dan Y adalah berbeza*
- C The nucleon number of X and Y are the same.  
*Nombor nukleon X dan Y adalah sama*
- D X and Y are a pair of isotopes  
*X dan Y adalah sepasang isotop*
12. Substance X conducts electricity in the solid and molten states. Substance Y does not conduct electricity in the solid and molten states.  
 Which of the following are X and Y likely to be?  
*Sebatian X mengkonduksikan elektrik dalam keadaan pepejal dan leburan. Sebatian Y tidak mengkonduksikan elektrik dalam keadaan pepejal dan leburan.*  
*Manakah antara berikut adalah X dan Y yang mungkin?*

	X	Y
A	Lead bromide <i>Plumbum bromida</i>	Naphthalene <i>Naftalena</i>
B	Naphthalene <i>Naftalena</i>	Lead bromide <i>Plumbum bromida</i>
C	Copper <i>Kuprum</i>	Sulphur <i>Sulfur</i>
D	Sulphur <i>sulfur</i>	Copper <i>kuprum</i>

13. Three metals powders react with oxygen and the observations are as in Table .2  
*Tiga jenis serbuk logam bertindakbalas dengan oksigen dan keputusan adalah seperti dalam Jadual 2.*

Metal powder <i>Serbuk logam</i>	Reaction <i>Tindakbalas</i>
P	Glows brightly <i>Membara dengan terang</i>
Q	Glows dimly <i>Membara dengan malap</i>
R	Burns with dazzling flame <i>Terbakar dengan nyala silau</i>

Table 2  
*Jadual 2*

Arrange the three metals in ascending order of reactivity.

*Susun ketiga-tiga logam dalam urutan kereaktifan meningkat.*

- A R, P, Q  
 B P, Q, R  
 C Q, R, P  
 D Q, P, R
14. Diagram 8 shows the purification of metal by electrolysis.  
*Rajah 8 berikut menunjukkan satu proses penulenan logam melalui elektrolisis.*

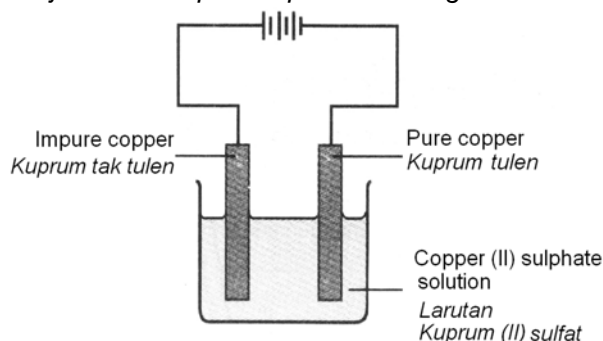


Diagram 8  
*Rajah 8*

Which of the following statements is **true** about the process?

*Antara pernyataan yang berikut, yang manakah benar tentang proses itu?*

- A Copper ions receive electrons from the cathode and form copper atoms.  
*Ion kuprum menerima elektron daripada katod dan membentuk atom kuprum.*
- B A layer of pure copper builds up on the anode.  
*Satu lapisan kuprum tulen terenal pada anod.*
- C The anode is made of pure copper.  
*Anod diperbuat daripada kuprum tulen.*
- D The anode grows thinner.  
*Anod menjadi semakin nipis.*

15. Diagram 9 shows cross section of a dry cell.  
*Rajah 9 menunjukkan keratan rentas sel kering.*

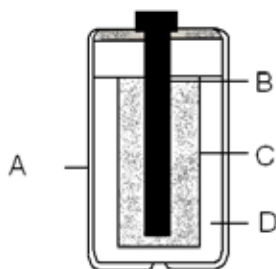


Diagram 9  
*Rajah 9*

Which of the parts **A**, **B**, **C** or **D** act as the positive terminal?  
*Manakah antara **A**, **B**, **C** atau **D** yang bertindak sebagai terminal positif?*

16. Which of the following are best used to control the thickness of materials?  
*Antara berikut, yang manakah paling sesuai digunakan untuk mengawal ketebalan suatu bahan?*
- A Ultraviolet rays  
*Sinaran ultraungu*
  - B Alpha rays  
*Sinaran alfa*
  - C Beta rays  
*Sinaran beta*
  - D Gamma rays  
*Sinaran gamma*
17. What is produce when uranium undergoes fission?  
*Apakah yang terhasil apabila uranium mengalami proses pembelahan?*
- A proton  
*proton*
  - B nucleon  
*nukleon*
  - C neutron  
*neutron*
  - D electron  
*elektron*

18. Which the following is the safety measure when handling radioactive substance.  
*Antara yang berikut, yang manakah langkah keselamatan yang diambil untuk mengendalikan bahan radioaktif ?*
- A Placing the warning symbol of radioactive substance where radioactive substance is stored.  
*Meletakkan simbol amaran bagi bahan radioaktif dimana bahan radioaktif itu disimpan.*
- B Keeping the radioactive substance in a case made of lead.  
*Menyimpan bahan radioaktif di dalam bekas yang diperbuat daripada plumbum.*
- C Burying the radioactive substance.  
*Menanam bahan radioaktif*
- D Wearing a film badge  
*Memakai lencana filem*
19. Which of the following are the characteristics of image formed by concave lens?  
*Antara berikut, yang manakah merupakan ciri-ciri imej yang dibentuk oleh kanta cekung?*
- A Virtual, inverted, enlarged  
*Maya, songsang, membesar*
- B Real, inverted, diminished  
*Nyata, songsang, mengecil*
- C Real, upright, enlarged  
*Nyata, menegak, membesar*
- D Virtual, upright, diminished  
*Maya, menegak, mengecil*
20. Diagram 10 shows a magnifying glass .  
*Rajah 10 menunjukkan sebuah kanta pembesar.*



Diagram 10  
*Rajah 10*

What is the distance between the 'HELLO' and the magnifying glass to produce image as seen in Diagram 10?

*Apakah jarak di antara perkataan 'HELLO' dengan kanta pembesar untuk menghasilkan imej seperti dalam Rajah 10?*

- A Same as the lens focal length  
*Sama dengan jarak fokus kanta*
- B Shorter than the lens focal length  
*Lebih pendek daripada jarak fokus kanta*
- C Longer than the lens focal length  
*Lebih panjang daripada jarak fokus kanta*
- D Twice the lens focal length  
*Dua kali jarak fokus kanta*

21. What causes the natural phenomena of blue sky and red sunset?  
Apakah yang menyebabkan fenomena semulajadi kebiruan langit dan kemerahan senja?
- A dispersion of light  
*penyebaran cahaya*
- B refraction of light  
*pembiasan cahaya*
- C reflection of light  
*pantulan cahaya*
- D scattering of light  
*penyerakan cahaya*
22. Diagram 11 shows two spot light which produce red light and light X. Y is the light color that passed through the blue filter. Which pair is **correct** about light Y and light X  
*Rajah 11 menunjukkan dua buah lampu yang memancarkan sinar merah dan sinar X. Y adalah warna cahaya yang melalui penapis biru. Manakah pasangan benar tentang warna-warna cahaya X dan Y?*

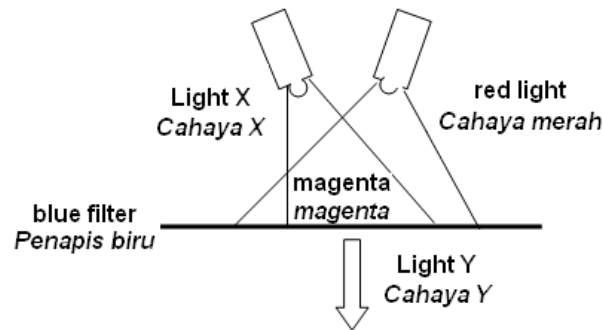


Diagram 11  
*Rajah 11*

	<u>X</u>	<u>Y</u>
A	Green <i>Hijau</i>	Red <i>Merah</i>
B	Yellow <i>Kuning</i>	Green <i>Hijau</i>
C	Cyan <i>Sian</i>	Blue <i>Biru</i>
D	Blue <i>Biru</i>	Blue <i>Biru</i>

23. Which of the following are the composition of brass?  
*Manakah antara yang berikut merupakan komposisi loyang?*
- A Iron and carbon  
*Besi dan karbon*
- B Copper and zinc  
*Kuprum dan zink*
- C Tin and antimony  
*Tin dan antimoni*
- D Aluminium and copper  
*Aluminium dan kuprum*

24. Diagram 12 shows activities carried out by humans near a river.  
*Rajah 12 menunjukkan aktiviti yang dilakukan oleh manusia berhampiran sebatang sungai.*

- |   |
|---|
| <ul style="list-style-type: none"> <li>• Chemical industries<br/><i>Industri kimia</i></li> <li>• Oil palm plantation<br/><i>Ladang kelapa sawit</i></li> </ul> |
|---|

Diagram 12  
*Rajah 12*

What type of pollution mainly occurs in that area?

*Apakah jenis pencemaran yang lazimnya berlaku di kawasan tersebut?*

- A Air pollution  
*Pencemaran udara*
- B Heat pollution  
*Pencemaran haba*
- C Water pollution  
*Pencemaran air*
- D Sound pollution  
*Pencemaran bunyi*
25. Which of the following is the optimal pH value and temperature for the growth of microorganisms?  
*Antara yang berikut, yang manakah merupakan nilai pH dan suhu yang optimum untuk pertumbuhan mikroorganisma?*

	pH pH	Temperature /°C Suhu /°C
A	5	30
B	6	34
C	7	37
D	8	42

26. Which of the following microorganisms are used to produce soya sauce, vinegar, cheese and yogurt?  
*Manakah antara mikroorganisma yang digunakan untuk menghasilkan kicap, cuka, keju dan dadih?*
- A Fungi  
*Kulat*
- B Algae  
*Alga*
- C Protozoa  
*Protozoa*
- D Bacteria  
*Bakteria*

27. The following information shows some diseases caused by a type of microorganism.  
Maklumat berikut menunjukkan beberapa penyakit yang disebabkan oleh sejenis mikroorganisma.

Tuberculosis, Cholera, Gonorrhoea Tuberkulosis, Taun, Gonorea
--

What is the microorganism?

Apakah mikroorganisma tersebut?

- A Virus  
*Virus*
- B Bacteria  
*Bakteria*
- C Protozoa  
*Protozoa*
- D Fungi  
*Kulat*
28. Which method is the most suitable way to control the population of housefly ?  
Apakah cara yang paling sesuai untuk mengawal populasi lalat rumah?
- A Spray the surface of ponds with oil  
*Sembur permukaan kolam dengan minyak.*
- B Keeping the surroundings clean  
*Memastikan persekitaran bersih*
- C Rear guppy fish  
*Memelihara ikan gapi*
- D Sterilisation  
*Pensterilan*
29. Table 3 shows the calorific value of different types of food.  
Jadual 3 menunjukkan nilai kalori bagi jenis makanan yang berbeza.

Food <i>Makanan</i>	Calorific value / kJ per 100g <i>Nilai kalori / kJ per 100g</i>
Rice <i>Nasi</i>	1504
Anchovy <i>Ikan bilis</i>	937
Egg <i>Telur</i>	662
Carrot <i>Lobak</i>	96
Cooking oil <i>Minyak masak</i>	3767

Table 3  
Jadual 3

Nana used 10g of oil to fry 300 g of rice with 20 g of anchovies, 100 g of eggs and 100 g of chopped carrots. What is the calorific value of Nana's meal?

*Nana menggunakan 10 g minyak masak untuk menggoreng 300 g nasi dengan 20 g ikan bilis, 100 g telur dan 100 g lobak cincang. Berapakah nilai kalori dalam makanan yang diambil oleh Nana?*

- A 5834 kJ
- B 6584 kJ
- C 6966 kJ
- D 9974 kJ

30. The following information shows the functions of macronutrient Z.  
*Maklumat berikut menunjukkan fungsi-fungsi makronutrient Z.*

- Helps in the formation of roots, shoots and flowers.  
*Membantu dalam pembentukan akar, pucuk dan bunga.*
- Synthesises protein and nucleic acid.  
*Mensintesis protein and nucleic acid.*

What is Z?

*Apakah Z?*

- A Iodine  
*Iodin*
  - B Potassium  
*Kalium*
  - C Magnesium  
*Magnesium*
  - D Phosphorous  
*Fosforus*
31. What is the function of the nitrogen fixing bacteria that lives in the nodules of legumes shown in Diagram 13?  
*Apakah fungsi bakteria pengikat nitrogen yang tinggal dalam nodul pokok legum yang ditunjukkan dalam Rajah 13?*

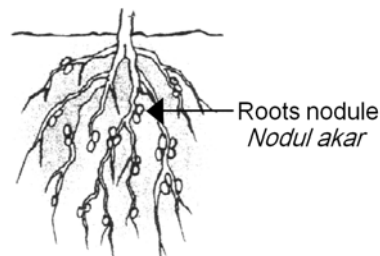


Diagram 13  
*Rajah 13*

- A To increase the nitrate content in the soil  
*Untuk meningkatkan kandungan nitrat dalam tanah*
- B To increase the nitrogen content in the atmosphere  
*Untuk menambah kandungan nitrogen dalam atmosfera*
- C To synthesis protein from nitrate  
*Untuk sintesis protein daripada nitrat*
- D To convert ammonium compound into nitrate  
*Untuk menukarkan sebatian ammonia kepada nitrat*

32. At night, both plants and animals use gas P and release gas Q.  
What are gases P and Q?  
*Waktu malam, kedua-dua tumbuhan dan haiwan menggunakan gas P dan membebaskan gas Q.*  
*Apakah gas-gas P dan Q?*

	Gas P <i>Gas P</i>	Gas Q <i>Gas Q</i>
A	Oxygen <i>Oksigen</i>	Carbon dioxide <i>Karbon dioksida</i>
B	Nitrogen <i>Nitrogen</i>	Oxygen <i>Oksigen</i>
C	Carbon dioxide <i>Karbon dioksida</i>	Nitrogen <i>Nitrogen</i>
D	Carbon dioxide <i>Karbon dioksida</i>	Oxygen <i>Oksigen</i>

33. Which of the following activities causes pollution to the environment?  
*Manakah antara aktiviti-aktiviti berikut menyebabkan pencemaran alam sekitar?*
- A Decorating the town by planting more flowering plants  
*Menghias bandar dengan menanam lebih banyak tumbuhan berbunga*
- B Establishing more playgrounds for children  
*Membina lebih banyak taman permainan kanak-kanak*
- C Increasing the number of motor vehicles in the city  
*Menambah bilangan kenderaan bermotor di bandar*
- D Conserving ponds, lakes and rivers  
*Memulihara kolam, tasik dan sungai*
34. Which is the **best** method to reduce problems of pollution caused by rubbish?  
*Kaedah manakah **terbaik** untuk mengurangkan pencemaran yang disebabkan oleh sampah sarap?*
- A Practise recycling and reducing habit.  
*Mengamalkan tabiat mengurang dan mengitar semula bahan.*
- B Burn the rubbish in a designated area.  
*Bakar sampah sarap di kawasan yang telah ditetapkan.*
- C Throw the rubbish into the sea.  
*Membuang sampah ke dalam laut.*
- D Encourage the use of plastic bags.  
*Menggalakkan penggunaan beg plastik.*

35. Diagram 14 below shows the experiment which is set up to show fermentation.  
*Rajah 14 di bawah menunjukkan eksperimen yang disediakan untuk menunjukkan proses penapaian.*

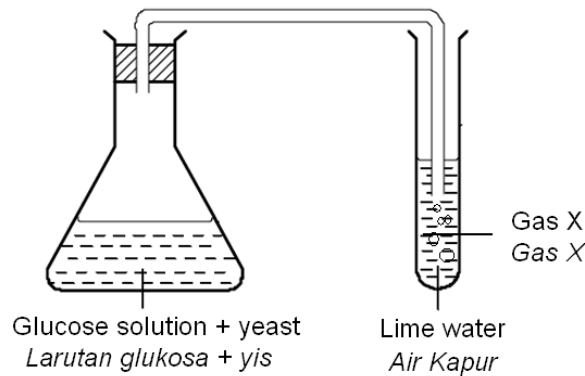


Diagram 14  
*Rajah 14*

Which of the following about fermentation is **true**?

*Antara yang berikut, manakah yang **benar** tentang penapaian?*

- A Ethanol is produced in the process.  
*Etanol terhasil dalam proses ini.*
- B The gas produced lights up a lighted wooden splinter.  
*Gas yang dibebaskan akan menyalakan kayu uji berbara.*
- C The limewater does not change.  
*Air kapur tidak berubah.*
- D This process releases oxygen.  
*Proses ini membebaskan oksigen.*
36. What are the effects of excessive intake of saturated fats?  
*Apakah kesan pengambilan lemak tepu yang berlebihan?*
- A blood glucose level to rise  
*peningkatan aras glukosa dalam darah*
- B blood cholesterol level to rise  
*peningkatan aras kolesterol dalam darah*
- C the lumen size of arteries increase  
*saiz lumen arteri akan bertambah*
- D decrease blood pressure  
*menurunkan tekanan darah*

37. What is the purpose of adding sodium chloride in the process of soap making?  
*Apakah tujuan penambahan sodium klorida dalam proses pembuatan sabun?*
- A to dissolve the palm oil  
*untuk melarutkan minyak kelapa sawit*
- B to give the soap a 'slippery' feeling  
*untuk memberi rasa licin terhadap sabun*
- C to precipitate the soap particles  
*untuk memendakkan partikel sabun*
- D to speed up the reaction  
*untuk meningkatkan tindak balas*

38. Diagram 15 shows the structure of rubber polymers before and after process W  
*Rajah 15 menunjukkan struktur polimer getah sebelum dan selepas proses W.*

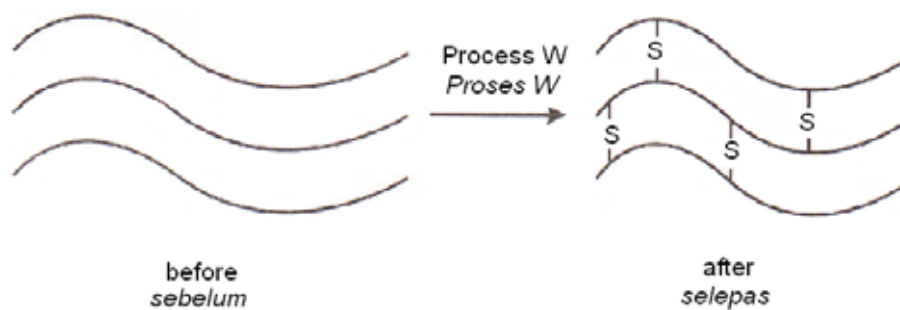


Diagram 15  
*Rajah 15*

What is process W

*Apakah proses W?*

- A Polymerisation  
*Pempolimeran*
- B Depolymerisation  
*Penyahpolimeran*
- C Vulcanisation  
*Pemvulkanan*
- D Coagulation  
*Koagulasi*

39. Which of the following vehicles uses a two-stroke petrol engine?  
 Manakah antara kenderaan berikut menggunakan enjin petrol dua lejang?



40. Diagram 16 shows a ticker tape obtained from an experiment to study the movement of a trolley. The ticker timer does 50 ticks in 1 second.

What is the trolley's velocity?

Rajah 16 menunjukkan pita detik yang diperolehi daripada eksperimen untuk mengkaji pergerakan sebuah troli. Jangkamasa detik menghasilkan 50 detik dalam 1 saat.

Apakah halaju troli itu?

$$\left[ \text{Velocity} = \frac{\text{Distance}}{\text{Time}} \right] \quad \left[ \text{Halaju} = \frac{\text{Jarak}}{\text{Masa}} \right]$$

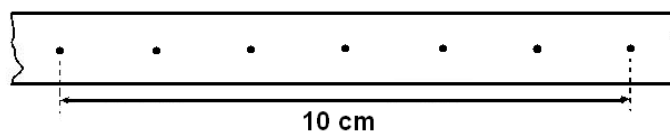


Diagram 16

Rajah 16

- A 83.3 cms<sup>-1</sup>  
 B 71.4 cms<sup>-1</sup>  
 C 50.0 cms<sup>-1</sup>  
 D 8.3 cms<sup>-1</sup>

41. Diagram 17 below shows a trolley moving with a velocity of  $2 \text{ ms}^{-1}$ .  
*Rajah 17 di bawah menunjukkan sebuah troli yang sedang bergerak dengan halaju  $2 \text{ ms}^{-1}$*

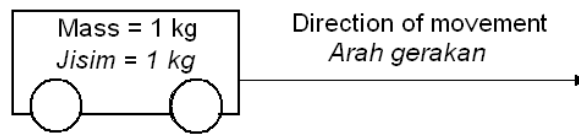


Diagram 17  
*Rajah 17*

What is the momentum of the trolley?

*Berapakah momentum troli tersebut?*

[Momentum = Mass  $\times$  Velocity]

*[Momentum = Jisim  $\times$  Halaju]*

- A  $0.5 \text{ kg ms}^{-1}$   
 B  $1 \text{ kg ms}^{-1}$   
 C  $2 \text{ kg ms}^{-1}$   
 D  $3 \text{ kg ms}^{-1}$
42. Diagram 18 below shows a simple hydraulic system.  
*Rajah 18 di bawah menunjukkan satu sistem hidraulik ringkas.*

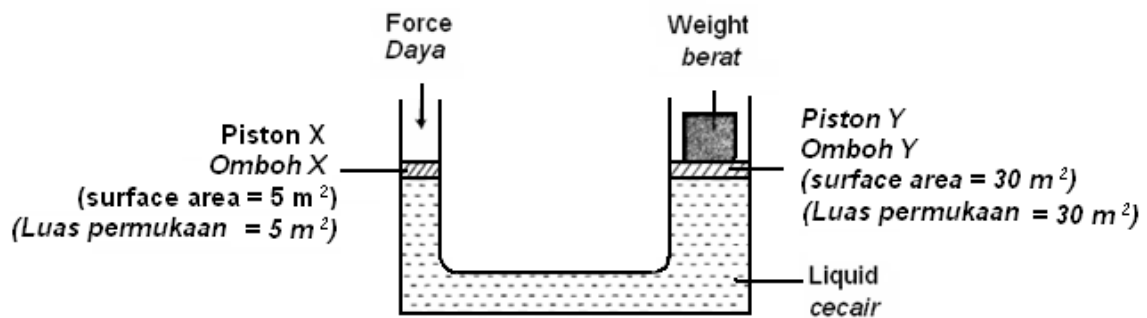


Diagram 18  
*Rajah 18*

A weight of  $180 \text{ N}$  is placed on piston Y. Calculate the pressure which is exerted by the weight on piston X.

*Satu beban  $180 \text{ N}$  diletakkan di omboh Y. Hitungkan tekanan yang digunakan oleh beban di omboh X.*

$$\left[ \text{Pressure} = \frac{\text{Force}}{\text{Area}} \right] \quad \left[ \text{Tekanan} = \frac{\text{Daya}}{\text{Luas}} \right]$$

- A  $30 \text{ Nm}^{-2}$   
 B  $60 \text{ Nm}^{-2}$   
 C  $90 \text{ Nm}^{-2}$   
 D  $120 \text{ Nm}^{-2}$

43. Diagram 19 shows an experimental set-up to study the Archimedes Principle.  
Rajah 19 menunjukkan susunan radas untuk mengkaji Prinsip Archimedes.

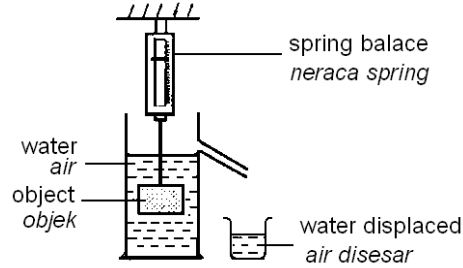


Diagram 19  
Rajah 19

The object displaces  $150 \text{ cm}^3$  of water when it is immersed in the water.

Calculate the upthrust on the object.

Objek menyesarkan sebanyak  $150 \text{ cm}^3$  air apabila direndam ke dalam air.

Hitung daya tujah ke atas objek.

( $1 \text{ cm}^3$  of water weighs  $0.01 \text{ N}$ )

(Berat  $1 \text{ cm}^3$  air adalah  $0.01 \text{ N}$ )

- A 1.0 N  
B 1.5 N  
C 2.5 N  
D 2.5 N
44. Diagram 20 below shows an aeroplane moving with uniform velocity in the air.  
Rajah 20 menunjukkan kapal terbang bergerak dengan kelajuan seragam di udara.

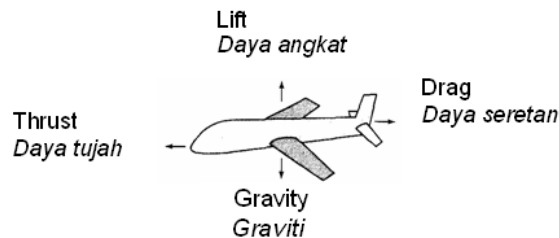


Diagram 20  
Rajah 20

Which of the following statements is **true**?

Mana satu kenyataan berikut adalah **benar**?

- A The lift force is more than the gravity force.  
Daya angkat adalah lebih besar dari daya graviti.
- B The thrust is the same as the drag.  
Daya tujah adalah sama dengan daya seretan
- C The weight is the same as the lift force.  
Daya graviti adalah sama dengan daya angkat
- D The thrust is the same as the gravity force.  
Daya tujah adalah sama dengan daya graviti.

45. Ahmad wishes to import fish from Thailand.  
What are the best method for preserving the freshness of the fish?  
*Ahmad ingin mengimport ikan dari Thailand .  
Apakah kaedah yang terbaik untuk mengekalkan kesegaran ikan?*
- A Canning  
*Pengetinan*
  - B Pasteurisation  
*Pempasteuran*
  - C Deep freezing  
*Penyejukbekuan*
  - D Vacuum packaging  
*Pembungkusan vakum*

Question 46 are based on Diagram 21.  
*Soalan 46 adalah berdasarkan Rajah 21.*



Diagram 21  
*Rajah 21*

46. Ahmad had a stomach ache after eating the food.  
What information on the label that he over-looked?  
*Ahmad mengalami sakit perut setelah memakan makanan tersebut.  
Apakah maklumat yang tidak diambil berat oleh Ahmad?*
- A Ingredients  
*Ramuan*
  - B Net weight  
*Berat bersih*
  - C Expiry date  
*Tarikh luput*
  - D Name of food  
*Nama makanan*

47. A polymer has the following characteristics:  
*Suatu polimer mempunyai ciri-ciri berikut:*

- Can withstand heat  
*Tahan haba*
- Can be moulded only once  
*Boleh diacu sekali sahaja*

What is the thing that can be made from this polymer?  
*Apakah barangan yang boleh diperbuat daripada polimer ini?*

- A Electric sockets  
*Soket elektrik*
  - B Plastic bags.  
*Beg plastik*
  - C Raincoats  
*Baju hujan*
  - D Food wrappers.  
*Pembungkus makanan*
48. The burning of plastic wastes is prohibited because they pollute the surroundings.  
What are released when plastics are burnt?  
*Pembakaran plastik adalah di larang kerana boleh mencemarkan alam sekitar.*  
*Apakah yang dibebaskan semasa plastik dibakar?*
- A smoke and toxic gases  
*asap dan gas beracun*
  - B water vapour and soot  
*wap air dan jelaga*
  - C water vapour and smoke  
*wap air dan asap*
  - D radioactive radiation and carbon dioxide  
*radioaktif dan karbon dioksida*

49. What is the function of the aerial in a radio receiver in Diagram 22?  
 Apakah fungsi aerial dalam penerima radio dalam Rajah 22?

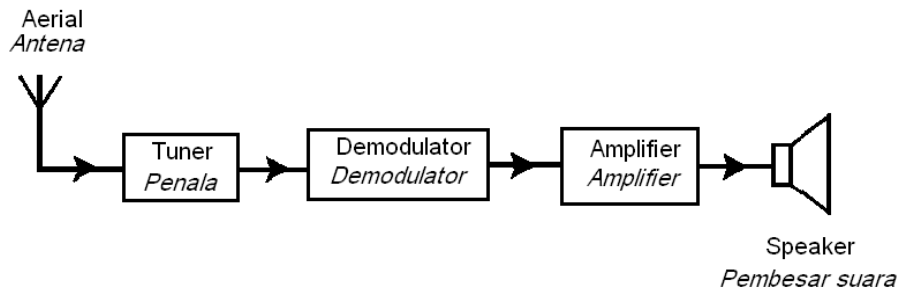


Diagram 22  
 Rajah 22

- A To generate radio waves  
 Menjana gelombang radio
- B To receive modulated radio waves  
 Menerima gelombang radio termodulasi
- C To combine radio waves and audio waves  
 Mengabungkan gelombang radio dan gelombang audio
- D To convert sound waves to electrical signals  
 Menukarkan gelombang bunyi ke isyarat elektrik
50. Which of the following is used to send information in a satellite communication system?  
 Antara berikut yang manakah digunakan untuk penghantaran maklumat dalam sistem komunikasi satelit?
- A Sound waves  
 Gelombang bunyi
- B Radiowaves  
 Gelombang radio
- C X-ray  
 Sinar - X
- D Gamma ray  
 Sinar gama

**END OF QUESTIONS PAPER**  
**KERTAS SOALAN TAMAT**

SULIT

NAMA : \_\_\_\_\_

KELAS : \_\_\_\_\_



**JABATAN PELAJARAN NEGERI SABAH**

**SIJIL PELAJARAN MALAYSIA 2010  
EXCEL 2  
SAINS  
Kertas 2  
OGOS 2010**

**1511/2**

2 Jam 30 minit

Dua jam tiga puluh minit

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. *Tulis nombor kad pengenalan dan angka giliran anda pada ruangan yang disediakan.*
2. *Kertas soalan ini adalah dalam dwibahasa.*
3. *Soalan dalam Bahasa Inggeris mendahului soalan yang sepadan dalam Bahasa Melayu.*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam Bahasa Inggeris atau Bahasa Melayu*
5. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*

Untuk Kegunaan Pemeriksa			
Kod Pemeriksa :			
Bahagian	Soalan	Markah Penuh	Markah Diperoleh
<b>A</b>	1	5	
	2	5	
	3	5	
	4	5	
<b>B</b>	5	6	
	6	6	
	7	6	
	8	6	
	9	6	
<b>C</b>	10	10	
	11	10	
	12	10	
Jumlah			

Kertas soalan ini mengandungi 19 halaman bercetak.

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[Lihat sebelah]  
**SULIT**

**Section A**  
**Bahagian A**

[20 marks]  
[20 markah]

Answer **all** the questions in this section.  
Jawab **semua** soalan dalam bahagian ini.

- 1 Diagram 1 shows an experiment to study the relationship between the intensity of light and photosynthesis.

Rajah 1 menunjukkan satu eksperimen untuk mengkaji hubungan diantara keamatan cahaya dengan fotosintesis

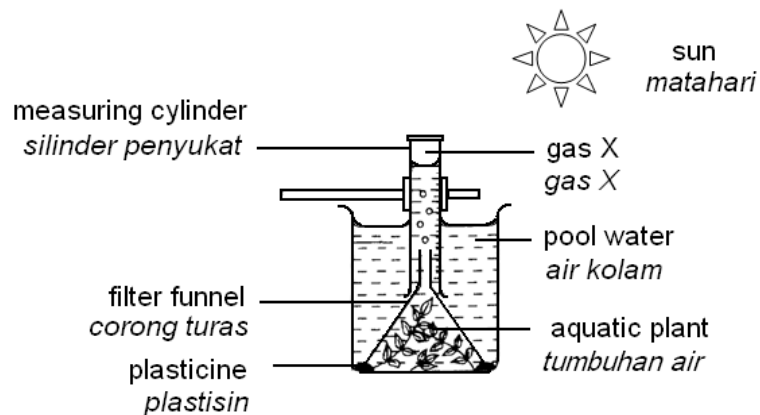


Diagram 1  
Rajah 1

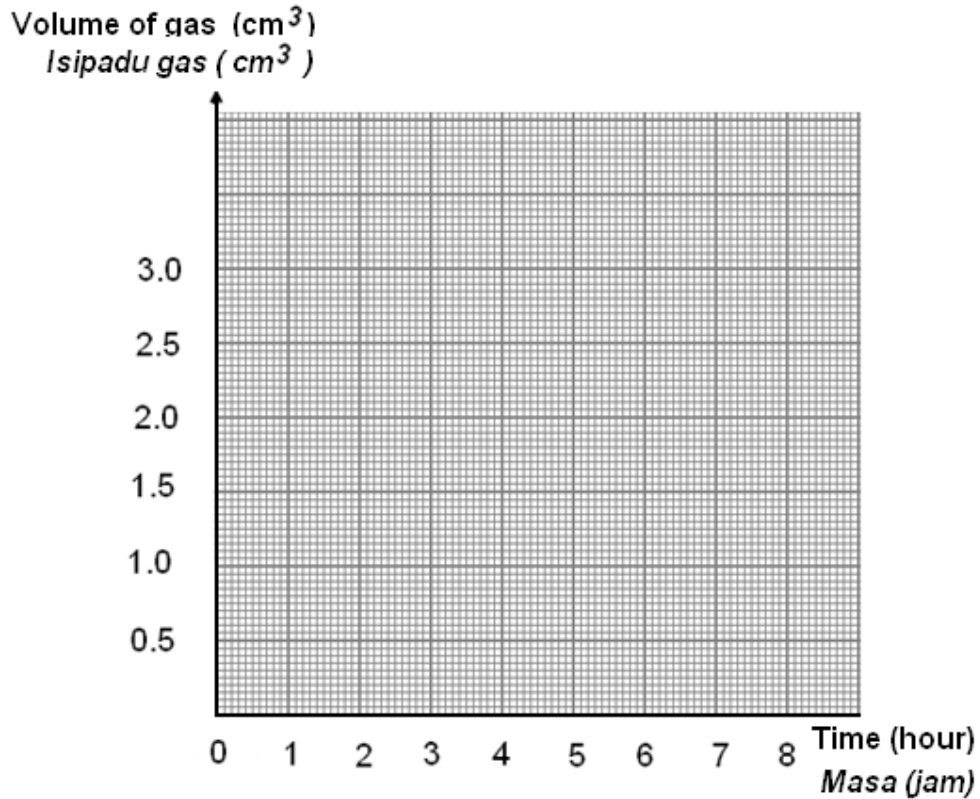
The result is showed on the Table 1  
Keputusan ditunjukkan di dalam Jadual 1

Time exposed to light (hour) Masa pendedahan kepada cahaya (jam)	0	1	2	3	4	5	6	7
The volume of gas X (cm <sup>3</sup> ) Isipadu gas X (cm <sup>3</sup> )	0	0.7	1.3	1.7	2.0	2.2	2.3	2.3

Table 1  
Jadual 1

- (a) Based on the result in Table 1, draw a graph of volume of gas X against the time exposed to light.

Berdasarkan keputusan di dalam Jadual 1, lukiskan graf isipadu melawan masa pendedahan kepada cahaya.



[2 marks]  
[2 markah]

- (b) Based on the graph, state the relationship between the volume of gas X and time exposed to light.  
*Berdasarkan graf, nyatakan hubungan di antara isipadu gas X dengan masa didedahkan kepada cahaya.*

\_\_\_\_\_  
[1 mark]  
[1 markah]

- (d) Based on the graph, determine the volume of gas X produced at  $3\frac{1}{2}$  hour.  
*Berdasarkan graf, tentukan isipadu gas X yang dihasilkan pada  $3\frac{1}{2}$  jam.*

\_\_\_\_\_  
[1 mark]  
[1 markah]

- (c) Predict the the volume of gas produced at the 8<sup>th</sup> hour.  
*Ramalkan isipadu gas yang dihasilkan pada jam ke-8.*

\_\_\_\_\_  
[1 mark]  
[1 markah]

- 2 Diagram 2 shows an experiment to study the hardness of bronze block and copper block.  
Rajah 2 menunjukkan eksperimen untuk mengkaji kekerasan blok gangsa dengan blok kuprum.

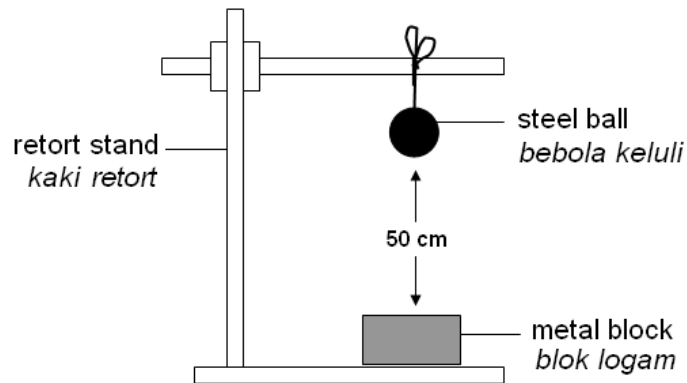


Diagram 2  
Rajah 2

Steel ball is dropped at the of height of 50 cm on bronze block and copper block.  
Table 2 shows the result of this experiment.  
Bola keluli dijatuhkan pada ketinggian 50 cm ke atas blok gangsa dan blok kuprum.  
Jadual 2 menunjukkan keputusan eksperimen.

Type of metal block <i>Jenis blok logam</i>	Depth of the dent (mm) <i>Kedalaman lekuk (mm)</i>
Copper block <i>Blok kuprum</i>	1.0
Bronze block <i>Blok gangsa</i>	0.5

Table 2  
Jadual 2

- (a) State the variables in this experiment.  
*Nyatakan pembolehubah dalam eksperimen ini.*
- (i) Responding variable:  
*Pembolehubah bergerakbalas:*
- \_\_\_\_\_ [1 mark]  
[1 markah]
- (ii) Constant variable:  
*Pembolehubah dimalarkan:*
- \_\_\_\_\_ [1 mark]  
[1 markah]
- (b) Write down **one** observation from the result of this experiment.  
*Tuliskan **satu** pemerhatian bagi hasil eksperimen ini.*
- \_\_\_\_\_ [1 mark]  
[1 markah]
- (c) State the inference that can be made based on the observation in this experiment.  
*Nyatakan inferens yang boleh dibuat berdasarkan pemerhatian dalam eksperimen ini.*

[1 mark]  
[1 markah]

- (d) Bronze is an example of an alloy. State the operational definition of an alloy.  
*Gangsa adalah contoh aloi. Nyatakan definisi secara operasi aloi.*

[1 mark]  
[1 markah]

- 3 Diagram 3 shows an experiment to study the effect of the deficiency of nitrogen on plant growth (P and Q).

*Rajah 3 menunjukkan eksperimen yang dijalankan untuk mengkaji kesan kekurangan nitrogen terhadap pertumbuhan tumbuhan (P dan Q).*

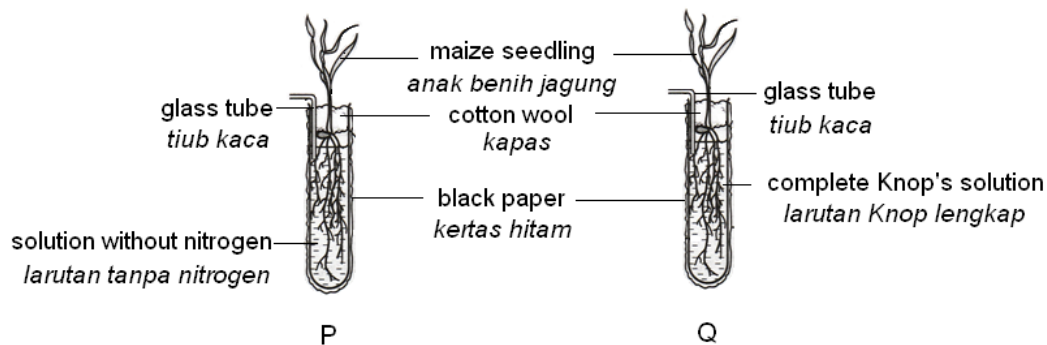


Diagram 3  
*Rajah 3*

- (a) State the hypothesis of this experiment.  
*Nyatakan hipotesis bagi eksperimen ini.*

[1 mark]  
[1 markah]

- (b) State the manipulated variable in this experiment.  
*Nyatakan pembolehubah dimanipulasi bagi eksperimen ini.*

[1 mark]  
[1 markah]

- (c) (i) State **one** observation that can be seen on the plant in the test tubes P and Q after a week.

[Lihat sebelah]  
SULIT

Nyatakan **satu** pemerhatian yang dapat dilihat pada anak benih dalam tabung uji P dan Q selepas seminggu.

\_\_\_\_\_

[1 mark]  
[1 markah]

- (ii) Give one inference that can be made based on the observation in c(i)  
*Berikan satu inferen yang boleh dibuat berdasarkan pemerhatian di c(i)*

\_\_\_\_\_

[1 mark]  
[1 markah]

- (d) Nitrogen is an example of macronutrient. Tick (✓) in the boxes in Table 3, nutrients which represent macronutrients.

*Nitrogen adalah contoh makronutrien. Tandakan (✓) dalam petak pada Jadual 3, nutrient yang mewakili makronutrien.*

Iron <i>Besi</i>	Potassium <i>Kalium</i>	Sulphur <i>Sulfur</i>	Molybdenum <i>Molibdenum</i>

Table 3  
Jadual 3

[1 mark]  
[1 markah]

- 4 Diagram 4.1 shows an experiment to study the movement of a trolley.  
Rajah 4.1 menunjukkan satu eksperimen untuk mengkaji gerakan sebuah troli.

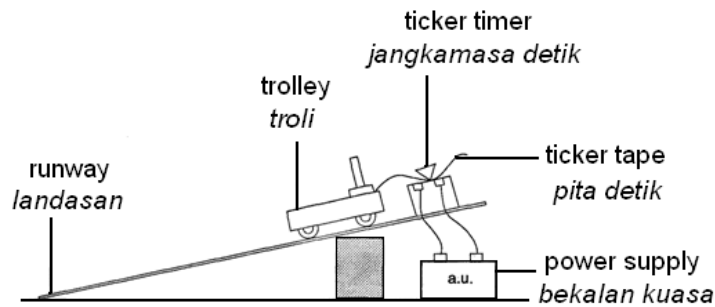


Diagram 4.1  
Rajah 4.1

The result of the experiment is shown on Diagram 4.2  
Keputusan eksperimen ditunjukkan dalam Rajah 4.2

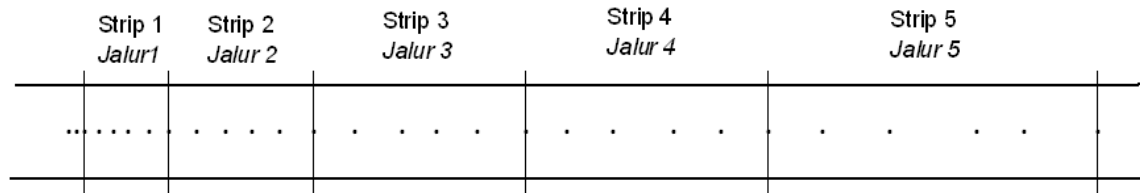


Diagram 4.2  
Rajah 4.2

Table 4 shows information about the section of the ticker tape.  
Jadual 4 menunjukkan maklumat tentang keratan pita detik .

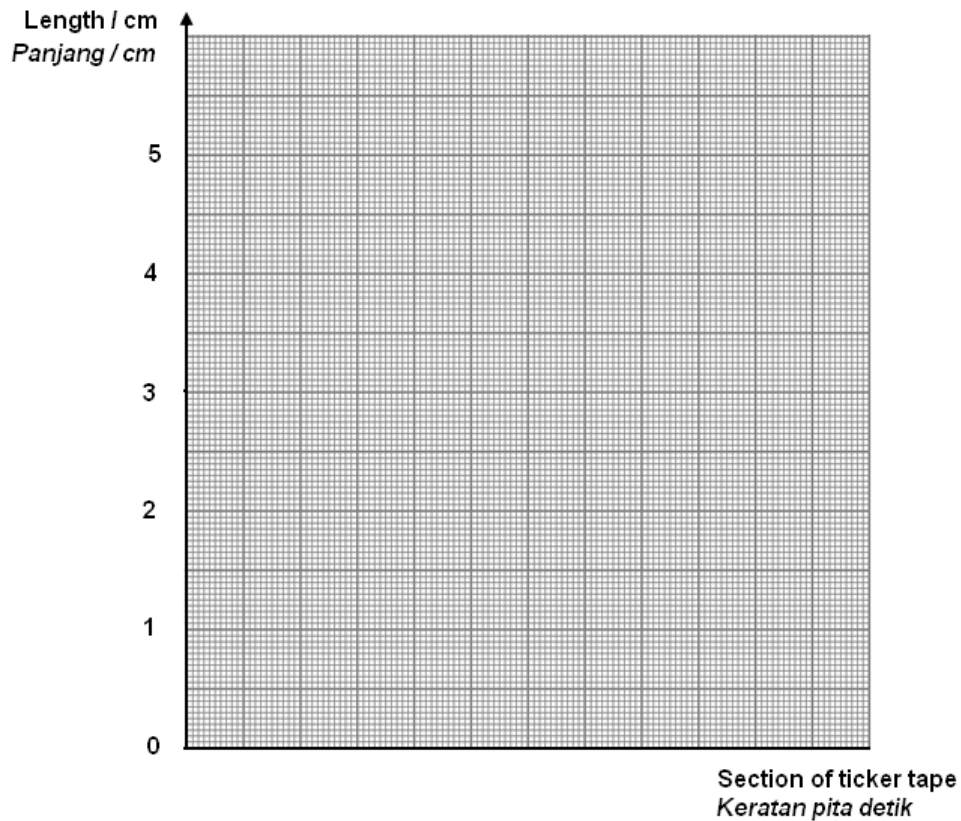
Section of the ticker tape Keratan pita detik	1	2	3	4	5
Length of section / cm Panjang /cm	1.2	2.0	.....	3.4	4.6

Table 4  
Jadual 4

- (a) Measure the length of section 3 of the ticker tape and record it into Table 4.  
Ukur panjang Keratan 3 pita detik itu dan catatkan dalam Jadual 4.

[1 mark]  
[1 markah]

- (b) Based on Table 4, draw a bar chart on the graph paper below.  
*Berdasarkan Jadual 4, lukis carta bar pada kertas graf di bawah.*



[2 mark]  
 [2 markah]

- (c) Using your bar chart in (b),  
*Dengan menggunakan carta bar anda di (b),*

- (i) state the type of movement made by the trolley.  
*nyatakan jenis gerakan troli ini.*

[1 mark]  
 [1 markah]

- (ii) predict the length of section 6 that is also represents a 1 second interval.  
*ramalkan ukuran keratan pita detik ke-6 yang juga mewakili jarak waktu 1 saat.*

Length  
 Panjang = \_\_\_\_\_ cm

[1 mark]  
 [1 markah]

**Section B**  
**Bahagian B**

[30 marks]  
[30 markah]

Answer **all** the questions in this section.  
Jawab **semua** soalan dalam bahagian ini.

- 5 Diagram 5 shows schematic diagram on inheritance of blood group.  
Rajah 5 menunjukkan rajah skema pewarisan bagi kumpulan darah.

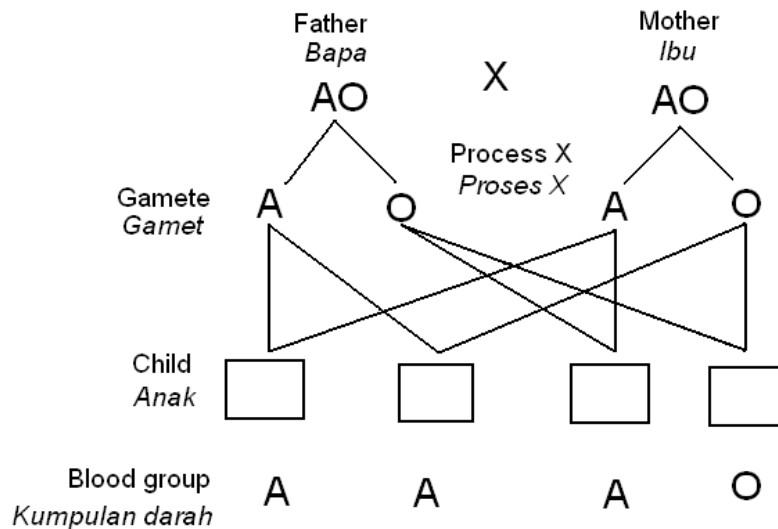


Diagram 5  
Rajah 5

[2 marks]  
[2 markah]

- (a) Complete Diagram 5 by writing down the pairs of genes in the boxes provided.  
Lengkapkan Rajah 5 dengan menulis pasangan gen dalam ruang yang disediakan
- (b) Based on Diagram 5, which type of blood group is recessive?  
Berdasarkan Rajah 5, darah jenis manakah adalah resesif?

[1 mark]  
[1 markah]

- (c) State process X.  
Nyatakan proses X.

[1 mark]  
[1 markah]

- (d) What is the ratio of A blood group to O blood group?  
*Apakah nisbah kumpulan darah A kepada kumpulan darah O ?*

\_\_\_\_\_ [1 mark]  
 [1 markah]

- (e) What factor determined the blood group?  
*Apakah faktor yang menentukan kumpulan darah?*

\_\_\_\_\_ [1 mark]  
 [1 markah]

- 6 Diagram 6.1 shows an experiment to study the penetrating power of beta ray.  
*Rajah 6 menunjukkan satu eksperimen mengkaji kuasa penembusan sinar beta.*

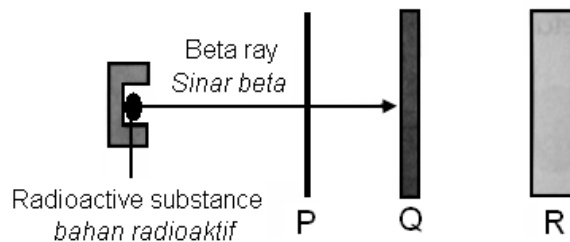


Diagram 6.1  
 Rajah 6.1

From the observation, the beta ray is blocked by material Q but can penetrate material P.  
*Berdasarkan pemerhatian, sinar beta dapat dihalang oleh bahan Q tetapi dapat menembusi bahan P.*

- (a) Name material  
*Namakan bahan*

(i) P: \_\_\_\_\_

(ii) Q: \_\_\_\_\_

[2 marks]  
 [2 markah]

- (b) Give one characteristic of beta ray  
*Berikan satu ciri sinar beta.*

\_\_\_\_\_ [1 mark]  
 [1 markah]

- (c) Explain why alpha ray cannot be used to measure the thickness of paper in industry

[Lihat sebelah]  
 SULIT

Terangkan kenapa sinar alfa tidak boleh digunakan untuk mengukur ketebalan kertas dalam industri

[1 mark]  
[1 markah]

- (d) State the use of gamma ray in medicine.  
Nyatakan kegunaan sinar gamma dalam perubatan.

[1 mark]  
[1 markah]

- (e) Diagram 6.2 shows the use of radioisotopes to study the absorption of fertiliser by a plant roots.

Rajah 2 menunjukkan kegunaan radioisotope untuk mengkaji penyerapan baja oleh akar tumbuhan.

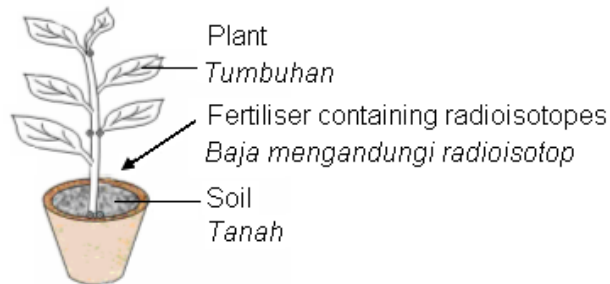


Diagram 6.2  
Rajah 6.2

Mark (✓) the radioisotopes that is used in the box provided.  
Tandakan (✓) radioisotop yang digunakan dalam petak disediakan.

Carbon-14 Karbon-14	
Iodine-31 Iodin-131	
Cobalt-60 Kobalt-60	
Phosphorus-32 Fosforus-32	

[1 mark]  
[1 markah]

- 7 Diagram 7.1 shows a red light and a blue light projected on a white screen.  
Rajah 7.1 menunjukkan cahaya merah dan cahaya biru dipancarkan ke atas skrin putih.

[Lihat sebelah]  
SULIT

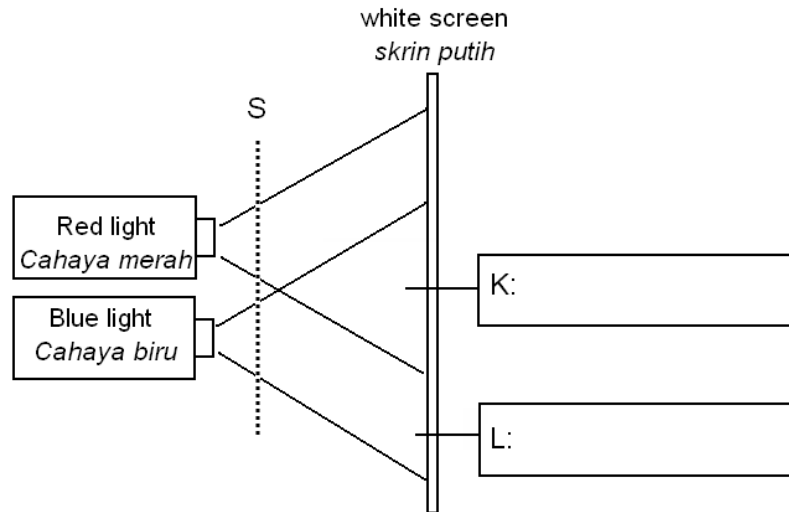


Diagram 7.1  
Rajah 7.1

- (a) Complete the colours of K and L in the boxes in Diagram 7.1  
*Lengkapkan warna-warna yang diperhatikan pada K dan L di dalam petak pada Rajah 7.1*  
 [2 marks]  
 [2 markah]
- (b) State the possible colour at L if a yellow filter is placed at S  
 \_\_\_\_\_  
 [1 mark]  
 [1 markah]

- (c) Diagram 7.2 shows an experiment to study the appearance of coloured object under coloured lights.  
*Rajah 7.2 menunjukkan eksperimen untuk mengkaji penglihatan objek berwarna di bawah cahaya berwarna.*

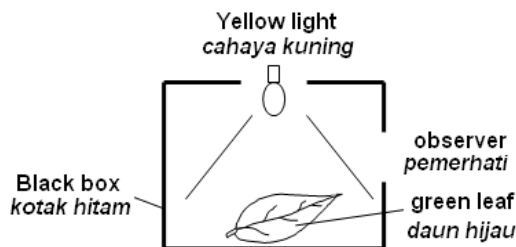


Diagram 7.2  
Rajah 7.2

- (i) What is the colour of the leaf that is currently seen by the observer?  
*Apakah warna daun yang dilihat oleh pemerhati?*  
 \_\_\_\_\_

[1 mark]  
[1 markah]

- (ii) State the principle used in this experiment.  
*Nyatakan prinsip yang digunakan dalam eksperimen ini.*

---

[1 mark]  
[1 markah]

- (d) State one importance of colour in daily life.  
*Nyatakan satu kepentingan warna dalam kehidupan harian*

---

[1 mark]  
[1 markah]

- 8 Diagram 8 shows a layer of gas P in the atmosphere.  
Rajah 8 menunjukkan lapisan gas P di atmosfera.

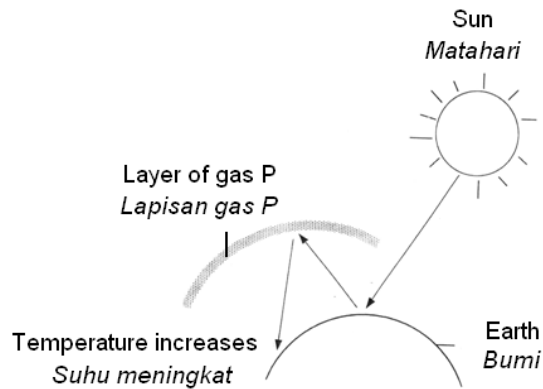


Diagram 8  
Rajah 8

- (a) Name gas P.  
Namakan gas P.

\_\_\_\_\_ [1 mark]  
[1 markah]

- (b) Name two processes which released gas P?  
Namakan dua proses yang menghasilkan gas P?

(i) \_\_\_\_\_  
(ii) \_\_\_\_\_

[2 marks]  
[2 markah]

- (c) Based on Diagram 8, name the phenomena that occur.  
Berdasarkan Rajah 8, namakan fenomena yang berlaku.

\_\_\_\_\_ [1 mark]  
[1 markah]

- (d) State two effect of this phenomena to the environment.  
Nyatakan dua kesan fenomena ini ke atas persekitaran.

(i) \_\_\_\_\_  
(ii) \_\_\_\_\_

[2 marks]  
[2 markah]

- 9 Diagram 9.1 shows the cross section of an oil-palm fruit  
*Rajah 9.1 menunjukkan keratan rentas buah kelapa sawit*

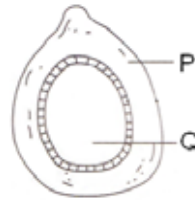


Diagram 9.1  
*Rajah 9.1*

- (a) Name part of the fruit that produces the most oil.  
*Namakan bahagian buah kelapa sawit yang menghasilkan minyak paling banyak.*

[1 mark]  
 [1 markah]

- (b) What type of vitamin found in oil palm.  
*Apakah jenis vitamin terdapat dalam minyak sawit.*

[1 mark]  
 [1 markah]

- (c) Diagram 9.2 shows the process of making soap in laboratory.  
*Rajah 9.2 menunjukkan proses membuat sabun di makmal.*

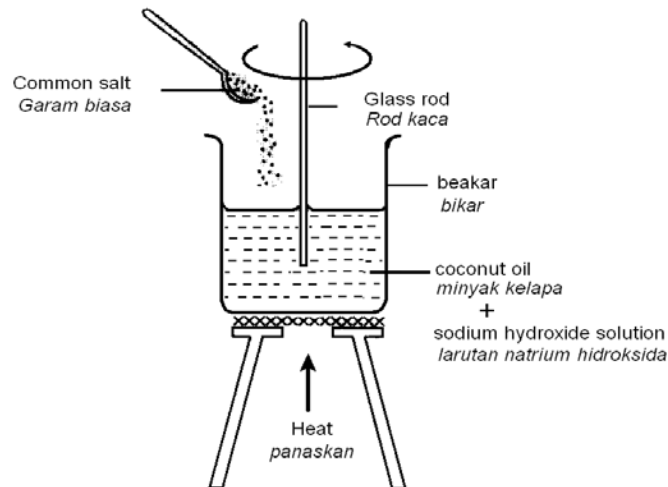


Diagram 9.2  
*Rajah 9.2*

- (i) Name the process of making soap.

[Lihat sebelah]  
 SULIT

Namakan proses membuat sabun.

---

[1 mark]  
[1 markah]

- (ii) State the function of common salt?  
*Nyatakan fungsi garam biasa?*

---

[1 mark]  
[1 markah]

- (iii) Mark (✓) the substances that can replace coconut oil in the box provided.  
a. *Tandakan (✓) bahan-bahan yang boleh menggantikan minyak kelapa dalam petak disediakan.*

Olive oil <i>Minyak zaiton</i>	
Petrol oil <i>Minyak petrol</i>	
Cooking oil <i>Minyak masak</i>	
Eucalyptus oil <i>Minyak kayu putih</i>	

[1 mark]  
[1 markah]

- (d) Diagram 9.3 shows the structure of soap molecules. Circle the part that dissolve in grease or oil.  
*Rajah 9.3 menunjukkan struktur molekul sabun. Bulatkan bahagian yang larut dalam gris atau minyak.*



Diagram 9.3  
*Rajah 9.3*

[1 mark]  
[1 markah]

**Section C**  
**Bahagian C**

[20 marks]  
[20 markah]

Answer **Question 10** and either **Question 11** or **Question 12**.  
Jawab **Soalan 10** dan mana-mana satu daripada **Soalan 11** atau **Soalan 12**.

- 10** Study the statement the following statement :  
Kaji pernyataan berikut :

Light affects the growth and reproduction of bacteria.  
*Cahaya mempengaruhi pertumbuhan dan pembiakan bakteria.*

You are given three substances: Nutrient broth, bacteria culture and sterilized cotton wool

*Anda diberi tiga bahan: Bubur nutrient, kultur bakteria dan kapas steril*

- (a) Suggest **one** hypothesis to investigate the above statement. [1 mark]  
*Cadangkan **satu** hipotesis untuk menyiasat pernyataan di atas.* [1 markah]
- (b) Using the apparatus and materials above, describe an experiment to test the hypothesis in **10(a)**, based on the following criteria:  
*Dengan menggunakan radas-radas dan bahan-bahan di atas, huraikan satu eksperimen untuk menguji hipotesis di **10(a)** berdasarkan kriteria-kriteria berikut;*
- |  |            |
|--|------------|
| (i) The aim of the experiment                    | [1 mark]   |
| <i>Tujuan eksperimen</i>                         | [1 markah] |
| (ii) Mengenal pasti pemboleh ubah-pemboleh ubah. | [2 marks]  |
| <i>Identify the variables</i>                    | [2 markah] |
| (iii) List of apparatus and material             | [1 mark]   |
| <i>Senarai radas</i>                             | [1 markah] |
| (iv) Procedure or method                         | [4 marks]  |
| <i>Prosedur.atau kaedah</i>                      | [4 markah] |
| (v) <i>Tabulation of data</i>                    | [1 mark]   |
| <i>Penjadualan data.</i>                         | [1 markah] |

- 11 (a) Give **four** differences between *natural rubber* and *synthetic rubber*.  
 Beri **empat** perbezaan antara getah asli dengan getah sintetik

[4 marks]  
 [4 markah]

- (b) You want to change your car tyres after they are being used for more than one year. You are given three types of car tyres as shown in the Diagram 11 below.  
 Anda ingin menukar tayar kereta anda selepas menggunakan tayar tersebut lebih dari setahun.  
 Anda diberi tiga jenis tayar kereta seperti yang ditunjukkan di dalam Rajah 11 di bawah.



Choose the most suitable car tyres for your car.  
 Pilih tayar kereta yang paling sesuai untuk kereta anda.

Explain your choice based on the following aspects:  
 Terangkan jawapan anda berdasarkan perkara berikut:

- Aim of choice [1 mark]  
 Tujuan pemilihan [1 markah]
- Explanation on the advantage of each type of tyre based on its properties [3 marks]  
 Penjelasan tentang kebaikan setiap jenis tayar berdasarkan ciri-cirinya [3 markah]
- List of type of car tyres based on its quality for long term use [1 mark]  
 Senaraikan jenis tayar berdasarkan kualiti untuk penggunaan jangka panjang [1 markah]
- The reason for your choice [1 mark]  
 Sebab kepada pemilihan anda [1 markah]

- 12 (a) State two uses of metal in daily life and the physical properties being applied.  
*Nyatakan dua kegunaan logam dalam kehidupan harian dan ciri fizikal yang diaplikasikan.*  
 [4 marks]  
 [4 markah]
- (b) Diagram 12 shows four examples of non-metals.  
*Rajah 12 menunjukkan empat contoh bukan logam.*

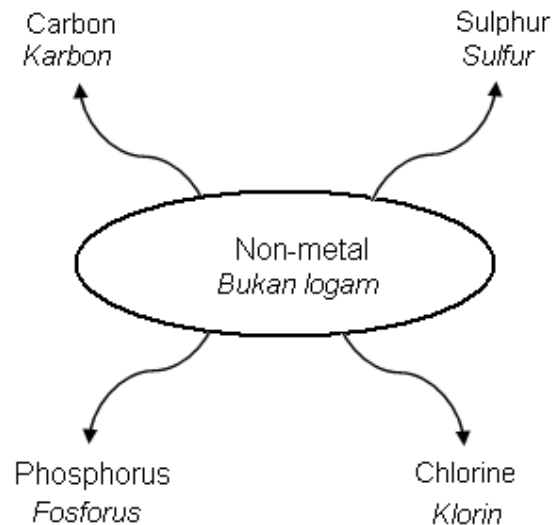


Diagram 12  
 Rajah 12

Study the examples in diagram 12 and construct the concept of non-metal.  
*Kaji contoh-contoh dalam Rajah 12 dan bina konsep bukan logam.*

Your answer should be based on the following aspects:  
*Jawapan anda hendaklah berdasarkan aspek-aspek berikut:*

- Identify **two** common characteristics [2 marks]  
*Kenal pasti **dua** ciri sepunya* [2 markah]
- Give **one** other example of non-metal [1 mark]  
*Beri **satu** contoh lain bagi bukan logam* [1 markah]
- Give **one** example of metal and the reason for your choice. [2 marks]  
*Beri **satu** contoh logam dan sebab kepada pemilihan anda* [2 markah]
- State the actual concept of non-metal. [1 mark]  
*Nyatakan konsep sebenar bukan logam.* [1 markah]

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

EXCEL SPM 2010

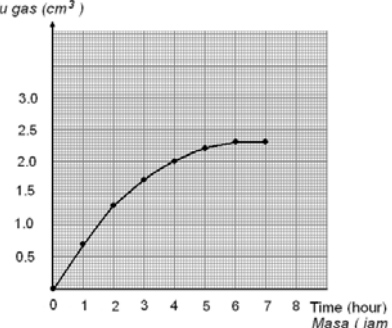
KERTAS 1

JAWAPAN:



1.	B	11.	D	21.	D	31.	A	41.	C
2.	B	12.	C	22.	D	32.	A	42.	A
3.	A	13.	D	23.	B	33.	C	43.	B
4.	B	14.	D	24.	C	34.	A	44.	B
5.	C	15.	B	25.	C	35.	A	45.	C
6.	D	16.	C	26.	D	36.	B	46.	C
7.	A	17.	C	27.	B	37.	C	47.	A
8.	A	18.	D	28.	B	38.	C	48.	A
9.	D	19.	D	29.	A	39.	A	49.	B
10.	D	20.	B	30.	D	40.	A	50.	B

**MARKING SCHEME**  
**SCIENCE SPM**  
**EXCEL 2**

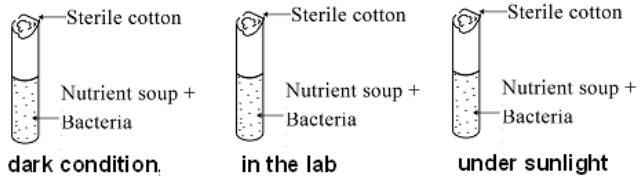
**SECTION A (20 marks)**

No. ITEM	JAWAPAN	MARKAH	
1	a	Setiap titik betul Garisan betul dan licin 	1 1
	b	The volume of gas X increases with time	1
	c	1.8 cm <sup>3</sup>	1
	d	2.3 cm <sup>3</sup>	1
<b>TOTAL</b>		<b>5</b>	
2	a	(i) RV : Depth of the dent (ii) CV : Height of steel ball from metal block / mass of steel ball / size of metal block	1 1
	b	Depth of the dent of bronze block is less than copper block / Vice versa	1
	c	Bronze harder than copper / Copper is soft than bronze	1
	d	Alloy is a substance that can produce dent with less depth on the metal block.	1
<b>TOTAL</b>		<b>5</b>	
3	a	<b>Hypothesis :</b> <ul style="list-style-type: none"> <li>▪ The plant need nitrogen to grow healthy.</li> <li>▪ Without nitrogen the seedling cannot grow healthy</li> <li>▪ Knops culture solution provided the seedling for healthy growth.</li> </ul>	1
	b	MV : Type of culture solution Solution without nitrogen and complete Knop solution.	1
	c	(i) <b>Observation</b> <ul style="list-style-type: none"> <li>• Plant Q has more leaves compare to plant P</li> </ul>	1
		(ii) <b>Inference</b> <ul style="list-style-type: none"> <li>• The Knop solution contain complete nutrient for the healthy growth of plant Q</li> </ul> <p style="text-align: center;"><b>OR</b></p>	1
d	Tick (✓) – Sulphur & Potassium <span style="float: right;"><b>Note – must tick both to get 1 mark</b></span>	1	
<b>TOTAL</b>		<b>5</b>	
4	a	2.8 cm ± 0.1 cm	1
	b	- all points correctly transferred	1
		- width of bar chart must be the same .	1
c	(i) Acceleration / velocity increase (ii) accept any answer 5cm and above	1 1	
<b>TOTAL</b>		<b>5</b>	

## SECTION B: 30 marks

No. Item	JAWAPAN	MARKAH	
5.	a.	 <p style="text-align: center;"><b>Note: 1 ✓ = 0, 2-3 ✓ = 1, all correct = 2</b></p>	2
	b.	O	1
	c.	meiosis	1
	d.	3:1	1
	e.	genetic	1
<b>TOTAL</b>		<b>6</b>	
6.	a.	P: a piece of paper Q: Aluminium sheet	1 1
	b.	Negative charge / Electron / Average ionising power/ Moderate penetration power	1
	c.	It penetration power is low	1
	d.	To kill cancerous cell <b>(accept other suitable answer)</b>	1
	e.	Tick (✓) – Phosphorus-32	1
<b>TOTAL</b>		<b>6</b>	
7.	a.	K : Magenta L : Blue	1 1
	b.	White	1
	c.	(i) Green (ii) Substraction of light	1 1
	d.	Colour printing / Electrical wiring / Traffic light <b>(accept other suitable answer)</b>	1
	<b>TOTAL</b>		<b>6</b>
8.	a.	Carbon dioxide	1
	b.	(i) Respiration (ii) Combustion <b>(accept other suitable answer)</b>	1 1
	c.	Global warming	1
	d.	<b>Effects of global warming</b> <ul style="list-style-type: none"> <li>• Increase average temperature in the world</li> <li>• Melting of ice in the polar</li> <li>• Sea level to rise</li> <li>• Affecting winds &amp; weather/ drought</li> <li>• Flooding</li> </ul> <b>(accept other suitable answer)</b>	Max : 2m
	<b>TOTAL</b>		<b>6</b>
9.	a.	P / Mesocarp	1
	b.	Contain vitamin A / beta carotene/ E / K	1
	c.	(i) Hydrolysis (ii) To precipitate the soap (iii) Mark (✓) – Olive oil and Cooking oil <b>[must tick both to get 1 mark]</b>	1 1 1
	d.		1
	<b>TOTAL</b>		<b>6</b>

**SECTION C [20 marks]**

No. Item	Marking Scheme	Mark								
10. a.	<b>Hypothesis :</b> The presence of light will retard the growth/reproduction of microorganisms. The growth/reproduction of bacteria is optimum in dark condition	1								
b. i.	<b>Aim of the experiment</b> To study the effect of light on the growth/reproduction of bacteria.	1								
(ii)	<b>Identification of variables</b>  Constant variable : <ul style="list-style-type: none"> <li>• Type of bacteria</li> <li>• Volume of bacteria culture</li> <li>• Volume of nutrient broth</li> <li>• Humidity/ Moisture</li> <li>• Surrounding temperature</li> </ul> Manipulated variable : intensity/ presence of light dark and light condition  Responding variable : growth of bacteria / cloudiness of nutrient broth	(Max:2)								
(iii)	<b>List of apparatus and material:</b> Nutrient broth, bacteria culture, sterilized cotton wool and test tubes	1								
(iv)	<b>Procedure</b>   <ol style="list-style-type: none"> <li>1. Three test tubes is filled with the nutrient broth and bacteria cultures.</li> <li>2. Cover each of these test tubes with sterile cotton wool plugs.</li> <li>3. The test tubes are placed in dark condition, in the lab and under sunlight.</li> <li>4. The apparatus is left for two days.</li> <li>5. The cloudiness of nutrient broth is observed and recorded.</li> </ol> Note : Accept 1 and step 2 in diagram	4								
(v)	<b>Tabulation of data</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">The intensity of light</th> <th style="width: 50%;">The cloudiness of nutrient / The growth of bacteria</th> </tr> </thead> <tbody> <tr> <td>Bright light</td> <td></td> </tr> <tr> <td>Medium</td> <td></td> </tr> <tr> <td>Dark</td> <td></td> </tr> </tbody> </table>	The intensity of light	The cloudiness of nutrient / The growth of bacteria	Bright light		Medium		Dark		1
The intensity of light	The cloudiness of nutrient / The growth of bacteria									
Bright light										
Medium										
Dark										
<b>TOTAL</b>		<b>10</b>								



No. Item	Marking Scheme	Mark						
12 (a)	<table border="1"> <thead> <tr> <th>uses</th> <th>Physical property being applied</th> </tr> </thead> <tbody> <tr> <td>In making bodies of airplanes</td> <td>Light in weight and malleable</td> </tr> <tr> <td>Electrical wires</td> <td>Can be easily bent and shaped</td> </tr> </tbody> </table> <p>(or any acceptable answer)</p>	uses	Physical property being applied	In making bodies of airplanes	Light in weight and malleable	Electrical wires	Can be easily bent and shaped	<p><b>Remark</b></p> <p>1 mark for uses (Max: 2m)</p> <p>1 mark for physical property being applied (Max: 2m)</p> <p><b>Max : 4m</b></p>
uses	Physical property being applied							
In making bodies of airplanes	Light in weight and malleable							
Electrical wires	Can be easily bent and shaped							
b. i.	<p><b>Identify two common characteristics of non metal.</b></p> <ul style="list-style-type: none"> <li>- Low melting point</li> <li>- Poor conductor of electricity</li> </ul> <p>(or any characteristic of non metal)</p>	<p>1</p> <p>1</p>						
ii	<p><b>Other example</b> : Bromine</p> <p>(or any acceptable answer)</p>	1						
iii.	<p><b>Non-example:</b> Iron</p> <p>(or any acceptable answer)</p> <p><b>Reason</b> : It is a good conductor of electricity</p> <p>(or any characteristic of metal)</p>	1						
iv.	<p><b>Explain the actual concept developed</b></p> <p>Non metal are substance that have low melting point and poor conductor of electricity.</p> <p><b>Note:</b> <i>Substance compulsory to be written</i> <i>Characteristics must be stated in b(.i)</i></p>	1						
<b>TOTAL</b>		10						