Science
Kertas 1
September
2013
1 ¼ jam

SMK KAMPUNG GELAM
MELAKA
PEPERIKSAAN PERCUBAAN SPM
TAHUN 2013

SCIENCE

Kertas 1

Satu jam lima belas minit

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** *ruang sahaja*
5. *Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*
6. *Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
7. *Satu senarai rumus disediakan di halaman 2.*
8. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*

Kertas soalan ini mengandungi 23 halaman bercetak

Rumus-rumus mungkin berfaedah:

$$\text{Tekanan} = \frac{\text{Daya}}{\text{Luas Permukaan}}$$

$$\text{Laju} = \frac{\text{Jarak}}{\text{Masa}}$$

$$\text{Momentum} = \text{Jisim} \times \text{Halaju}$$

$$\text{Ketumpatan} = \frac{\text{Jisim}}{\text{Isipadu}}$$

1. The information shows three type of neurones in the human nervous system.
Maklumat menunjukkan tiga jenis neuron dalam sistem saraf manusia.

X : Carry impulses to the effector
Membawa impuls ke efektor

Y : Connecting two neurones
Menyambungkan dua neuron

Z: Carry impulses from receptor
Membawa impuls dari reseptor

Choose the correct match for X,Y and Z.
Pilih padanan yang betul bagi X,Y dan Z

	X	Y	Z
A	Motor neurone *Neuron motor*	Sensory neurone *Neuron deria*	Relay neurone *Neuron perantaraan*
B	Relay neurone *Neuron perantaraan*	Motor neurone *Neuron motor*	Sensory neurone *Neuron deria*
C	Motor neurone *Neuron motor*	Relay neurone *Neuron perantaraan*	Sensory neurone *Neuron deria*
D	Sensory neurone *Neuron deria*	Motor neurone *Neuron motor*	Relay neurone *Neuron perantaraan*

2. Diagram 1 shows the structure of a human brain. Which of the parts **A, B, C** or **D** controls the breathing process?
*Rajah 1 menunjukkan struktur otak manusia. Antara bahagian **A, B, C** atau **D** yang manakah mengawal proses pernafasan*?

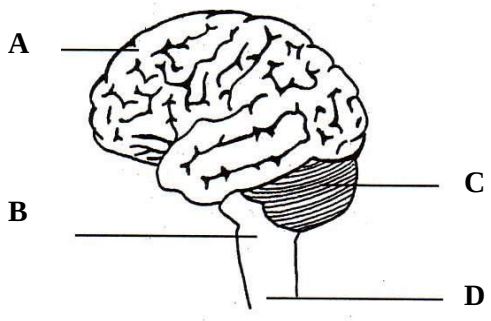


Diagram 1
Rajah1

3. The following information shows the characteristics of a human body system.
Maklumat berikut menunjukkan ciri-ciri bagi satu sistem badan manusia.

- Responses are slow
  Tindak balas adalah perlahan
- It may last for a long period
  Boleh tahan lama
- It involves the secretion of hormones
  Melibatkan rembesan hormon

Which of the following system has the above criteria?
Antara sistem berikut yang manakah mempunyai kriteria di atas?

A Blood circulation system
Sistem peredaran darah

B Respiration system
Sistem respirasi

C Endocrine system
Sistem endokrin

D Nervous system
Sistem saraf

4. Diagram 2 shows a stage of meiosis.
Rajah 2 menunjukkan satu peringkat meiosis.

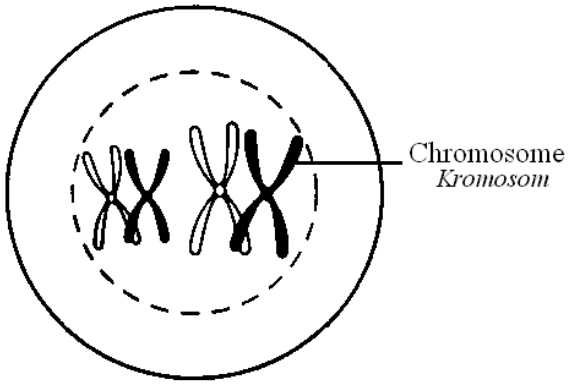


Diagram 2
Rajah 2

What is the process shown in Diagram 2?
Apakah proses yang ditunjukkan dalam Rajah 2?

A Replication
Replikasi

B Fertilisation
Persenyawaan

C Crossing-over
Pindah silang

D Mutation
Mutasi

5. Diagram 3 shows the chromosomes found in a baby skin cells.
Rajah 3 menunjukkan kromosom yang terdapat dalam sel kulit seorang bayi.

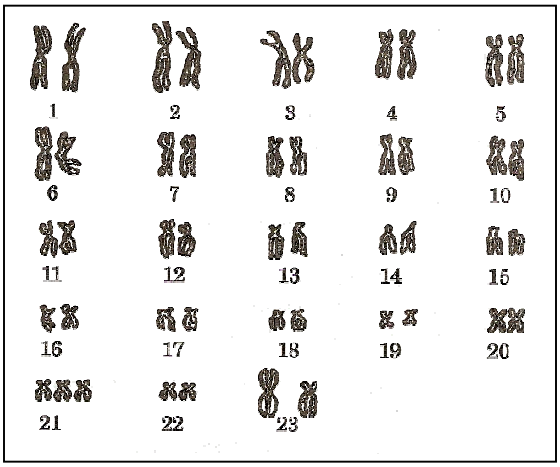


Diagram 3
Rajah 3

Which of the following genetic diseases is the baby suffering from?
Antara berikut manakah penyakit genetik yang dihidapi oleh bayi tersebut?

A Albinism *Albino* **B** Colour blindness *Buta warna* **C** Turner's syndrome *Sindrom Turner* **D** Down's syndrome *Sindrom Down*

6. Diagram 4 shows a graph of variation among the pupils in a class.
Rajah 4 menunjukkan graf satu variasi di antara pelajar-pelajar dalam sebuah kelas.

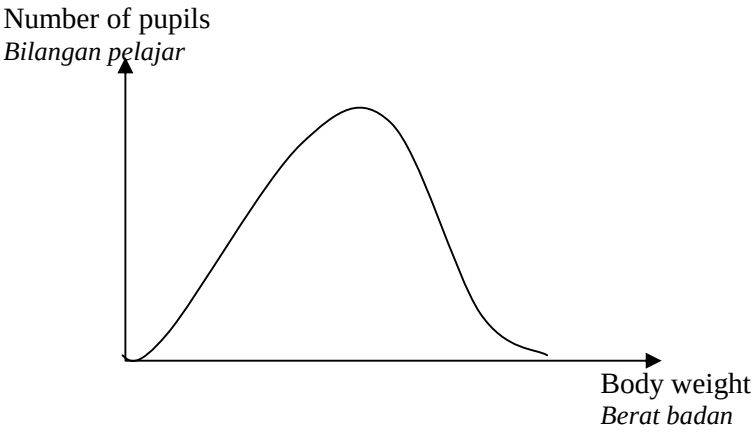
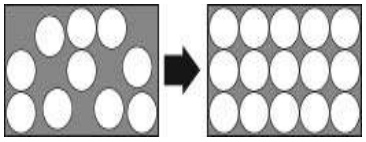


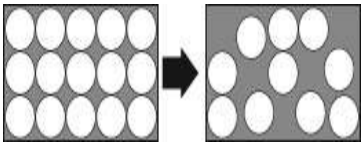
Diagram 4
Rajah 4

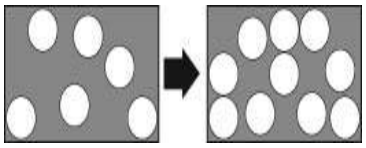
Which of the following is the example of the same type of the variation ?
Manakah antara berikut adalah contoh variasi yang sama ?

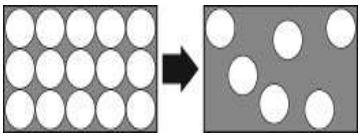
A Ability to roll tongue *Kebolehan menggulung lidah* **B** Type of thumb prints *Jenis cap ibu jari* **C** Blood group *Kumpulan darah* **D** Height *Ketinggian*

7. Which of the following represents the change in the arrangement of dry ice particles when heated?
Manakah di antara berikut menunjukkan perubahan susunan zarah-zarah apabila ais kering dipanaskan

A. 

C. 

B. 

D. 

8. Diagram 5 shows the atomic structure of atom P and Q.
Rajah 5 menunjukkan struktur atom bagi atom P and Q.

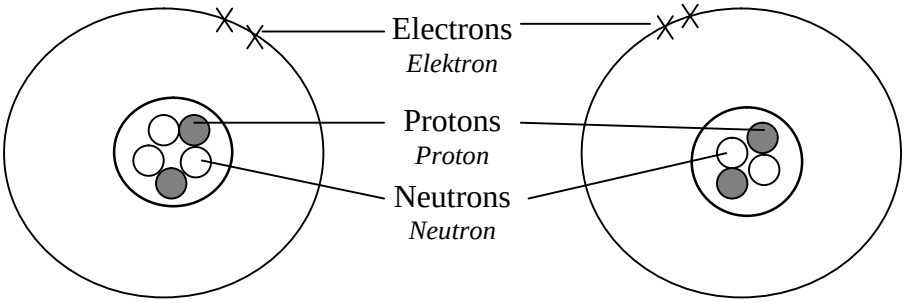


Diagram 5
Rajah 5

What is the difference between atoms P and Q?
Apakah perbezaan antara atom P dan Q?

A. The number of electron
Bilangan elektron

C. The proton number
Nombor proton

B. The number of proton
Bilangan proton

D. The nucleon number
Nombor nukleon

9. The following information shows the physical properties of substance Q.
Maklumat berikut menunjukkan ciri fizik bahan Q.

- Has high tensile strength
  Mempunyai kekuatan regangan yang tinggi
- Malleable
  Mudah ditempa
- Has high melting point
  Mempunyai takat lebur yang tinggi

What is substance Q?
Apakah bahan Q?

A. Iron *Besi*
B. Carbon *Karbon*
C. Sulphur *Sulfur*
D. Chlorine *Klorin*

10. Which of the following substances are classified as molecular substances?
Antara bahan berikut, manakah diklasifikasikan sebagai bahan molekul?

A. Iron and carbon
Besi dan karbon

B Carbon and copper
Karbon dan kuprum

C Ammonia and oxygen
Ammonia dan oksigen

D Sodium chloride and ammonia
Natrium klorida dan ammonia

11. Which of the following is a chemical change?
Manakah di antara berikut adalah perubahan kimia?

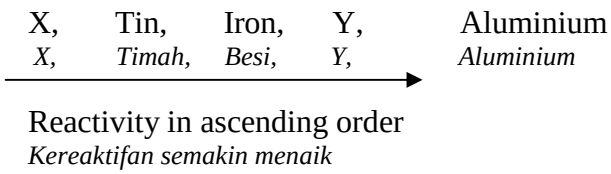
A. Burning of magnesium ribbon
Pembakaran pita magnesium

B. Condensation of steam
Kondensasi wap air

C. Evaporation of water
Penyejatan air

D. Sublimation of ammonium salt
Pemejalwapan garam ammonia

12. The flow chart shows reactivity of metal.
Carta alir menunjukkan siri keaktifan logam.



What do X and Y represent in the reactivity series of metals above?
Apakah yang diwakili oleh X dan Y dalam siri keaktifan logam di atas?

	X	**Y**
A	Copper *Kuprum*	Magnesium *Magnesium*
B	Zinc *Zink*	Lead *Plumbum*
C	Lead *Plumbum*	Zinc *Zink*
D	Magnesium *Magnesium*	Zinc *Zink*

13. The reactions below involve metals P, Q, R and their oxides.
Tindakbalas di bawah melibatkan logam P,Q, R dan oksidanya.

P + Q oxide → Q + P oxide
P + Oksida Q → Q + Oksida P

P + R oxide → R + P oxide
P + Oksida Q → Q + Oksida P

Q + R oxide → No reaction
Q + Oksida R → Tidak ada tindakbalas.

Arrange the metals P, Q and R in increasing order of reactivity.
Susun logam-logam tersebut mengikut kereaktifan meningkat.

A. R, Q, P B. P, Q, R C. Q, P, R D. Q, R, P

14. Diagram 6 shows an electrolytic cell.
Rajah 6 menunjukkan sel elektrolisis.

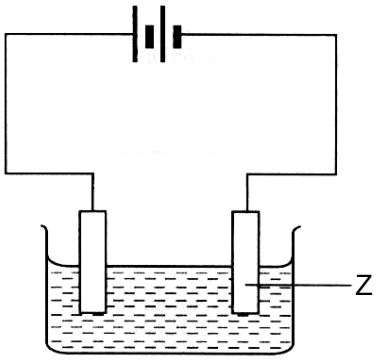


Diagram 6
Rajah 6

What is Z?
Apakah Z?

A. Anion *Anion*
B. Anode *Anod*
C. Cation *Kation*
D. Cathode *Katod*

15. What is the source of energy used in the nuclear reactor?
Apakah sumber tenaga yang digunakan dalam reaktor nuklear?

A. Plutonium *Plutonium*
B. Strontium *Strontium*
C. Barium *Barium*
D. Uranium *Uranium*

16. Which of the statements below is true about carbon-12 and carbon-14?
Manakah di antara pernyataan berikut adalah benar mengenai karbon-12 dan karbon – 14?

A. Carbon-12 is radioactive substance whereas carbon-14 is not radioactive substance.
Karbon-12 adalah bahan radioaktif manakala karbon-14 adalah bahan bukan radioaktif

B. Carbon-12 is not radioactive substance whereas carbon-14 is radioactive substance.
Karbon-12 adalah bahan bukan radioaktif manakala karbon-14 adalah bahan radioaktif

C. Both elements are radioactive substance.
Kedua-dua unsur adalah bahan radioaktif

D. Both elements are not radioactive substance.
Kedua-dua unsur adalah bukan bahan radioaktif.

17. Diagram 7 shows the formation of image by a convex lens.
Rajah 7 menunjukkan pembentukan imej oleh kanta cembung.

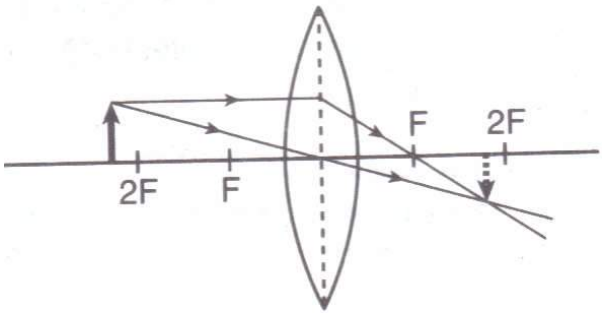


Diagram 7
Rajah 7

Which optical instrument uses the principle shown in the ray diagram?
Manakah alat optik berikut menggunakan prinsip seperti yang ditunjukkan dalam rajah sinar?

A. Camera *Kamera*
B. Periscope *Periskop*
C. Telescope *Teleskop*
D. Magnifying glass *Kanta pembesar*

18. Diagram 8 shows an experiment to study the properties of white light.
Rajah 8 menunjukkan satu eksperimen untuk mengkaji sifat cahaya putih

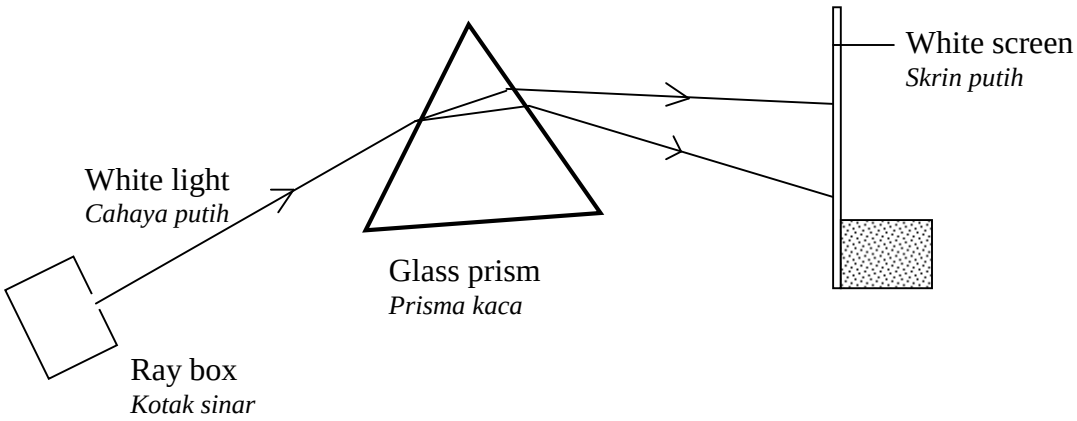


Diagram 8
Rajah 8

What is the process?
Apakah proses tersebut?

A. Reflection of light
Pantulan cahaya

B. Dispersion of light
Penyebaran cahaya

C. Scattering of light
Penyerakan cahaya

D. Addition of light
Penambahan cahaya

19. Diagram 9 shows the overlapping of three coloured lights.
Rajah 9 menunjukkan pertindihan tiga warna cahaya.

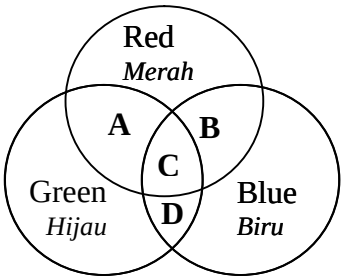


Diagram 9
Rajah 9

Which of the area A, B, C and D is yellow light?
Antara kawasan A, B, C dan D yang manakah cahaya kuning?

20. The word equation below shows the reaction to produce a type of fertilizer.
Persamaan perkataan di bawah menunjukkan tindak balas untuk menghasilkan sejenis baja.

Ammonia + sulphuric acid → Fertilizer X
Ammonia *Asid sulfurik* *Baja X*

What is fertilizer X?
Apakah baja X?

A. Ammonium nitrate
Ammonium nitrat

B. Ammonium sulphate
Ammonium sulfat

C. Ammonium chloride
Ammonium klorida

D. Ammonium carbonate
Ammonium karbonat

21. Diagram 10 shows a type of alloy.
Rajah 10 menunjukkan sejenis aloi.

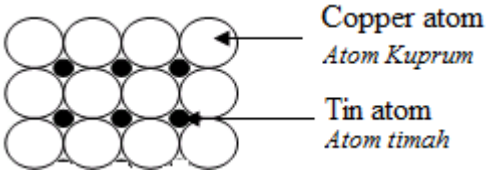


Diagram 10
Rajah 10

Which of following is the alloy?
Antara berikut, apakah aloi tersebut?

A. Brass
Loyang

B. Bronze
Gangsa

C. Pewter
Piuter

D. Steel
Keluli

22 What is the effect caused by lead?
Apakah kesan yang disebabkan oleh plumbum?

A Asid rain
Hujan asid

B Green house effect
Kesan rumah hijau

C Retards brain development
Merencatkan perkambangan otak

D Decreases the acidity of the soil
Mengurangkan keasidan tanah

23. Diagram 11 shows the classification of microorganisms.
Rajah 11 menujukkan pengelasan mikroorganisma.

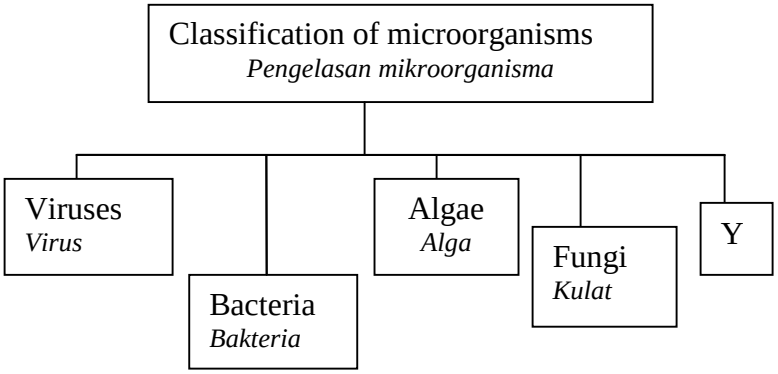


Diagram 11
Rajah 11

Which of the following represents Y?
Apakah yang mewakili Y?

A. Mucor
Mukor

B. Bacillus
Basillus

C. Amoeba
Ameba

D. Spirogyra
Spirogyra

24. Diagram 12 shows a type of microorganism.
Rajah 12 menunjukkan sejenis mikroorganisma.

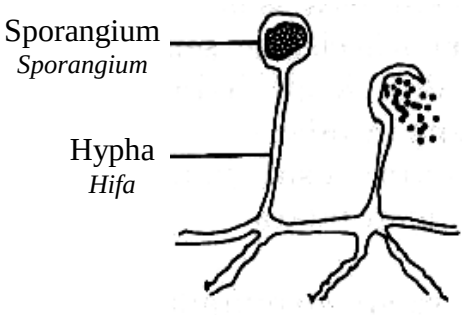


Diagram 12
Rajah 12

What is the method of reproduction of this microorganism?
Apakah kaedah pembiakan mikroorganisma tersebut?

A. Budding *Pertunasan* B. Conjugation *Konjugasi* **C.** Binary fission *Belahan dedua* **D.** Spore formation *Pembentukan spora*

25. Diagram 13 shows the roots of leguminous plant.
Rajah 13 menunjukkan akar suatu tumbuhan kekacang.

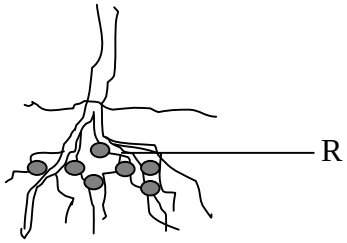


Diagram 13
Rajah 13

What is the function of the bacteria that live in structure R?
Apakah fungsi bakteria yang tinggal di dalam struktur R?

A To synthesise protein from nitrate
Mensintesiskan protein daripada nitrat

B To increase the nitrate content in soil
Meningkatkan kandungan nitrat dalam tanah

C To increase ammonium compound in soil
Meningkatkan sebatian ammonia dalam tanah

D To increase the nitrogen content in the atmosphere
Meningkatkan kandungan nitrogen dalam atmosfera

26. A girl and her family suffer from food poisoning. Which of the following can spread this disease?
Seorang budak perempuan dan keluarganya mengalami keracunan makanan. Antara berikut , yang manakah boleh menyebarkan penyakit ini?

A. Through mosquito bites
Melalui gigitan nyamuk

C. Sharing the personal items
Perkongsian barangan peribadi

B. Breathing in polluted air
Bernafas dalam udara tercemar

D. Through flies contact on food
Melalui hinggapan lalat pada makanan

27. The following information shows the substances used in the treatment of disease caused by pathogen.
Maklumat berikut menunjukkan bahan-bahan yang digunakan dalam rawatan penyakit yang disebabkan oleh patogen.

- Penicillin
  Penisilin
- Tetracycline
  Tetrasiklin
- Streptomycin
  Streptomisin

What is the name of that substance?
Apakah nama bahan tersebut?

A. Vaccine
Vaksin

B. Antibiotic
Antibiotik

C. Antiseptic
Antiseptik

D. Antiserum
Antiserum

28. Table 1 shows the calorific value of different types of food.
Jadual 1 menunjukkan nilai kalori bagi jenis makanan yang berbeza.

Food *[Makanan]*	Calorific value/kJ per 100 g *[Nilai kalori/kJ per 100 g]*
Egg *Telur*	665
Lamb *Daging biri-biri*	827
Chicken *Ayam*	643
Fish *Ikan*	433

Table 1
Jadual 1

Which food contributes the highest calorific value?
Makanan yang manakah menyumbang nilai kalori paling tinggi?

A. 100 g of lamb
100g daging biri-biri

B. 150 g of chicken
150 g ayam

C. 200 g of eggs
200 g telur

D. 250 g of fish
250 g ikan

29 Table 2 shows the total energy required by men of different occupations.
Jadual 2 menunjukkan jumlah tenaga yang diperlukan oleh lelaki yang berlainan pekerjaan.

Type of occupation *Jenis pekerjaan*	Total energy (kJ) *Jumlah tenaga (kJ)*
P	8,000
Q	10,000
R	12,000
S	20,000

Table 2
Jadual 2

Which occupation represents S?
Manakah mewakili pekerjaan S?

A. Doctor *Doktor* B. Labourer *Buruh* C. Clerk *Kerani* D. Manager *Pengurus*

30. Which of the following class of food provides us with energy to carry out daily physical activities?
Manakah di antara kelas makanan berikut membekalkan kita tenaga bagi menjalankan aktiviti fizikal ?

A. Protein *Protein* B. Mineral *Mineral* C. Vitamin *Vitamin* D. Carbohydrate *Karbohidrat*

31. Diagram 14 shows a Nitrogen Cycle.
Rajah 14 menunjukkan kitar nitrogen.

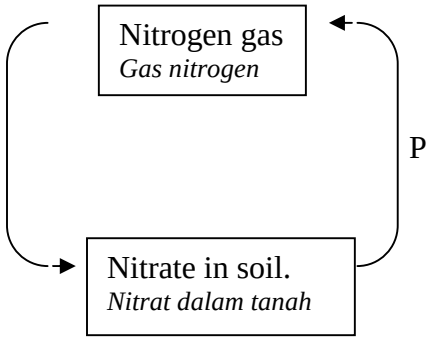


Diagram 14
Rajah 14

Which of the following causes the change at P?
Manakah antara berikut adalah penyebab perubahan di P?

A Nitrifying bacteria
Bakteria penitritan

C. Nitrogen fixing bacteria
Bakteria pengikat nitrogen

B Denitrifying bacteria
Bakteria pendenitritan

D. Decomposing bacteria
Bakteria pereputan

32. Diagram 15 shows a food web.
Rajah 15 menunjukkan siratan makanan.

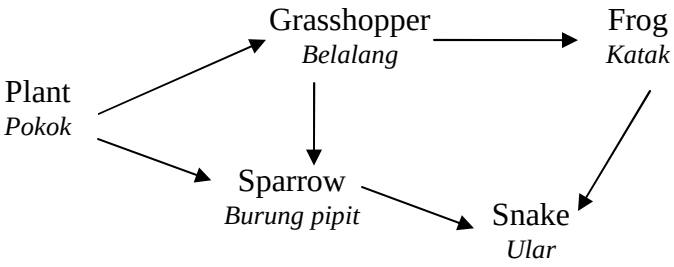


Diagram 15
Rajah 15

Which of the following is a primary and also a secondary consumer?
Antara berikut, yang manakah merupakan pengguna primer dan juga pengguna sekunder?

A. Frog *Katak*
B. Snake *Ular*
C. Sparrow *Burung pipit*
D. Grasshopper *Belalang*

33. The diagram 16 shows a type of phenomenon.
Rajah 16 menunjukkan satu fenomena.

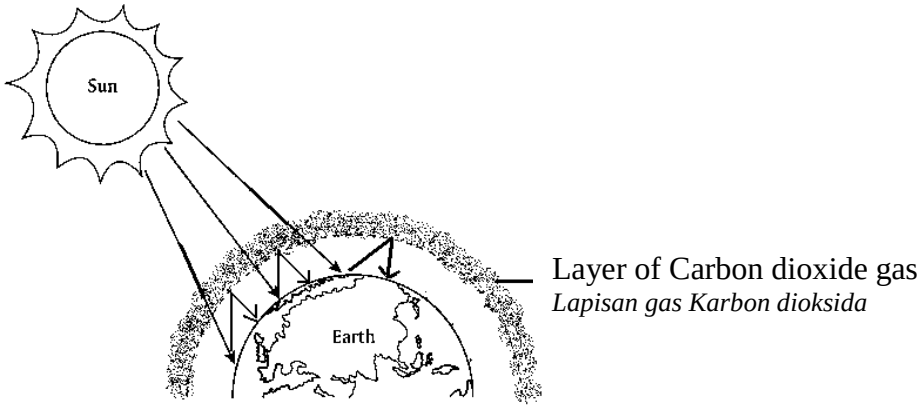


Diagram 16
Rajah 16

Which of the following method can overcome this problem?
Antara berikut, cara yang manakah boleh mengatasi masalah ini?

A. Fixing air filtration systems
Memasang sistem penapis udara

B. Planting more green plants
Menanam lebih banyak tumbuhan hijau

C. Fixing electrostatic precipitators in chimneys of factory
Memasang pemendak electrostatik pada cerobong asap kilang

D. Fixing catalytic converters on all exhaust pipes of vehicle
Memasang pengubah pemangkin pada salur ekzos kenderaan

34. Which of the following contains chlorofluorocarbon (CFC)?
Antara berikut, yang manakah mengandungi klorofluorokarbon (CFC)?

A Fertiliser
Baja

B Animal sewage
Kumbahan haiwan

C Radioactive waste
Sisa radioaktif

D Coolant in refrigerators
Penyejuk dalam peti ais

35. Which of the following describes the preservation of the environment?
Antara berikut, yang manakah menerangkan tentang pemeliharaan alam sekitar?

A Replanting green plant
Menanam semula tumbuhan hijau

B Using chemical fertisers in agricultural activities
Menggunakan baja kimia dalam aktiviti pertanian

C Using natural resources wisely to reduce wastage
Menggunakan sumber semula jadi dengan bijak untuk mengurangkan pembaziran

D Using natural resources for all kinds of development
Menggunakan sumber semula jadi untuk semua jenis pembangunan.

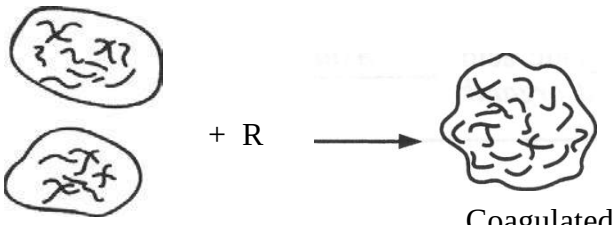
36. The following word equation shows a chemical process.
Persamaan perkataan berikut menunjukkan suatu proses kimia.

$$\text{Glucose } \textit{Glukosa} \xrightarrow[\textit{Yis}]{\text{Yeast}} \text{X} + \text{Carbon dioxide } \textit{Karbon dioksida}$$

What is X?
Apakah X?

A. Urea *Urea*
B. Ethanol *Etanol*
C. Ester *Ester*
D. Ammonia *Ammonia*

37. Diagram 17 shows the action of substance R on latex.
Rajah 17 menunjukkan tindakan bahan R ke atas lateks.



Latex
Lateks

Coagulated latex
Gumpalan lateks

Diagram 17
Rajah 17

What is R?
Apakah R?

A Ethanoic acid
Asid etanoik

B Distilled water
Air suling

C Sodium chloride
Natrium klorida

D Ammonia solution
Larutan ammonia

38. Diagram 18 shows a structure of a soap molecule.
Rajah 18 menunjukkan struktur satu molekul sabun.

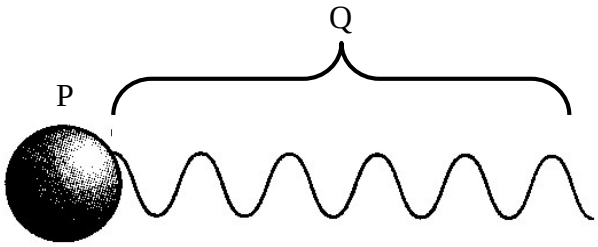


Diagram 18
Rajah 18

Which of the following about P and Q are true?
Antara yang berikut, manakah yang benar mengenai P dan Q?

	P	Q
A	Hydrophilic *Hidrofilik*	Hydrophobic *Hidrofobik*
B	Hydrophobic *Hidrofobik*	Hydrophilic *Hidrofilik*
C	Hydrophobic *Hidrofobik*	Hydrocarbon tail *Ekor hidrokarbon*
D	Ionic head *Kepala ionik*	Hydrophilic *Hidrofilik*

39. Diagram 19 shows a ticker tape for a moving trolley.
Rajah 19 menunjukkan keratan pita detik bagi gerakan troli.

.

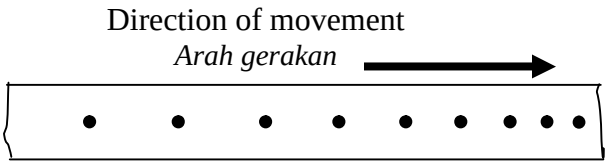


Diagram 19
Rajah 19

Which of the following describe the movement of the trolley?
Antara berikut, yang manakah menerangkan pergerakan troli itu?

A Acceleration
Pecutan

B Deceleration
Nyahpecutan

C Zero velocity
Halaju sifar

D Uniform velocity
Halaju seragam

40. A car accelerates from its stationary state and reaches a velocity of 80 ms^{-1} in 10 seconds.
Sebuah kereta memecut dari keadaan rehat dan mencapai halaju 80 ms^{-1} selepas 10 saat.

$$\text{Acceleration / } \textit{Pecutan} = \frac{\text{Final velocity / } \textit{Halaju akhir} - \text{Initial velocity / } \textit{Halaju awal}}{\text{Time / } \textit{Masa}}$$

What is its acceleration?
Berapakah pecutannya?

A 0 .8 ms^{-2} **B** 8.0 ms^{-2} **C** 10 ms^{-2} **D** 80 ms^{-2}

41. The passengers in a bus being jerked forward when the bus stops suddenly.
Penumpang-penumpang sebuah bas tersentak ke hadapan apabila bas itu berhenti secara tiba-tiba.

Which of the following causes that situation?
Antara yang berikut, yang manakah menyebabkan keadaan itu berlaku?

A Force
Daya

B Inertia
Inersia

C Pressure
Tekanan

D Momentum
Momentum

42. Which of the following sequences is correct for the four stroke petrol engine?
Antara urutan berikut, yang manakah betul bagi enjin petrol empat lejang?

A Intake stroke → Compression stroke → Exhaust stroke → Power stroke
Lejang pengambilan → Lejang mampatan → Lejang ekzos → Lejang kuasa

B Intake stroke → Powe stroke → Compression stroke → Exhaust stroke
Lejang pengambilan → Lejang kuasa → Lejang mampatan → Lejang ekzos

C Power stroke → Compression stroke → Intake stroke → Exhaust stroke
Lejang Kuasa → Lejang mampatan → Lejang pengambilan → Lejang ekzos

D Intake stroke → Compression stroke → Power stroke → Exhaust stroke
Lejang pengambilan → Lejang mampatan → Lejang kuasa → Lejang ekzos

43. Diagram 20 shows a stone weighed in the air and then in water.
Rajah 20 menunjukkan seketul batu ditimbang di dalam udara dan kemudian di dalam air.

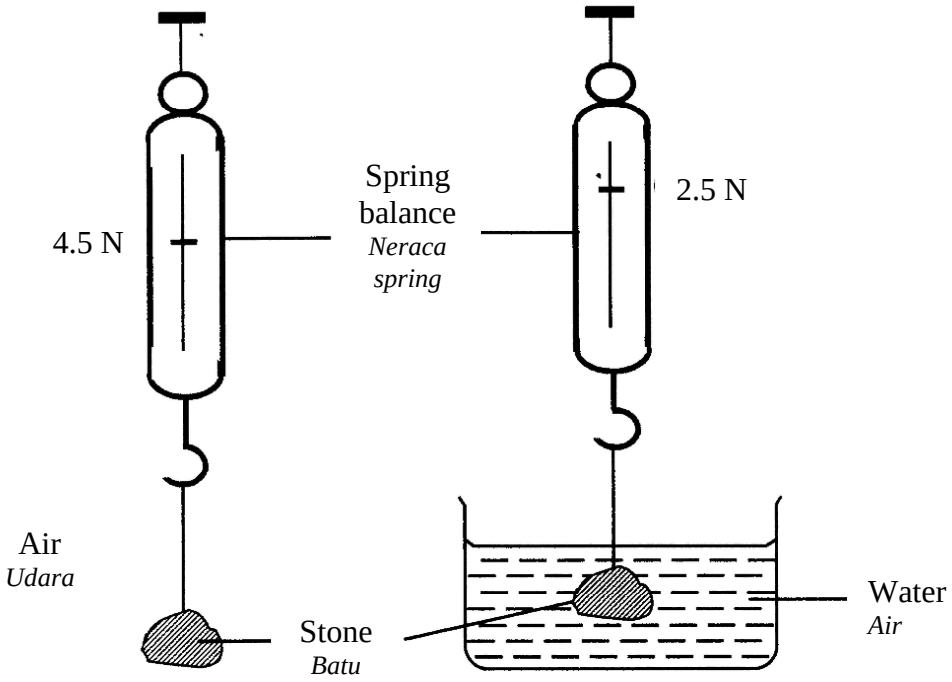


Diagram 20
Rajah 20

What is the upthrust experienced by the stone?
Berapakah tujah ke atas yang dialami oleh batu tersebut?

A 2.0 N **B** 2.5 N **C** 4.5 N **D** 6.5 N

44. Diagram 21 shows a popular drink among children.
Rajah 21 menunjukkan sejenis minuman yang popular dalam kalangan kanak-kanak.

Diagram 21
Rajah 21

Which method is the most suitable to preserve the drink?
Kaedah yang manakah paling sesuai untuk mengawet minuman itu?

A. Freezing
Penyejukbekuan

B. Pasteurization
Pempasteuran

C. Dehydration
Pendehidratan

D. Vacuum packaging
Pembungkusan vakum

45. Which of the following substances is used to make food looks clean?
Antara bahan berikut, yang manakah digunakan untuk membuat makanan kelihatan bersih?

A. Bleach
Peluntur

B. Stabilizer
Penstabil

C. Colouring
Pewarna

D. Flavouring
Bahan perisa

46. Diagram 22 shows an information about a classification of plastic.
Rajah 22 menunjukkan maklumat tentang pengelasan plastik.

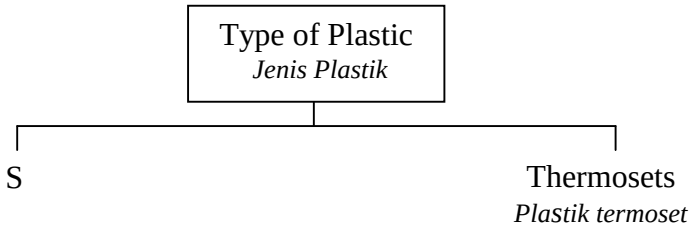


Diagram 22
Rajah 22

What is the property of plastic S?
Apakah ciri plastik jenis S ?

A. More heat-resistant
Lebih tahan haba

C. Can be moulded only once
Dapat diacu sekali sahaja

B. Does not bend easily
Tidak boleh dibengkok dengan mudah

D. Can be dissolve in organic solvents
Boleh larut dalam pelarut organik

47. Diagram 23 shows form of wave.
Rajah 23 menunjukkan suatu bentuk gelombang.

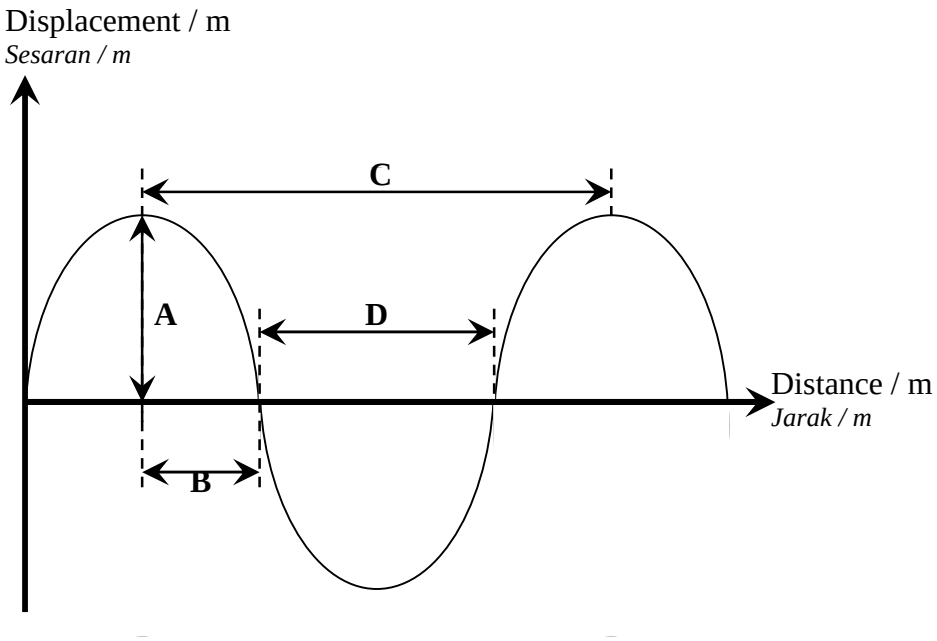


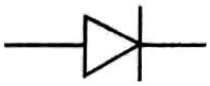
Diagram 23
Rajah 23

Which of the following A, B, C and D represent the wave length?
Antara A, B, C dan D, yang manakah mewakili jarak gelombang?

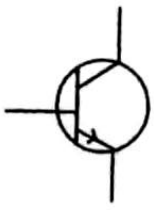
48. Which of the electronic components **A**, **B**, **C** or **D** is allow current to flow in one direction only?
*Antara komponen elektronik **A, B, C** dan **D** yang manakah membenarkan arus mengalir sehala sahaja?*

A

B



C



D

49. Which of the following is used to convert sound waves to electrical signals?
Antara yang berikut, yang manakah digunakan untuk menukarkan gelombang bunyi kepada isyarat elektrik?

A Modulator
Modulator

B Microphone
Mikrofon

C Turner circuit
Litar penala

D Detector circuit
Litar pengesan

50. Diagram 24 shows a type of communication system.
Rajah 24 menunjukkan sejenis sistem komunikasi.

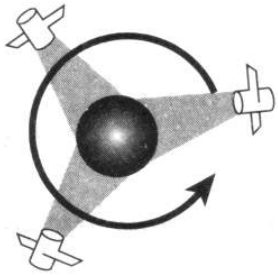


Diagram 24
Rajah 24

For global communication, what is the minimum number of space satellites is needed?
Untuk komunikasi global, berapakah bilangan minimum satelit angkasa yang diperlukan?

A Two
Dua

B Three
Tiga

C Four
Empat

D *Five*
Lima

END OF QUESTION PAPER

SKEMA PEPERIKSAAN PERCUBAAN SCIENCE
TINGKATAN LIMA TAHUN 2013

PAPER 1

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

1511/2
Science
Kertas 2
September
2 ½ jam

Nama

Tingkatan

SMK KAMPUNG GELAM MELAKA

PEPERIKSAAN PERCUBAAN SPM

TAHUN 2013

SCIENCE

Kertas 2

Dua jam tiga puluh minit

1. *Tuliskan nama dan tingkatan anda pada ruangan yang disediakan di bahagian atas muka surat ini*.
2. *Kertas soalan ini mengandungi tiga bahagian:* **Bahagian A**, **Bahagian B** *dan* **Bahagian C**.
3. *Jawab* **semua** *soalan dalam* **Bahagian A** *dan* **Bahagian B**. *Bagi* **Bahagian C**, *jawab* **Soalan 10** *dan mana-mana* **satu** *daripada* **Soalan 11** *atau* **Soalan 12**.
4. *Jawapan hendaklah ditulis dengan jelas dalam ruangan yang disediakan dalam kertas soalan*.
5. *Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.*
6. *Markah yang diperuntukkan bagi setiap ceraian soalan ditunjukkan dalam kurungan [ ].*
7. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*
8. *Kertas soalan ini hendaklah diserahkan di akhir peperiksaan*.

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

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of three sections:**Section A, Section B** and **Section C.**
   Kertas soalan ini mengandungi tiga bahagian: **Bahagian A, Bahagian B** dan **Bahagian C.**

2. Answer **all** questions in **Section A** and **Section B.**
   Write your answers for **Section A** and **Section B** in the spaces provided on the question paper.
   Jawab ***semua*** *soalan dalam* ***Bahagian A*** *dan* ***Bahagian B****.*
   Tuliskan jawapan bagi ***Bahagian A*** *dan* ***Bahagian B*** *dalam ruangan yang disediakan pada kertas soalan.*

3. For **Section C,** answer **Question 10** and choose another question from **Question 11** *or* **Question 12.**
   You may use equations, diagrams, tables, graphs and other suitable methods to explain your answers.
   Bagi ***Bahagian C****, jawab* ***Soalan 10*** *dan pilih mana-mana* ***satu*** *soalan daripada* ***Soalan 11*** *dan* ***Soalan 12.***
   Anda boleh menggunakan persamaan, gambar rajah, jadual, graf dan cara lain yang sesuai untuk menjelaskan jawapan anda.

4. The diagrams in the questions are not drawn to scale unless stated.
   Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.

5. The marks allocated for each sub-part of a question are shown in brackets.
   Markah yang diperuntukan bagi setiap ceraian soalan ditunjukkan dalam kurungan.

6. If you wish to change your answer, neatly cross out the answer that you have done. Then write down the new answer.
   Sekiranya anda hendak menukarkan jawapan, batalkan dengan kemas jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.

7. You may use a non-programmable scientific calculator.
   Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

8. The time suggested to answer **Section A** is 60 minutes, **Section B** is 50 minutes and **Section C** is 40 minutes.
   Masa yang dicadangkan untuk menjawab ***Bahagian A*** *ialah* ***60*** *minit,* ***Bahagian B*** *ialah 50 minit dan* ***Bahagian C*** *ialah* ***40*** *minit.*

9. Hand in this question paper at the end of the examination.
   Serahkan kertas soalan ini di akhir peperiksaan.

Section A
Bahagian A

[20 marks]
[20 markah]

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

The time suggested to answer this section is 60 minutes
Masa yang dicadangkan untuk menjawab bahagian ini ialah 60 minit

1. Diagram 1 shows the arrangement of apparatus to study the electrical conductivity of different substances.
Rajah 1 menunjukkan susunan radas untuk mengkaji kekonduksian elektrik beberapa bahan.

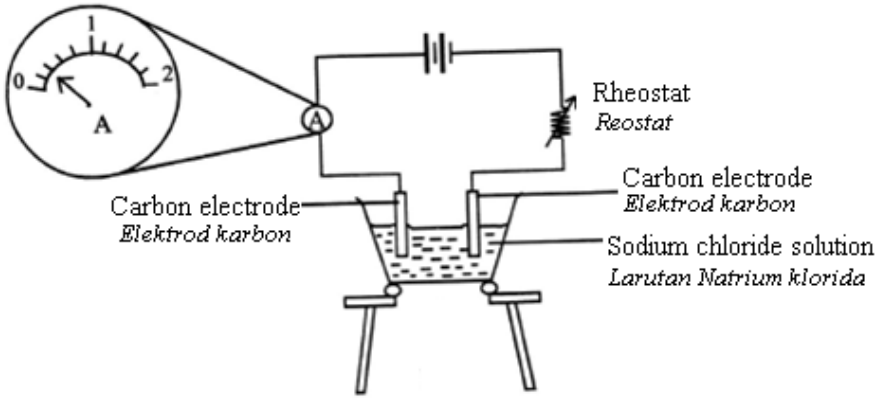


Diagram 1
Rajah 1

The experiment is repeated using different substances. The readings of the ammeter are recorded as shown in Table 1.
Eksperimen ini diulang dengan menggunakan bahan yang berbeza. Bacaan ammeter direkodkan seperti yang ditunjukkan dalam Jadual 1

Substance *Bahan*	Reading of the ammeter (A) *Bacaan ammeter* (A)
Kerosene *Minyak tanah*	0.0
Sodium chloride *Natrium klorida*	

Table 1
Jadual 1

(a) Record the reading of ammeter for sodium chloride solution in Table 1.
Rekodkan bacaan ammeter bagi larutan natrium klorida dalam Jadual 1. [1 mark]
[1 markah]

(b) State the variables in this experiment.
Nyatakan pembolehubah dalam eksperimen ini.

(i) Manipulated variable
Pembolehubah yang dimanipulasi

_____

(ii) Responding variable
Pembolehubah yang bergerakbalas

_____

[2 marks]
[2 markah]

(c) Predict the reading of the ammeter if sugar solution is used.
Ramalkan bacaan ammeter sekiranya larutan gula digunakan.

_____

[1 mark]
[1 markah]

(d) State the operational definition for electrical conductivity.
Nyatakan definisi secara operasi bagi kekonduksian elektrik.

_____

_____

[1 mark]
[1 markah]

2. Diagram 2 shows the apparatus set up of an experiment. The white screen is adjusted to form a sharp image on the screen.
Rajah 2 menunjukkan susunan radas untuk suatu eksperimen. Skrin putih dilaraskan supaya satu imej yang tajam terbentuk pada skrin.

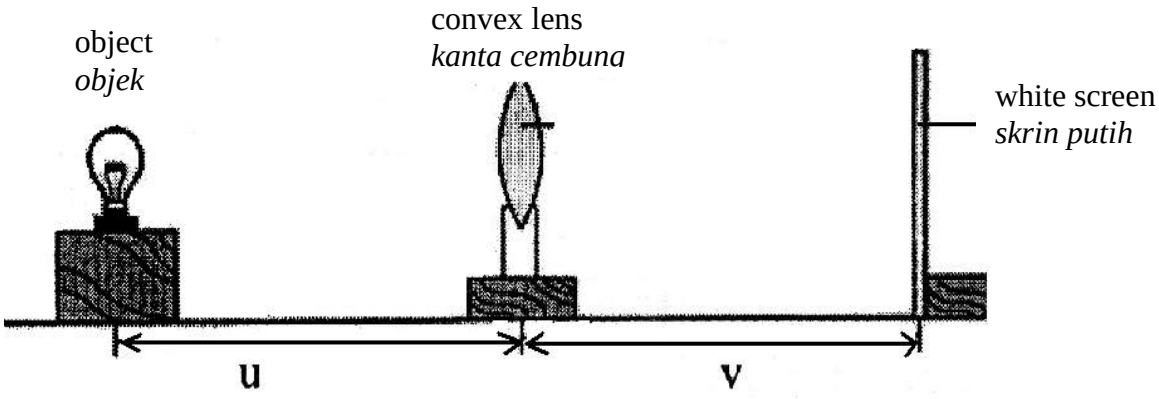


Diagram 2
Rajah 2

Table 2 shows the result of the experiment.
Jadual 2 menunjukkan keputusan eksperimen.

Table 2
Jadual 2

Object distance, u (cm) *Jarak objek, u (cm)*	10	20	30	40
Image distance, v (cm) *Jarak imej, v (cm)*	34	31	28	25

(a) Suggest a hypothesis for this experiment.
Cadangkan satu hipotesis untuk eksperimen ini.

_____

_____

[1 mark]
[1 markah]

(b) State the variables in this experiment.
Nyatakan pembolehubah dalam eksperimen ini.

(i) Manipulated variable
Pembolehubah yang dimanipulasi

_____

(ii) Responding variable
Pembolehubah yang bergerakbalas

_____

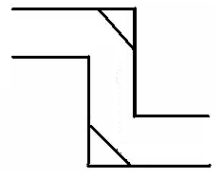
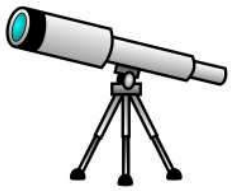
[2 marks]
[2 markah]

(c) State **one** characteristic of the image formed.
*Nyatakan **satu** ciri bagi imej yang terbentuk.*

_____

[1 mark]
[1 markah]

(d) Mark (√) in the boxes provided to show the object that uses convex lens.
Tandakan (√) dalam petak yang disediakan bagi menunjukkan objek yang menggunakan kanta cembung

[1 mark]
[1 *markah*]

3. Diagram 3 shows the set up of the apparatus to investigate the purification of copper using electrolysis. Copper which is deposited on one of the electrodes is weighed.
Rajah 3 menunjukkan susunan radas untuk mengkaji penulenan kuprum dengan menggunakan elektrolisis. Kuprum yang terenap pada salah satu elektrod ditimbang.

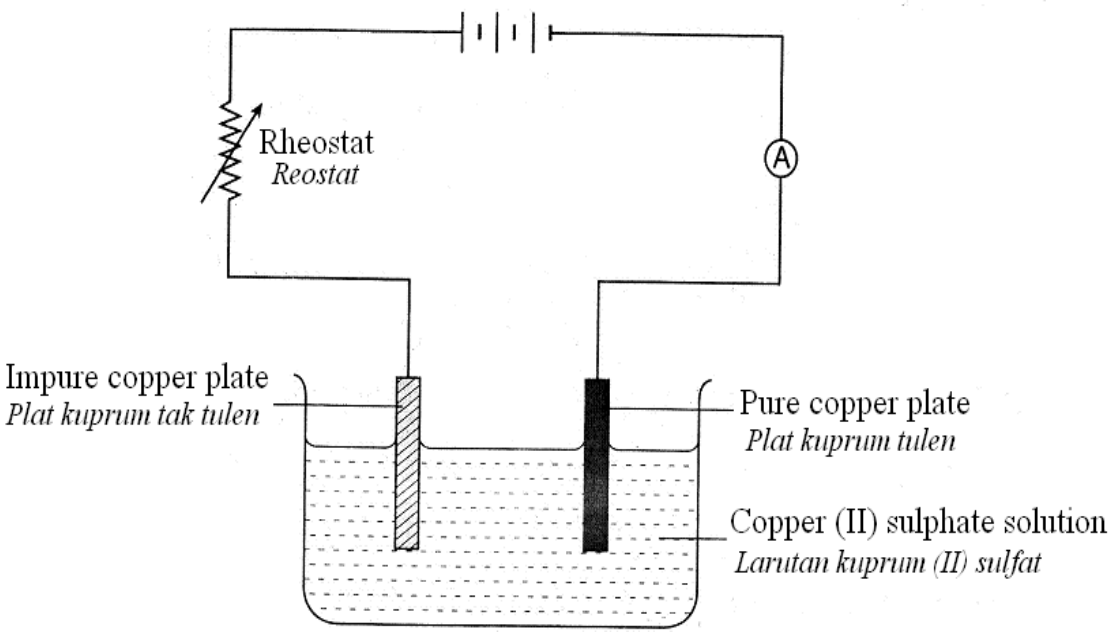


Diagram 3
Rajah 3

Table 3 shows the mass of copper deposited when 0.5 A is used.
Jadual 3 menunjukkan jisim kuprum yang terenap apabila arus 0.5 A digunakan.

Time (minutes) *Masa (minit)*	Mass of copper deposited (g) *Jisim kuprum terenap (g)*
2	0.3
4	0.6
6	0.9
8	1.2
10	
12	1.8

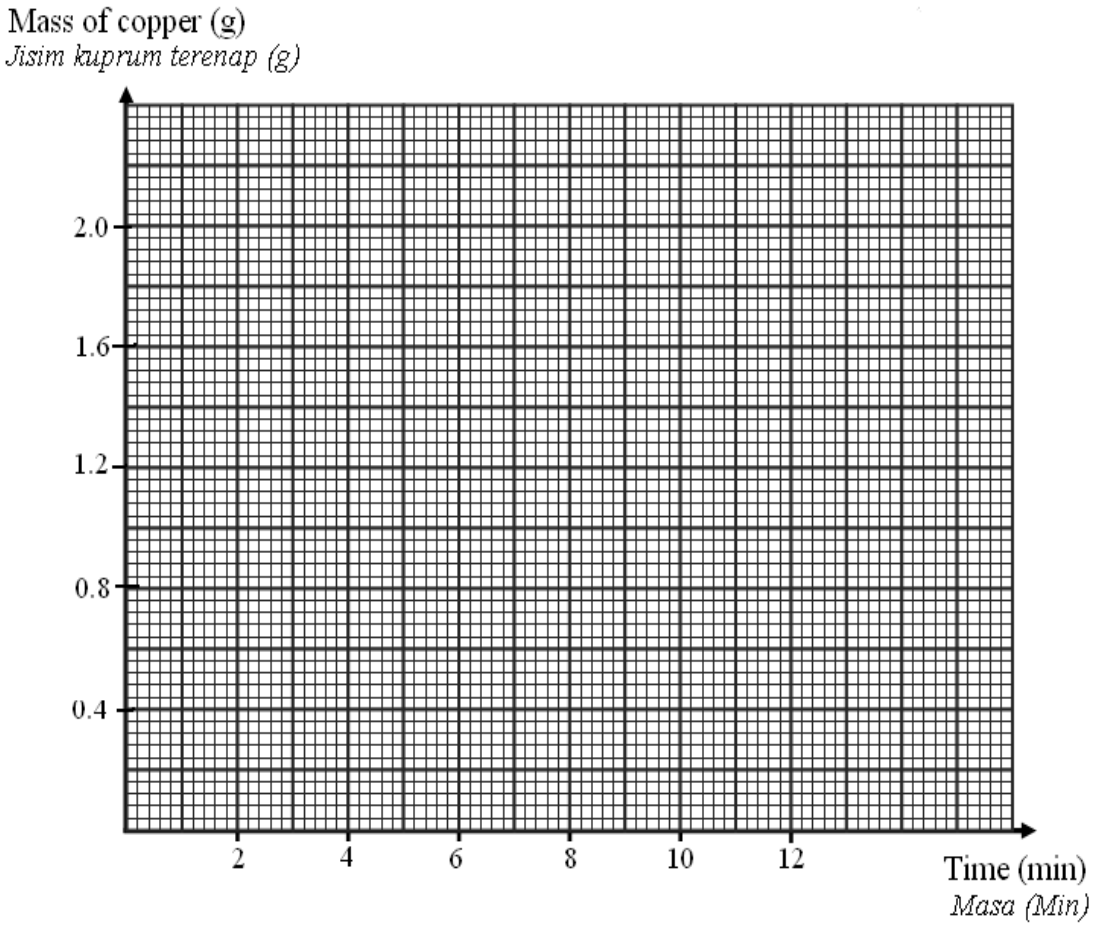
Table 3
Jadual 3

(a) State the constant variable in this experiment.
Nyatakan pembolehubah yang dimalarkan dalam eksperimen ini.

_____

[1 mark]
[1 markah]

(b) Based on Table 3, draw a graph of mass of copper deposited against time.
Berdasarkan Jadual 3, lukis graf jisim kuprum yang terenap melawan masa



[2 marks]
[2 markah]

(c) Using the graph, determine the mass of copper deposited at 10 minutes.
Dengan menggunakan graf, tentukan jisim kuprum yang terenap pada minit 10.

_____

[1 mark]
[1 markah]

(d) State the relationship between the mass of copper deposited and time.
Nyatakan hubungan di antara jisim kuprum yang terenap dan masa.

_____

_____

[1 mark]
[1 markah]

4 Diagram 4 shows the result of the experiment to study the effect of the deficiency of nitrogen on the growth of pant X and plant Y.
Rajah 4 menunjukkan keputusan eksperimen yang dijalankan untuk mengkaji kesan kekurangan nitrogen terhadap pertumbuhan pokok X dan pokok Y.

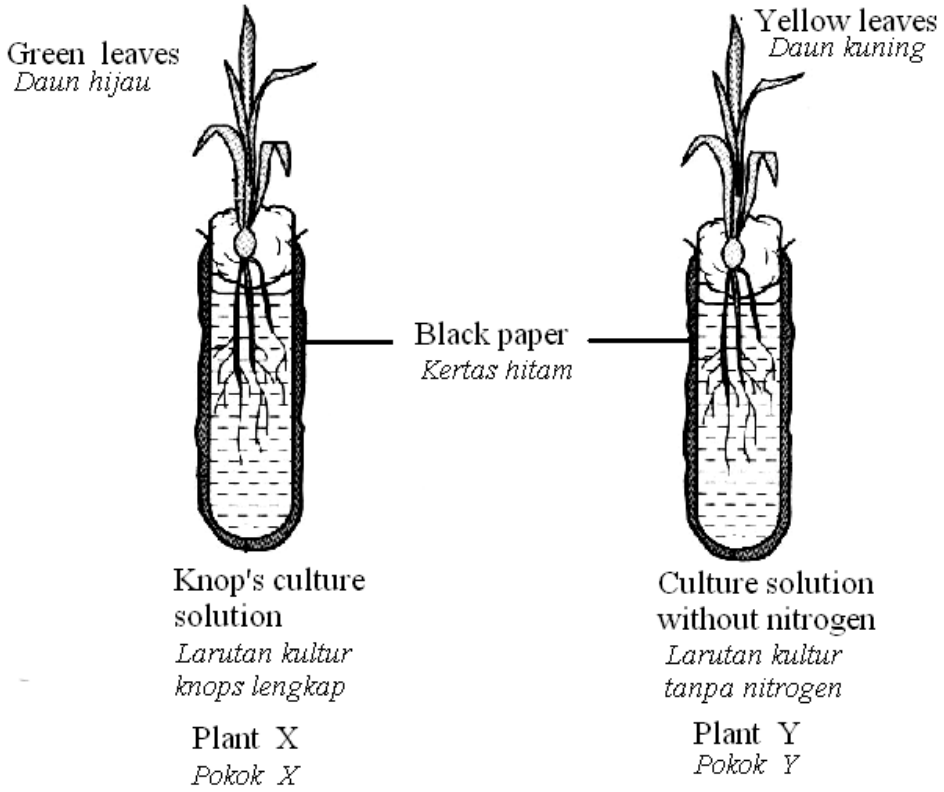


Diagram 4
Rajah 4

(a) Based on Diagram 4, state one observations on the plant.
Berdasarkan Rajah 4, nyatakan satu pemerhatian pada anak benih.

_____

[1 mark]
[1 markah]

(b) State one inference that can be made based on the observation in this experiment.
Nyatakan satu inferens yang boleh dibuat berdasarkan pemerhatian dalam eksperimen ini.

_____

[1 mark]
[1 markah]

(c) State the hypothesis of this experiment.
Nyatakan hipotesis bagi eksperimen ini.

_____

[1 mark]
[1 markah]

(d) State the variables in this experiment.
Nyatakan pembolehubah dalam eksperimen ini

(i) Manipulated variable
Pembolehubah yang dimanipulasi

_____

(ii) Responding variable
Pembolehubah yang bergerakbalas

_____

[2 marks]
[2 markah]

Section B
Bahagian B

[30 marks]
[30 markah]

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

The time suggested to answer this section is 50 minutes
Masa yang dicadangkan untuk menjawab bahagian ini ialah 50 minit

5. Diagram 5 shows the location of endocrine glands in human.
Rajah 5 menunjukkan kedudukan kelenjar endokrin dalam badan manusia.

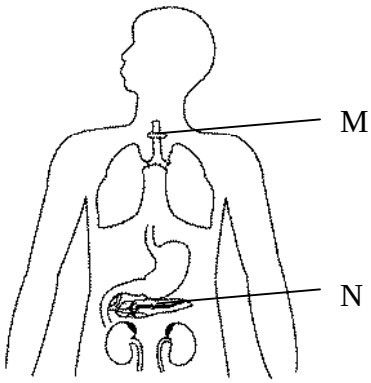


Diagram 5
Rajah 5

(a) (i) Name the gland M.
Namakan kelenjar M.

_____

[1 mark]
[1 markah]

(ii) State **one** effect if gland M secretes excess of hormone.
*Nyatakan **satu** kesan jika kelenjar M merembeskan hormon yang berlebihan.*

_____

[1 mark]
[1 markah]

(c) Name gland N.
Namakan kelenjar N.

_____

[1 mark]
[1 markah]

(d) What is the effect to human if gland N is not functioning?
Apakah kesan kepada manusia jika kelenjar N tidak berfungsi?

_____

[1 mark]
[1 markah]

(e) Mark (P) on Diagram 5 to show the gland that secretes hormone when someone is anxious.
Tandakan (P) pada Rajah 5 untuk menunjukkan kelenjar yang berfungsi semasa seseorang berada dalam keadaan cemas. [1 mark]
[1 markah]

(f) How are the hormones that produced by glands in Diagram 5 transported in the body?
Bagaimanakah hormon yang dirembeskan oleh kelenjar dalam Rajah 5 dihantar ke seluruh badan?

_____

[1 mark]
[1 markah]

6. Diagram 6 shows radioactive rays from a radioactive substance.
Rajah 6 menunjukkan sinaran radioaktif dari satu bahan radioaktif.

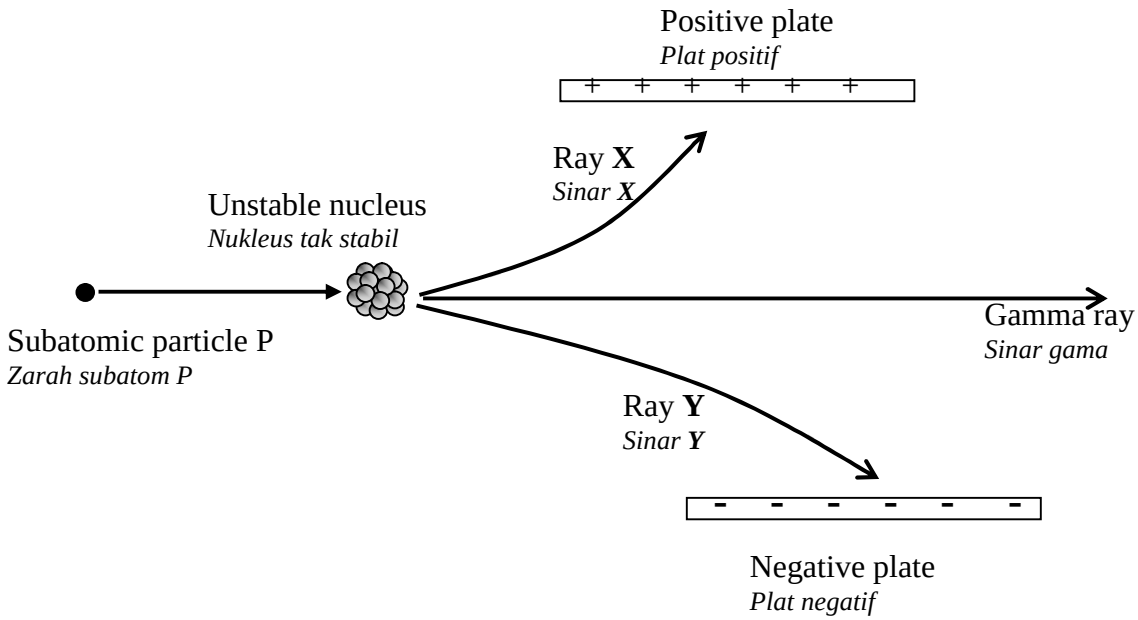


Diagram 6
Rajah 6

(a) What is subatomic particle P?
Apakah zarah subatom P?

P : _____

[1 mark]
[1 markah]

(b) Give one example of substance with an unstable nucleus.
Berikan satu contoh bahan yang mempunyai nukleus yang tidak stabil?

_____

[1 mark]
[1 markah]

(c) Name ray X and ray Y in Diagram 6.
Namakan sinar X dan sinar Y di dalam Rajah 6.

Ray X :_____
Sinar X

Ray Y: _____
Sinar Y

[2 marks]
[2 markah]

(d) Radioisotopes in Table 4 are useful in various fields. Match each radioisotope with its usage.
Radioisotop dalam Jadual 4 adalah berguna dalam berbagai bidang. Padankan radioisotop dengan kegunaannya.

Radioisotope ***Radioisotop***	**Usage** ***Kegunaan***
Carbon-14 *Karbon-14*	To kill cancerous cell *Membunuh sel-sel kanser*
Phosphorus-32 *Posforus-32*	To detect the defect in thyroid gland *Mengesan kecacatan pada kelenjar tiroid*
Cobalt-60 *Kobalt-60*	To estimate the age of an artifact *Menganggar umur artifak*
Iodin-131 *Iodin-131*	To study the transportation of elements in plant *Mengkaji pengangkutan unsur dalam tumbuhan*

Table 4
Jadual 4

[2 marks]
[2 markah]

7. Diagram 7 shows a harmful phenomenon that is affecting Earth.
Rajah 7 menunjukkan fenomena bahaya yang memberi kesan ke atas bumi

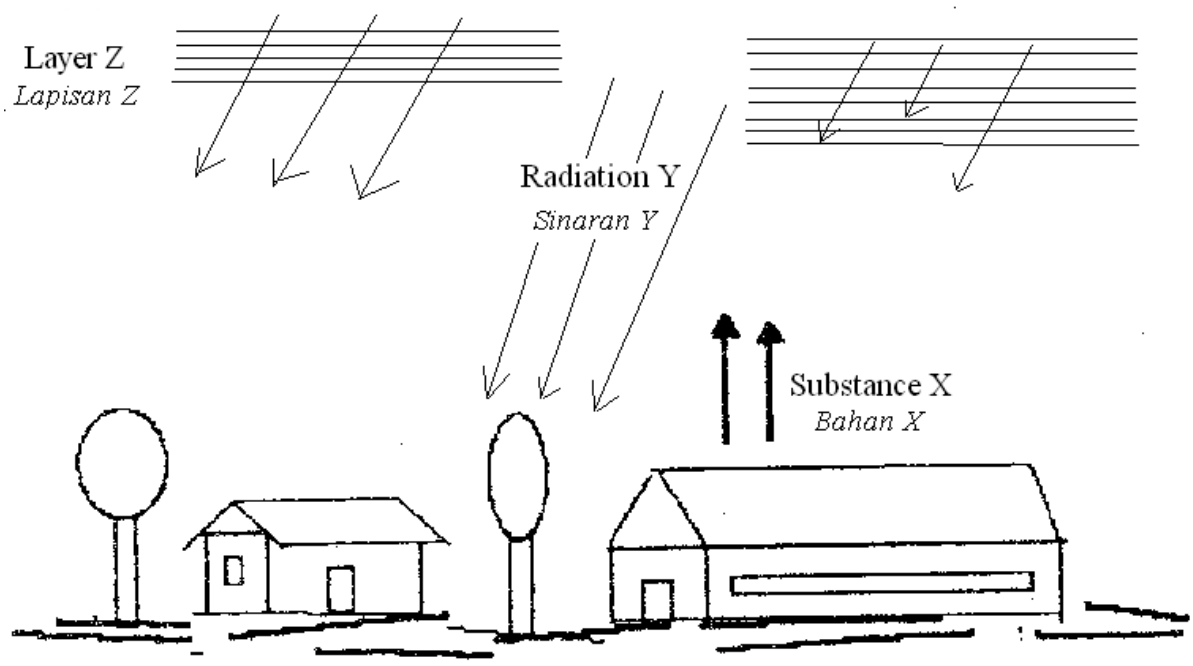


Diagram 7
Rajah 7

(a) What is the phenomenon shows in Diagram 7?
Apakah fenomena yang ditunjukkan dalam Rajah 7?

_____

[1 mark]
[1 markah]

(b) (i) Name substance X.
Namakan bahan X.

_____

[1 mark]
[1 markah]

(ii) Name one appliance which use the substance X mentioned in b) (i)?
Namakan satu alat yang menggunakan bahan X yang anda sebutkan di (b) (i)?

_____

[1 mark]
[1 markah]

(c) (i) Name radiation Y.
Namakan sinar Y.

_____

[1 mark]
[1 markah]

(ii) State **one** effect of radiation Y on human
*Nyatakan **satu** kesan sinar Y pada manusia.*

_____

[1 mark]
[1 markah]

(d) State **one** step which can be taken to prevent this phenomenon.
*Nyatakan **satu** langkah yang boleh diambil untuk mencegah fenomena ini .*

_____

[1 mark]
[1 markah]

8. Diagram 8 shows a biscuit wrapper with incomplete information.
Rajah 8 menunjukkan pembungkus biskut dengan maklumat yang tidak lengkap.

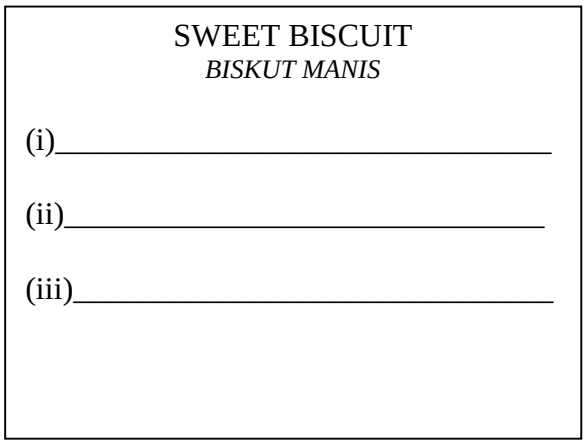


Diagram 8
Rajah 8

(a) In Diagram 8 write all the required information according to the 1983 Food Act and 1985 Food Regulation.
Pada Rajah 8 tuliskan semua maklumat yang diperlukan mengikut Akta Makanan 1983 dan Peraturan Makanan 1985.

[3 marks]
[3 markah]

(b) (i) Which of the information in (a) do you consider the most important when buying the sweet biscuit?
Antara maklumat di (a) yang manakah paling penting anda pertimbangkan apabila membeli biskut manis itu?

_____

[1 mark]
[1 markah]

(ii) Give one reason for your answer in (b) (i).
Berikan satu sebab untuk jawapan anda di (b) (i).

_____

[1 mark]
[1 markah]

(c) State one effect on a person's health if too many sweet biscuits are eaten over a long period.
Nyatakan satu kesan ke atas kesihatan seseorang apabila mengamalkan memakan terlalu banyak biskut manis secara berterusan.

_____

[1 mark]
[1 markah]

9. Diagram 9 shows a four-stroke petrol engine.
Rajah 9 menunjukkan enjin petrol empat lejang.

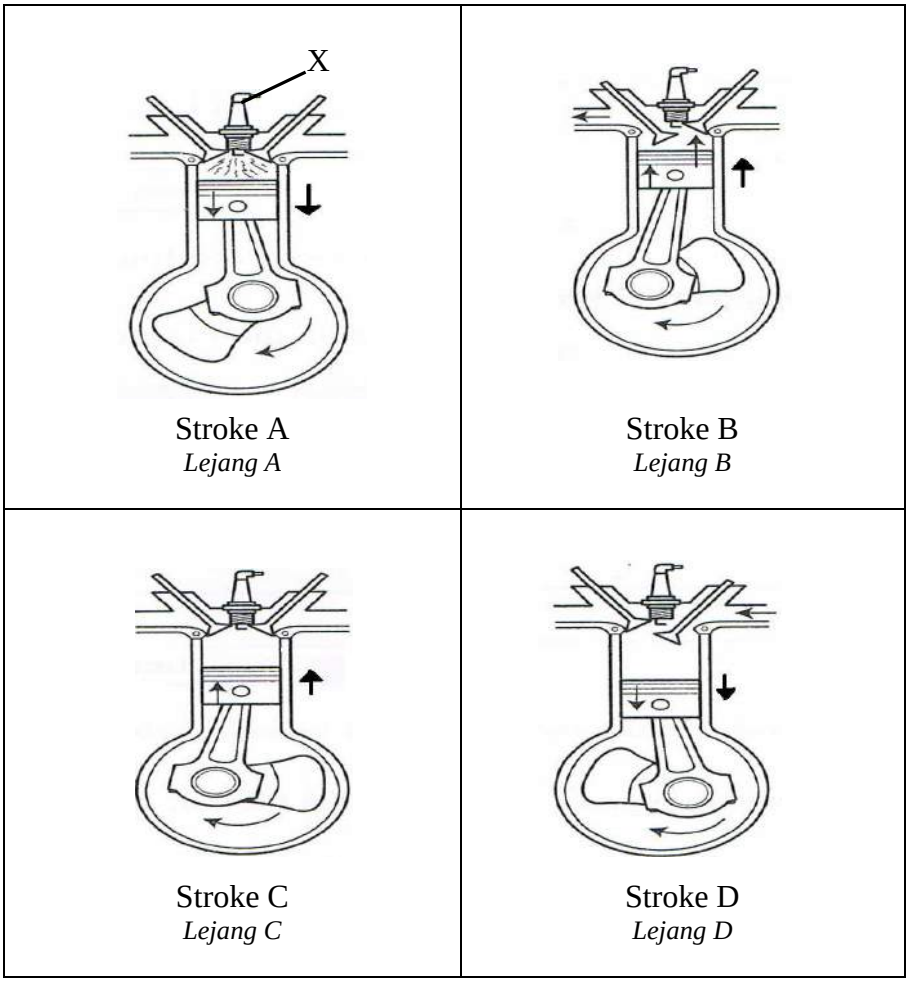


Diagram 9
Rajah 9

The diagram is not arranged in the correct order.
Rajah tidak disusun mengikut urutan yang betul.

a. Name the stroke B and stroke D.
Namakan lejang B dan lejang D.

Stroke B : _____
Lejang B

Stroke D : _____
Lejang D

[2 marks]
[2 markah]

b. (i) Name the part labelled X in Diagram 9.
Namakan bahagian berlabel X dalam Rajag 9.

_____

[1 mark]
[1 markah]

(ii) What is the function of the part labelled X?
Apakah fungsi bahagian berlabel X?

_____

[1 mark]
[1 markah]

c. Arrange the strokes in Diagram 9 in the correct order.
Susun lejang dalam Rajah 9 mengikut urutan yang betul.

_____

[1 mark]
[1 markah]

d. State **one** difference between the petrol engine in Diagram 9 and a four-stroke diesel engine.
*Nyatakan **satu** perbezaan antara enjin petrol dalam Rajah 9 dengan enjin diesel empat lejang.*

_____

[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 sama ada **Soalan 11** atau **Soalan 12***

The time suggested to answer this section is 40 minutes
Masa yang dicadangkan untuk menjawab bahagian ini ialah 40 minit

10. Study the following statement;
Kaji pernyataan berikut;

The presence of antibiotics affects the growth of microorganisms *Kehadiran antibiotik memberikan kesan ke atas pertumbuhan bakteria.*

(a) Suggest one hypothesis to investigate the above statement.
Cadangkan satu hipotesis yang sesuai untuk mengkaji pernyataan di atas.

[1 *mark*]
[1 markah]

(b) You are given with steril nutrient agar, bacteria culture and other apparatus.
Anda dibekalkan dengan agar-agar nutrien steril, kultur bakteria dan radas lain.
Describe an experiment to test your hypothesis based on the following criteria
Huraikan satu eksperimen untuk membuktikan hipotesis itu berpandukan kriteria berikut;

- Aim of the experiment [1 *mark*]
  Tujuan eksperimen *[1 markah]*
- Identification of variables [2 *marks*]
  Mengenalpasti pemboleh ubah [2 *markah*]
- List of apparatus and materials [1 *mark*]
  Senarai radas dan bahan *[1 markah]*
- Produre or method [4 *marks*]
  Prosedur *[4 markah]*
- Tabulation of data [1 *mark*]
  Penjadualan data *[1 markah]*

11 (a) Explain one method to coagulate latex and one method of preventing latex from coagulating.
Huraikan satu kaedah untuk membekukan latex dan satu kaedah mencegah pembekuan latex.
[4 marks]
[4 markah]

(b) Natural rubber is not very strong, hard and elastic, so that it is not suitable to make tyre . Explain how to overcome the problem.
Your answer should include the following:
Getah asli tidak kuat, keras atau kenyal, jadi ia tidak sesuai untuk dijadikan tayar. Terangkan cara-cara penyelesaian masalah tersebut.
Jawapan anda mestilah mengandungi perkara-perkara berikut:

- Identify the problem [1 *mark*]
  Mengenalpasti masalah *[1 markah]*
- The method used. [1 *mark*]
  Kaedah yang digunakan. *[1 markah]*
- Explanation of the method [4 marks]
  Penjelasan kaedah *[4 markah]*

12.

(a) State the differences between thermoplastics and thermosets.
Nyatakan perbezaan antara thermoplastik dan plastik termoset.
[4 *marks*]
[4 markah]

(b) Diagram 12 shows the uses of plastic in daily life.
Rajah 12 menunjukkan kegunaan plastik dalam kehidupan seharian

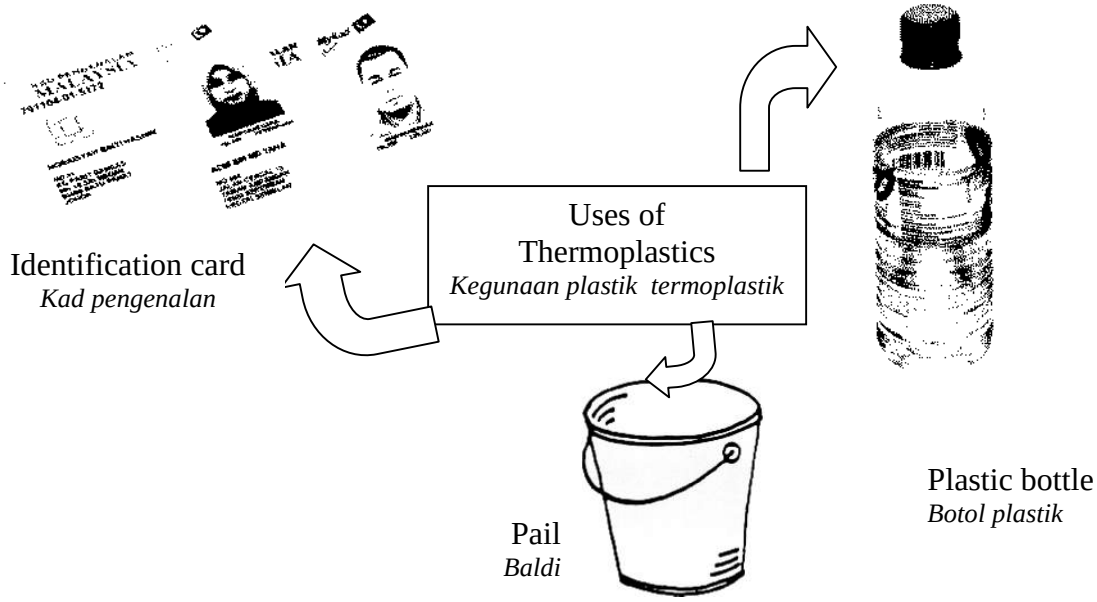


Diagram 12
Rajah 12

Study the above diagram. You are required to develop of concept of thermoplastics
Kaji rajah di atas. Anda dikehendaki membina suatu konsep tentang termoplastik

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

- Identify the information [1 *mark*]
  Mengenalpasti maklumat *[1 markah]*

- Identify two common characteristics of thermoplastics [2 *marks*]
  Kenal pasti dua ciri sepunya termoplastik *[2 markah]*

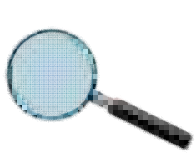
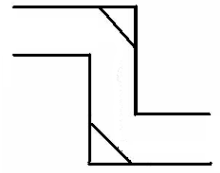
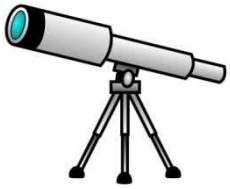
- Give **one** other example and **one** reason [1*mark*]
  *Beri **satu** contoh lain dan **satu** sebab* *[1 markah]*

- Give **one** non-example and **one** reason [1 *mark*]
  *Beri **satu** bukan contoh dan **satu** sebab* *[1 markah]*

- State the actual concept of thermoplastics [1 *mark*]
  Menyatakan konsep sebenar termoplastik *[1 markah]*

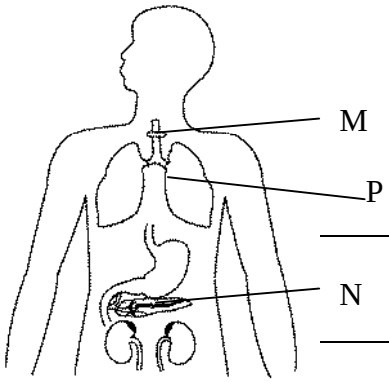
END OF QUESTION PAPER

SKEMA PEPERIKSAAN PERCUBAAN SCIENCE TINGKATAN LIMA
TAHUN 2013
PAPER 2
Section A

No		Answer	Mark
1	(a)	0.4 A	1
	(b)	i. type of substance ii. reading of ammeter	2
	(c)	0.0 A	1
	(d)	Electrical conductivity is a process that shows the reading of the ammeter	1
		Total	5
2	(a)	If the object distance increases, the image distance decreases	1
	(b)	i. Oject distance ii. Image distance	2
	(c)	Diminished // inverted // real	1
	(d)	 /   / 2 corrects : 1 marks 1 corrects : 0 mark	
		Total	5
3	(a)	Amount of current // type of solution	1
	(b)	All points transferred correctly – 1 mark Line drawn straight with using ruler – 1 mark	2
	(c)	1.5 g	1
	(d)	Time increases, the mass of copper deposited increases	1
		Total	5
4	(a)	The leaves of plant X is green but Y is yellow	1
	(b)	The leaves of plant Y is yellow because it has insufficient nitrogen	1

	(c)	When uses knop culture solution, plant grows healthy (any suitable answer)	1
	(d)	i. Manipulated variable – presence of knop culture solutiuon // Type of culture solution ii. Responding variable - the colour of leaves / the condition of leaves	2
		Total	5

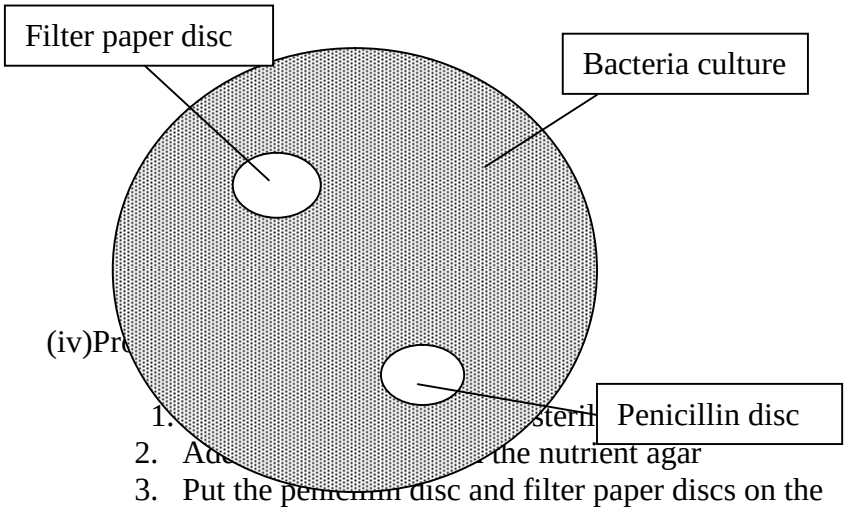
Section B

No		Answer	Mark
5	(a)	Thyroid gland	1
	(b)	High metabolic rate	1
	(c)	Pancreas gland	1
	(d)	Increase glucose in blood // may become diabetic	1
	(e)		1
	(f)	Through tl	1
		Total	6
6	(a)	Neutron	1
	(b)	Uranium // any radioactive substances	1
	(c)	i) Beta ii) Alpha	2
	(d)	**Radioisotope** ***Radioisotop*** / **Usage** ***Kegunaan***	
		Carbon-14 *Karbon-14* — To kill cancerous cell *Membunuh sel-sel kanser*	
		Phosphorus-32 *Posforus-32* — To detect the defect in thyroid gland *Mengesan kecacatan pada kelenjar tiroid*	
		Cobalt-60 *Kobalt-60* — To estimate the age of an artifact *Menganggar umur artifak*	

		Iodin-131 *Iodin-131*	To study the transportation of elements in plant *Mengkaji pengangkutan unsur dalam tumbuhan*
			4 corrects : 2 marks 3 corrects : 1 mark 2 corrects : 1 mark 1 correct : 0 mark
		Total	6
7	(a)	Ozone depletion	1
	(b)	(i) CFC // Chlorofluorocarbon (ii) Refrigerator // Air conditioner // Aerosol spray	2
	(c)	(i) Ultraviolet // UV (ii) Cataract // Skin cancer // Lower the human immune system	2
	(d)	Find other alternatives to replace CFC // Reduce the usage of CFC//Use HCFC	1
		Total	6
8	(a)	1. Food ingredients 2. Name of the food 3. Expired date 4. Weight or volume 5. Name and address of the factory **Able to write at least 3 information correctly**	3
	(b)	(i) Expired date (ii) To avoid buying unhealthy food / To prevent from food poisoning	2
	(c)	Obesity // Diabetes	1
		Total	6
9	(a)	B : Exhaust stroke D : Induction stroke	2
	(b)	i. Spark plug ii. Spark plug produces a spark (ignites the mixture and cause an explosion)	2
	(c)	Stroke D → Stroke C → Stroke A → Stroke B	1
	(d)	Four-stroke petrol engine: Light vehicles - motocars Four stroke diesel-engine: Heavy vehicles – buses, lorries, trucks	1

		Smaller and lighter for engine of the same power	Larger and heavier for engine of the same power
		Engine is quieter when switched on	Engine is noisier when switched on
		Less efficient and wastes more petrol	More efficient and wastes less diesel
		Mixture of air and petrol vapour enters cylinder	Only air enters the cylinder
		Mixture of petrol-air is ignited by a spark plug	Heat from compressed hot air ignites the diesel injected by the fuel injector
		Total	6

Section C

10.	(a) Hypothesis : Antibiotic prevent the growth of bacteria// When antibiotic presence, it shows a clear area around it	1
	(b) (i) Aim : To study the effects of antibiotics on the growth of bacteria	1
	(ii) Manipulated variables : Presence of antibiotics Responding variables : Area of clear area/ Growth of bacteria Constant variables : Type of bacteria/ temperature	Max : 2 **1**
	(iii) Materials and apparatus : steril nutrient agar, bacteria culture, penisilin disc, Filter paper disc dan petri dish (Semua radas dan bahan berfungsi mesti ditulis)	
	 (iv)Pr 1. steril 2. Ad the nutrient agar 3. Put the penicillin disc and filter paper discs on the nutrient agar 4. Leave the experiment for 48 hrs / 2 days 5. The diameter of clear area is measured (v) Tabulation of data :	Max : 4 1

Type of discs	**Area of clear area**
Penisilin disc	

	Filter paper	
	Total	10
11.	(a) To coagulate latex - add acid (formic acid) - When acid is added into latex, the hidrogen ions neutralise the negatively charged protein membranes - This causes the membrane to break and let the rubber polymer free and causing the latex to coagulate. To prevent latex from coagulate – add alkali (ammonia) - The latex particles contain rubber polymers that are wrapped in protein membranes that are negatively charged. - This prevent the particles from coagulating.	1 1 1 1
	(b) • Identify the problem Natural rubber is not very strong, hard and elastic • The method use Vulcanisation • Explanation of the method ▪ natural rubber is heated ▪ with sulphur ▪ form strong chemical bonds cross-link between the long chains of rubber molecules	1 1 4
	Total	10

12. (a) Differences between thermoplastics and Thermosets

Characteristics	Thermoplastics	Thermosets
1. Melting point	Low	High
2. Can be remoulded/ recycled	Yes	No
3. Has cross links between polymers	No	Yes
4. Hardness	Softer	Harder
5. Resistance towards shock	Low	High
6. Heat resistance	Low	High

Any four differences - 4m
Each comparison must correct – 1 m

b)

1	Information	Pail, Identification card, Plastic Bottle
2	Common characteristis	1. Plastic that has low melting point 2. Plastic that has low heat resistance 3. Plastic that can be remoulded 4. Plastic that does not has cross link between molecules

			5. Plastic that has low resistance towards shock **Note : Any two**	
	3	Other example and reason	Any other example of thermoplastics and a reason (any characteristic from common characteristics) **Note: Both eg and reason must correct – 1 mark**	
	4	Non- example and reason	Any non-example (ie use of thermosets) and a reason (any characteristic of thermosets) **Note: Both non- eg and reason must correct – 1 mark**	
	5	Actual concept	Thermoplastic is a type of plastic that has low melting point and low heat resistance. **Note: Must have 2 common characteristis - 1 mark**	
				6
			Total	**10**