1511/1
Sains
Kertas 1
Ogos 2011
1 ¼ jam

PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA
SEKOLAH MENENGAH
NEGERI KEDAH DARUL AMAN

PEPERIKSAAN PERCUBAAN SPM 2011

SAINS
Kertas 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Setiap soalan dimulai dengan soalan Bahasa Inggeris dan diikuti dengan terjemahannya dalam Bahasa Melayu.*

INFORMATION FOR CANDIDATES

1 This question paper consists of **50** questions.
2 Answer **all** questions.
3 Answer each question by blackening the correct space on the objective answer sheet.
4 Blacken only **one** space for each question.
5 If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.
6 The diagrams in the questions provided are not drawn to scale unless stated.
7 You may use a non-programmable scientific calculator.

MAKLUMAT UNTUK CALON

1. *Kertas soalan ini mengandungi **50** soalan.*
2. *Jawab **semua** soalan.*
3. *Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan objektif.*
4. *Hitamkan **satu** ruangan sahaja bagi setiap jawapan.*
5. *Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*
6. *Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.*
7. *Satu senarai rumus disediakan di bawah.*
8. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.*

Kertas soalan ini mengandungi 27 halaman bercetak

1. Diagram 1 shows a neurone. Which is dendrite?
Rajah 1 menunjukkan satu neuron.Yang manakah adalah dendrit?

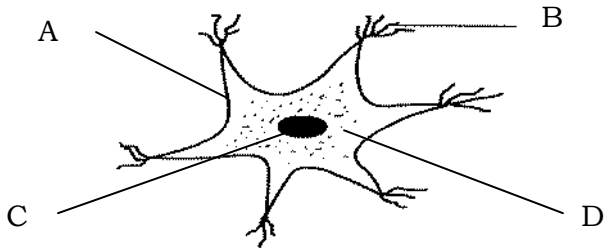


Diagram 1
Rajah 1

2 Diagram 2 shows the flow of impulses involving a type of sense.
Rajah 2 menunjukkan pengaliran impuls yang melibatkan sejenis deria.

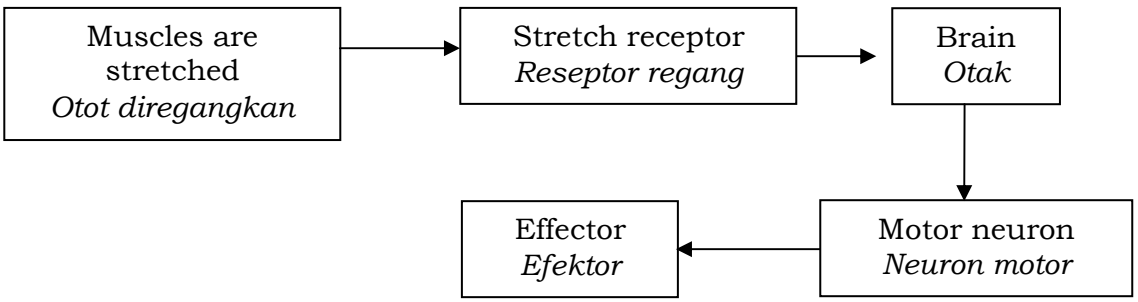


Diagram 2
Rajah 2

Which sense is involved?
Deria yang manakah terlibat?

A Taste
Rasa
B Touch
Sentuhan
C Hearing
Pendengaran
D Kinaesthetic
Kinestesis

3 Which of the following activity involves cerebellum?
Antara aktiviti berikut yang manakah melibatkan serebelum?

A Reading
Membaca
B Dancing
Menari
C Sneezing
Bersin
D Breathing
Bernafas

4 Diagram 3 shows an endocrine gland X.
Rajah 3 menunjukkan satu kelenjar endokrin X.

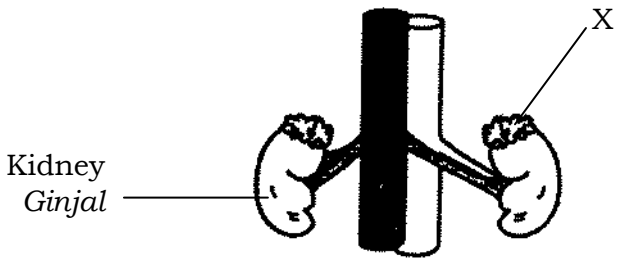


Diagram 3
Rajah 3

Gland X controls
Kelenjar X mengawal

A menstrual cycle
kitaran haid
B growth of bones
pertumbuhan tulang
C body's metabolism
metabolisme badan
D increase the rate of heart beat
meningkatkan kadar denyutan jantung

5 Which of the following heredity unit carries genetic information?
Antara berikut unit keturunan yang manakah membawa maklumat genetik?

A Gene
Gen
B Gamete
Gamet
C Cytoplasm
Sitoplasma
D Chromosome
Kromosom

6 Diagram 4 shows the stages in the formation of a baby.
Rajah 4 menunjukkan peringkat pembentukkan seorang bayi.

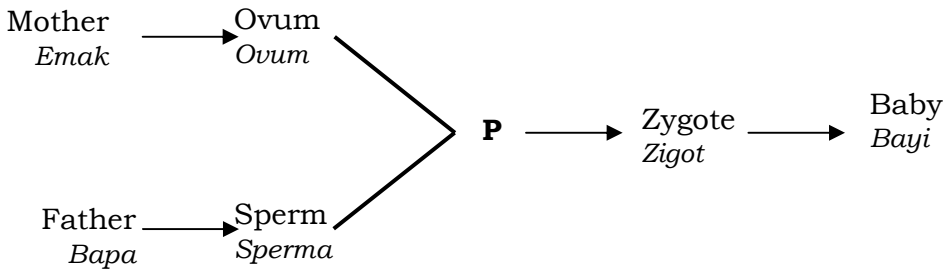


Diagram 4
Rajah 4

What is process P?
Apakah proses P ?

A Mitosis
Mitosis
B Meiosis
Meiosis
C Fertilisation
Persenyawaan
D Crossing over
Pindah silang

7 Diagram 5 shows the stage of formation of twins.
Rajah 5 menunjukkan pembentukan sepasang kembar.

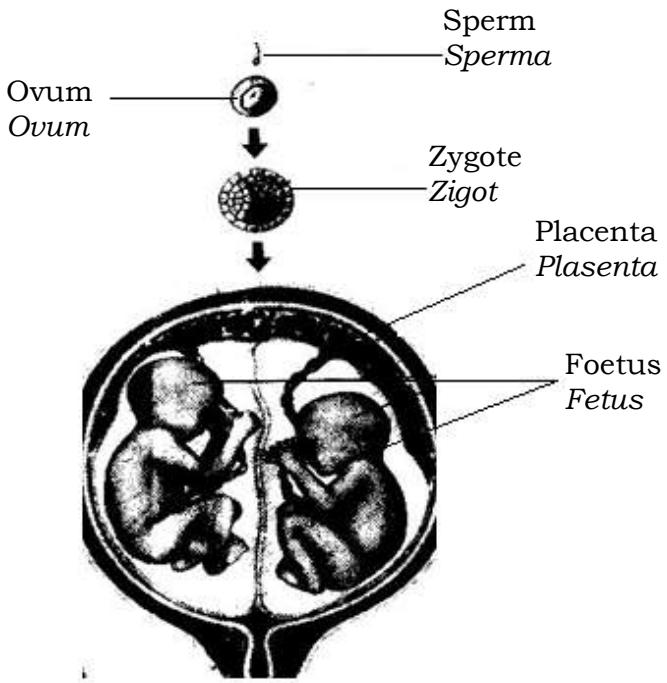
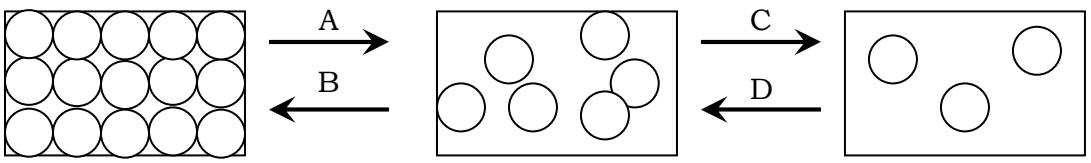


Diagram 5
Rajah 5

What is the characteristic of the twins ?
Apakah ciri kembar tersebut ?

A Same genetic traits
Ciri-ciri genetik yang sama
B Different sex of twins
Jantina anak kembar berbeza
C More than one ovum involved
Lebih dari satu ovum terlibat
D Each foetus has its own placenta
Setiap fetus mempunyai plasenta tersendiri

8. Which change represents the process of freezing?
Perubahan yang manakah mewakili proses pembekuan?



9 Diagram 6 shows the nucleus of an atom.
Rajah 6 menunjukkan nukleus bagi suatu atom.

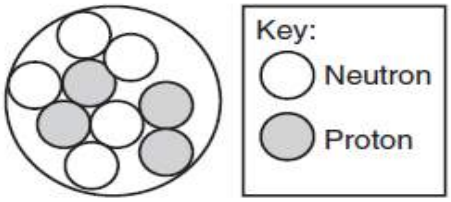


Diagram 6
Rajah 6

What is the nucleon number for the atom?
Berapakah nombor nukleon bagi atom itu?

A 4
B 5
C 6
D 9

10 Diagram 7 shows an incomplete Periodic Table.
Rajah 7 menunjukkan Jadual Berkala yang tidak lengkap.

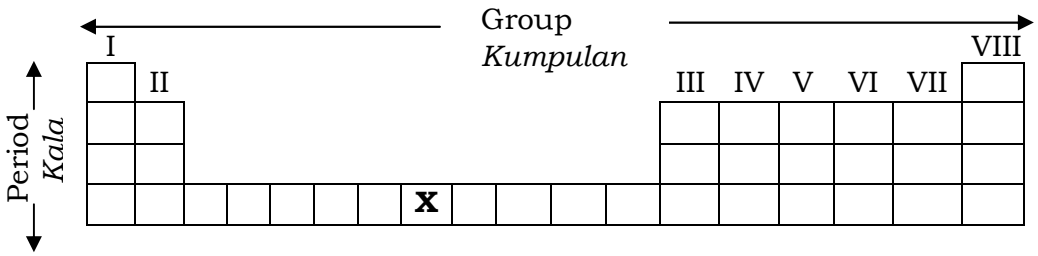


Diagram 7
Rajah 7

What is *X*?
Apakah unsur X?

A Metal
Logam
B Noble gas
Gas adi
C Non-metal
Bukan logam
D Transition element
Unsur peralihan

11 The information shows the characteristics of substance X.
Maklumat berikut menunjukkan ciri-ciri suatu bahan X.

- Able to conduct electricity in molten state.
  Boleh mengkonduksi elektrik dalam keadaan leburan.
- Cannot conduct electricity in solid state.
  Tidak boleh mengkonduksi elektrik dalam keadaan pepejal

What is substance X?
Apakah bahan X?

A Copper
Kuprum
B Sulphur
Sulfur
C Carbon dioxide
Karbon dioksida
D Lead (ll) bromide
Plumbum (ll) bromida

12 Tin can be extracted from its ore by using carbon because
Timah boleh diekstrak dari bijihnya dengan menggunakan karbon kerana

A carbon is cheap
karbon adalah murah
B carbon is easily available
karbon mudah diperolehi
C carbon is more reactive than tin
karbon lebih reaktif daripada timah
D tin ore can be easily decomposed by heat
bijih timah mudah terurai apabila dipanaskan

13 Diagram 8 shows the action of dissolving sugar in distilled water.
Rajah 8 menunjukkan tindakan melarutkan gula di dalam air suling.

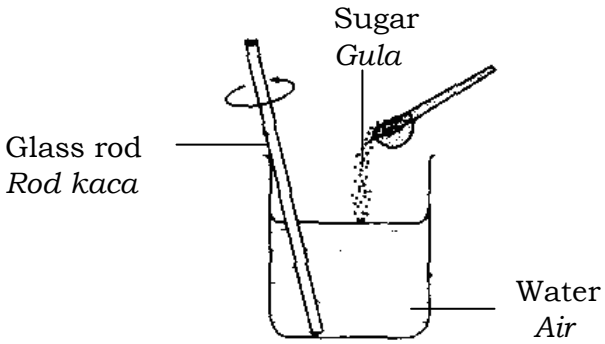


Diagram 8
Rajah 8

What is the characteristic of the changes involved?
Apakah ciri bagi perubahan yang berlaku?

A Irreversible
Tidak berbalik
B Needs a lot of energy
Memerlukan tenaga yang banyak
C Produces new substances
Menghasilkan bahan baru
D Involves only physical changes
Melibatkan perubahan fizikal sahaja

14 What type of battery is used in a mobile phone?
Apakah jenis bateri yang digunakan oleh telefon bimbit?

A Alkaline battery
Bateri alkali
B Lead-acid battery
Batteri asid-plumbum
C Nickel cadmium battery
Bateri nikel kadmium
D Argentum oxide battery
Bateri argentum oksida

15 Which reaction needs light?
Tindak balas yang manakah memerlukan cahaya?

A Electrolysis
Elektrolisis
B Electroplating
Penyaduran
C Photosynthesis
Fotosintesis
D Purification of metals
Penulenan logam

16 Diagram 9 shows two types of radioactive radiations P and R in an electric field.
Rajah 9 menunjukkan dua jenis sinaran radioaktif P dan R di dalam medan elektrik

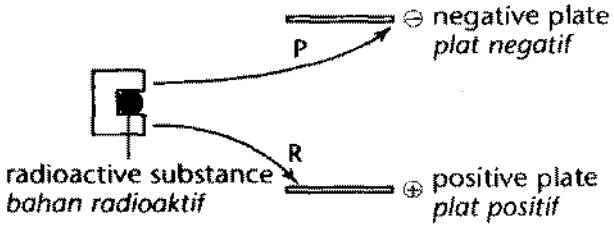


Diagram 9
Rajah 9

What are radiations P and R?
Apakah sinaran P dan R ?

	P	*R*
A	Alpha *Alfa*	Beta *Beta*
B	Gamma *Gama*	Beta *Beta*
C	Beta *Beta*	Gamma *Gama*
D	Beta *Beta*	Alpha *Alfa*

17 Diagram 10 shows the penetrating power of ray P.
Rajah 10 menunjukkan kuasa penembusan sinar P.

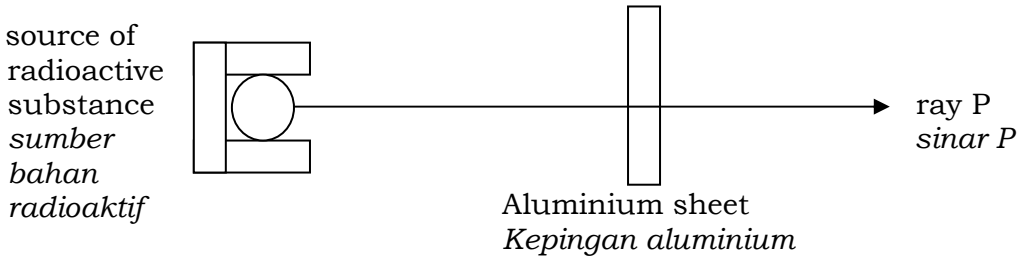


Diagram 10
Rajah 10

Which of the following about ray P is **correct**?
*Antara berikut yang manakah **benar** tentang sinar P?*

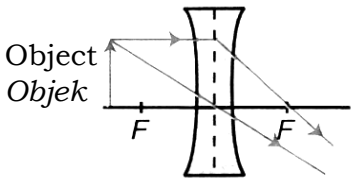
A Positively charged
Bercas positif
B Has a low penetrating power
Mempunyai kuasa penembusan yang rendah
C Can only be blocked by a thick lead block
Hanya boleh dihalang oleh blok plumbum yang tebal
D Deflected away from the positive plate of the electric field
Dipesongkan menjauhi plat positif medan elektrik

18 Which radioactive substance is **correctly** matched ?
*Manakah bahan radioaktif yang **betul** dipadankan ?*

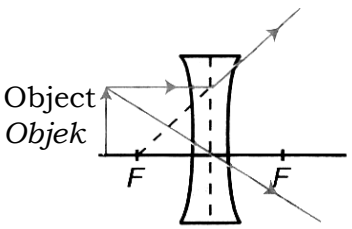
	Radioactive substance *Bahan radioaktif*	Uses *Kegunaan*
A	Phosphorus-32 *Fosforus-32*	Kill cancer cells *Membunuh sel-sel kanser*
B	Carbon-14 *Karbon-14*	Determine the age of ancient materials *Menentukan usia bahan-bahan purba*
C	Sodium-24 *Natrium-24*	Study the rate of absorption of fertilisers in plants *Mengkaji kadar penyerapan baja oleh tumbuhan*
D	Cobalt-60 *Kobalt-60*	To locate the source of leakage in underground pipes *Untuk mengesan punca kebocoran paip di bawah tanah*

19 Which ray diagrams is **correct**?
*Rajah sinar yang manakah **betul**?*

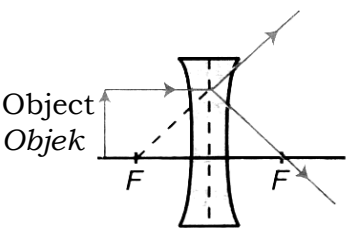
A



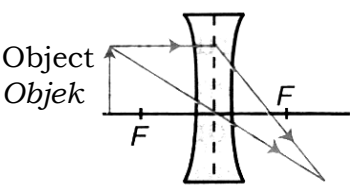
B



C



D



20 Diagram 11 shows an image formed by a plain mirror.
Rajah 11 menunjukkan imej yang terbentuk oleh satu cermin satah.

Diagram 11
Rajah 11

What is the characteristic of the image ?
Apakah ciri imej ?

A Real
Nyata
B Inverted
Songsang
C Laterally inverted
Songsang sisi
D Smaller than the object
Lebih kecil dari objek

21 Diagram 12 shows the structure of a camera.
Rajah 12 menunjukkan struktur suatu kamera.

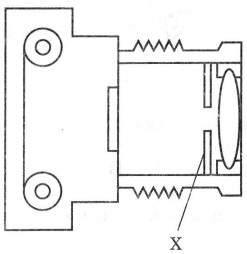


Diagram 12
Rajah 12

Which part of the human eye has the same function as X?
Bahagian mata yang manakah mempunyai fungsi yang sama dengan X?

A Iris
Iris
B Pupil
Anak mata
C Retina
Retina
D Eye lens
Kanta mata

22 Diagram 13 shows the addition of coloured lights.
Rajah 13 menunjukkan penambahan cahaya berwarna.

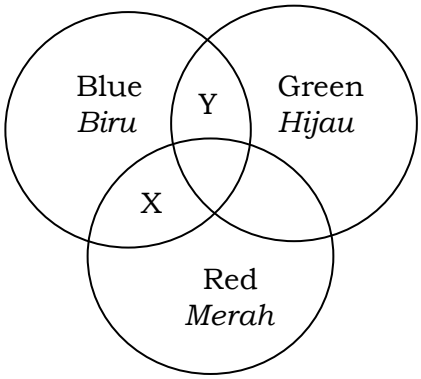


Diagram 13
Rajah 13

What are the colours of X and Y?
Apakah warna X dan Y?

	X	Y
A	Yellow *Kuning*	Cyan *Sian*
B	Magenta *Magenta*	Cyan *Sian*
C	Cyan *Sian*	Magenta *Magenta*
D	Magenta *Magenta*	Yellow *Kuning*

23 What is the ratio of nitrogen to hydrogen in the Haber Process?
Apakah nisbah nitrogen kepada hidrogen dalam Proses Haber?

A 1 : 3
B 3 : 1
C 2 : 3
D 3 : 2

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24 Which of the following is **not** the purpose of alloying?
*Antara berikut yang manakah **bukan** fungsi pengaloian?*

A Increase hardness
Menambah kekerasan
B Prevent corrosion
Menghalang kakisan
C Improve the appearance
Memperbaiki rupa bentuk
D Decrease the magnetic strength
Mengurangkan kekuatan magnetik

25 Diagram 14 shows an experiment to prepare a nitrogeneous fertilizer.
Rajah 14 menunjukkan eksperimen untuk menghasilkan baja bernitrogen.

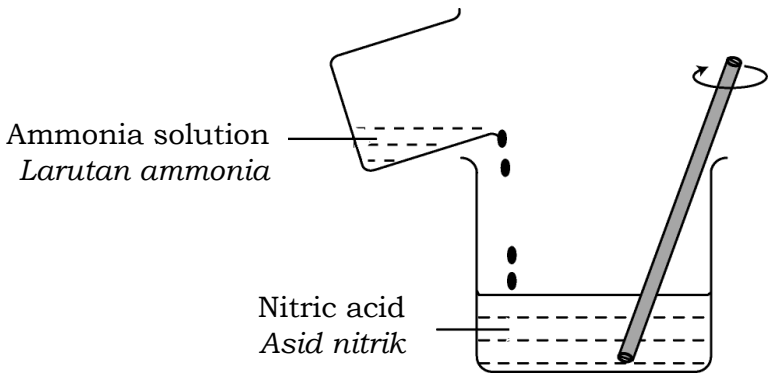


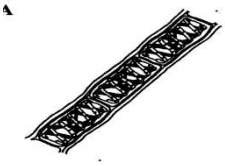
DIAGRAM 14
Diagram 14

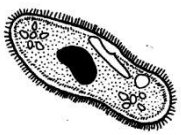
Name the fertilizer.
Namakan baja itu

A Ammonium phosphat
Ammonium fosfat
B Ammonium sulphate
Ammonium sulfat
C Ammonium chloride
Ammonium klorida
D Ammonium nitrate
Ammonium nitrat

26 Which microorganism contains chlorophyll?
Mikroorganisma yang manakah mengandungi klorofil?

A 

B 

C 

D 

27 A group of students have the following symptoms:
Sekumpulan pelajar mempunyai gejala-gejala berikut:

- Vomitting
  Muntah
- Diarrhoea
  Cirit-birit
- Dehydration
  Pendehidratan
- Muscle cramps
  Kekejangan otot

Which disease infects the students?
Penyakit yang manakah menjangkiti pelajar-pelajar tersebut?

A Cholera
Kolera
B Dysentery
Disenteri
C Hepatitis A
Hepatitis A
D Tuberculosis
Tibi

28 A boy recovered from chicken pox disease will acquire
Seorang kanak-kanak lelaki sembuh daripada penyakit campak akan memperoleh

A natural active immunity
keimunan aktif semulajadi
B natural passive immunity
keimunan pasif semulajadi
C artificial active immunity
keimunan aktif buatan
D artificial passive immunity
keimunan pasif buatan

29 Which substance is used to clean toilet ?
Bahan yang manakah digunakan untuk mencuci tandas?

A Antibiotic
Antibiotik
B Antiseptic
Antiseptik
C Antiserum
Antiserum
D Disinfectant
Disinfektan

30 The following information shows the health problem of a man.
Maklumat berikut menunjukkan masalah kesihatan seorang lelaki.

- Thrombosis
  Trombosis
- Arteriosclerosis
  Arteriosklerosis
- High blood presure
  Tekanan darah tinggi

What should be done to overcome his problem ?
Apakah yang perlu dilakukan untuk mengatasi masalahnya?

A Increase the intake of salt
Menambah pengambilan garam
B Increase the intake of sugar
Menambah pengambilan gula
C Reduce the intake of fat and cholesterol
Mengurangkan pengambilan lemak dan kolesterol
D Reduce the intake of fresh fruits and vegetables
Mengurangkan pengambilan buah-buahan dan sayur-sayuran

31 Table 1 shows the calorific values for three food classes.
Jadual 1 menunjukkan nilai kalori bagi tiga kelas makanan.

Food ***Makanan***	**Calorific value /kJ g^{-1}** ***Nilai kalori*/kJ g^{-1}**
Protein *Protein*	16.7
Fat *Lemak*	37.6
Carbohydrate *Karbohidrat*	16.7

Table 1
Jadual 1

Fatimah eats food M which contains 2g of protein, 2.5g of fat and 6g of carbohydrate. What is the calorific value of food M?
Fatimah memakan makanan M yang mengandungi 2g protein, 2.5g lemak dan 6g karbohidrat. Berapakah nilai kalori makanan M?

A 71.0 kJ
B 81.5 kJ
C 227.6 kJ
D 710.0 kJ

32 Diagram 15 shows a part of nitrogen cycle.
Which stage **A, B, C** and **D** involves decomposing bacteria?
Rajah 15 menunjukkan sebahagian daripada kitar nitrogen.
*Peringkat **A, B, C** dan **D** yang manakah melibatkan bakteria pereputan.*

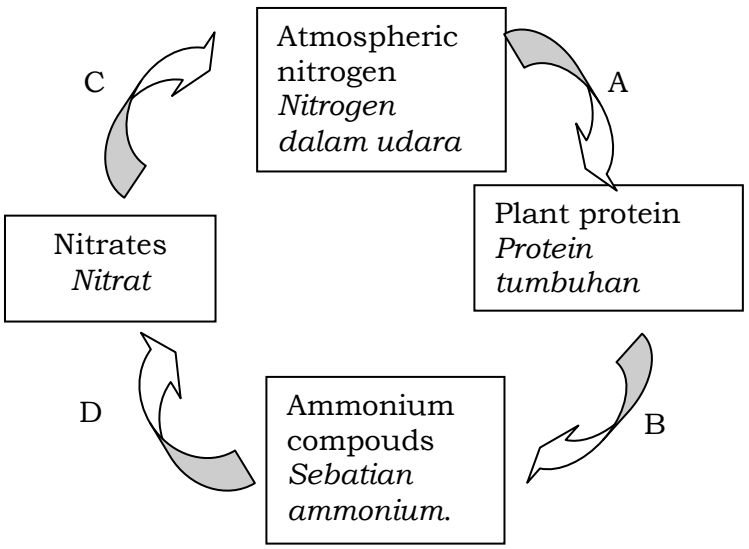


Diagram 15
Rajah 15

33 The information shows the uses of substance X.
Maklumat menunjukkan kegunaan bahan X.

- Coolants in refrigerator
  Bahan pendingin dalam peti sejuk
- Substance in aerosols
  Bahan dalam aerosol

The effect of the uses of substance X is
Kesan penggunaan bahan X ialah

A water pollution
pencemaran air
B green house effect
kesan rumah hijau
C depletion of ozone layer
penipisan lapisan ozon
D decrease of global temperature
penurunan suhu dunia

34 Diagram 16 shows a human activity.
Rajah 16 menunjukkan suatu aktiviti manusia.

Diagram 16
Rajah 16

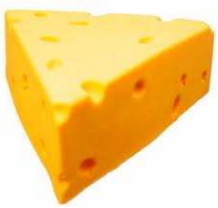
Which solid waste is produced from this activity?
Sisa pepejal yang manakah dihasilkan dari aktiviti ini?

A Mercury
Merkuri
B Sulphur
Sulfur
C Carbon
Karbon
D Lead
Plumbum

35 Which is the best method used by farmers to replace pesticides?
Kaedah manakah paling baik digunakan oleh petani untuk menggantikan racun perosak?

A Vector control
Kawalan vector
B Fertilizer control
Kawalan baja
C Biological control
Kawalan biologi
D Insecticide control
Kawalan racun serangga

36 Which of the following is an inorganic compound?
Manakah antara berikut adalah sebatian bukan organik ?

A		Cotton clothes *Pakaian kapas*
B		marble *marmar*
C		egg *telur*
D		cheese *keju*

[lihat sebelah

37 The information shows the properties of substance Z.
Maklumat menunjukkan ciri-ciri bahan Z.

- volatile
  mudah meruap
- flammable
  mudah terbakar
- miscible in water
  larut campur dalam air

What is Z?
Apakah bahan Z?

A Petrol
Petrol
B Ethanol
Etanol
C Kerosene
Kerosin
D Palm oil
Minyak sawit

38 Diagram 17 shows a reaction of ethanoic acid on latex coagulation.
Rajah 17 menunjukkan tindak balas asid etanoik ke atas lateks.

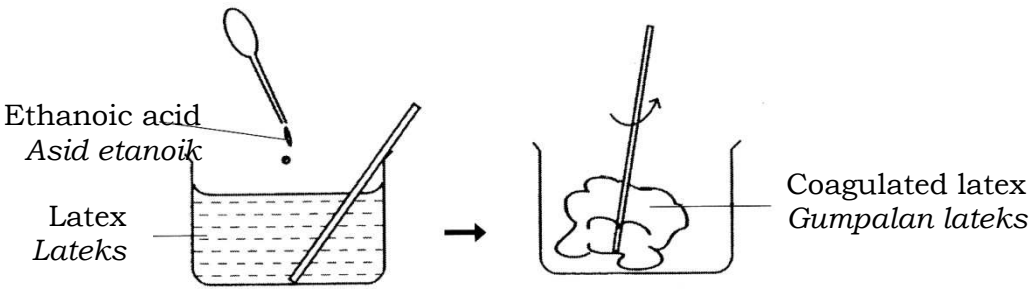


Diagram 17
Rajah 17

Which substance can replace ethanoic acid ?
Bahan yang manakah boleh menggantikan asid etanoik ?

A Lime juice
Jus limau
B Lime water
Air kapur
C Salt solution
Larutan garam
D Sugar solution
Larutan gula

39 Diagram 18 shows a cross section of an oil palm fruit.
Which part of **A, B, C** and **D** produces the most oil?
Rajah 18 menunjukkan keratan rentas sebiji buah kelapa sawit.
*Bahagian manakah antara **A, B, C** atau **D** yang menghasilkan paling banyak minyak.*

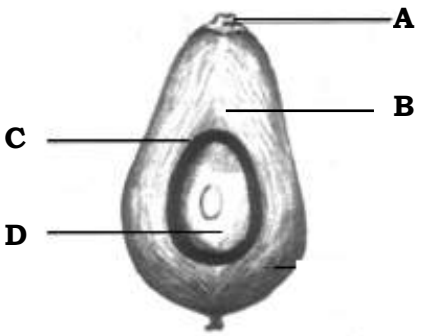


Diagram 18
Rajah 18

40 Diagram 19 shows a four- stroke engine.
Rajah 19 menunjukkan satu enjin empat lejang.

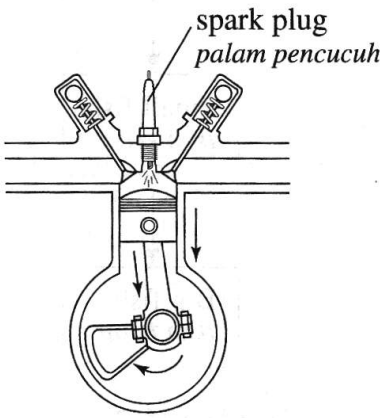


Diagram 19
Rajah 19

Name the above stroke?
Namakan lejang di atas?

A Power stroke
Lejang kuasa
B Exhaust stroke
Lejang ekzos
C Induction stroke
Lejang pengambilan
D Compression stroke
Lejang mampatan

41 A boy cycles 500 metres in 100 seconds.
What is his speed?
Seorang budak lelaki berbasikal sejauh 500 meter dalam masa 100 saat.
Apakah kelajuannya?

$$\left[\ \text{Speed} = \frac{\text{Distance}}{\text{Time}}\ \right]$$

$$\left[\ \textit{Laju} = \frac{\textit{Jarak}}{\textit{Masa}}\ \right]$$

A $0.2\ ms^{-1}$
B $5.0\ ms^{-1}$
C $50.0\ ms^{-1}$
D $100\ ms^{-1}$

42 Diagram 20 shows book A falls onto book C when book B is pulled out very quickly.
Rajah 20 menunjukkan buku A jatuh ke atas buku C apabila buku B ditarik dengan cepat.

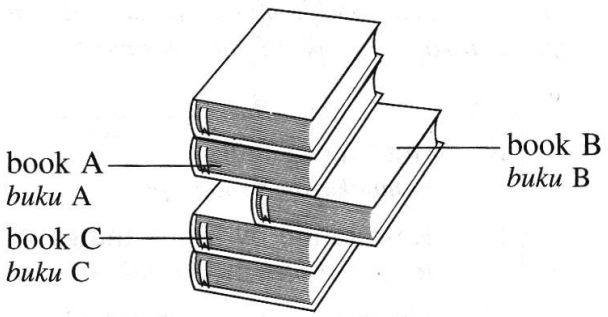


Diagram 20
Rajah 20

What is the causes of the effect?
Apakah yang menyebabkan kesan itu?

A Inertia of book A
Inersia buku A
B Inertia of book B
Inersia buku B
C Momentum of book A
Momentum buku A
D Friction between book A and book B
Geseran antara buku A dengan buku B

43 Which food processing method kill microorganisms ?
Manakah kaedah pemprosesan makanan yang membunuh mikroorganisma ?

A Pasteurization
Pempasteuran
B Dehydration
Pendehidratan
C Irradiation
Radiasi
D Cooling
Pendinginan

44 The following information shows various farming method.
Maklumat berikut menunjukkan pelbagai kaedah pertanian.

- Contour ploughing
  Penanaman kontur
- Terraces
  Teres
- Strip cropping
  Penanaman berjalur

What is the advantage of the above farming practice?
Apakah kelebihan mengamalkan kaedah pertanian di atas?

A Prevent soil erosion
Menghalang hakisan tanah
B Irrigate the farmland
Pengairan tanah pertanian
C Replace nutrients in the soil
Menggantikan nutrien dalam tanah
D Optimise the use of farmland
Mengoptimakan penggunaan tanah pertanian

45 What is the function of monosodium glutamate in instant noodles?
Apakah fungsi mononatrium glutamat dalam mee segera?

A Makes food tastier
Menjadikan makanan lebih sedap
B Reduce food spoilage
Mengurangkan kerosakan makanan
C Prevent food from oxidizing
Menghalang makanan dari teroksida
D Enrich the food with vitamin and minerals
Memperkayakan makanan dengan vitamin dan mineral

46 Diagram 21 shows a process in the production of a synthetic material.
Rajah 21 menunjukkan satu proses dalam penghasilan bahan sintetik.

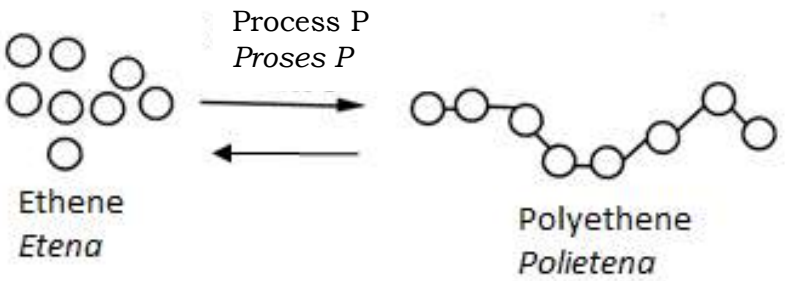


Diagram 21
Rajah 21

What is process P ?
Apakah proses P ?

A Coagulation
Penggumpalan
B Vulcanization
Pemvulkanan
C Polymerization
Pempolimeran
D Depolymerization
Penyahpolimeran

47 Which is the best method to avoid plastic waste pollution?
Manakah kaedah terbaik untuk mengelakkan pencemaran sisa plastik?

A Burn the plastic in an open area
Bakar plastik di kawasan terbuka
B Throw the plastic into a river
Buang plastik ke dalam sungai
C Buried the plastic in the soil
Tanamkan plastik ke dalam tanah
D Use biodegradable plastic
Guna plastik yang terbiodegradasi

48 Which of the following component is matched **correctly**?
*Manakah komponen berikut dipadankan dengan **betul**?*

	Component ***Komponen***	**Function** ***Fungsi***
A	 Capasitor *Kapasitor*	Amplifies the electric current *Menguatkan arus elektrik*
B	 Transistor *Transistor*	To produce magnetic field *Menghasilkan medan magnet*
C	 Inductor *Induktor*	Controls the size of current in the circuit *Mengawal saiz arus elektrik di dalam litar*
D	 Diode *Diod*	Allows current to flow in one direction only *Membenarkan arus elektrik mengalir dalam satu arah sahaja*

49 Diagram 22 shows a satellite communication system
Rajah 22 menunjukkan sistem komunikasi satelit

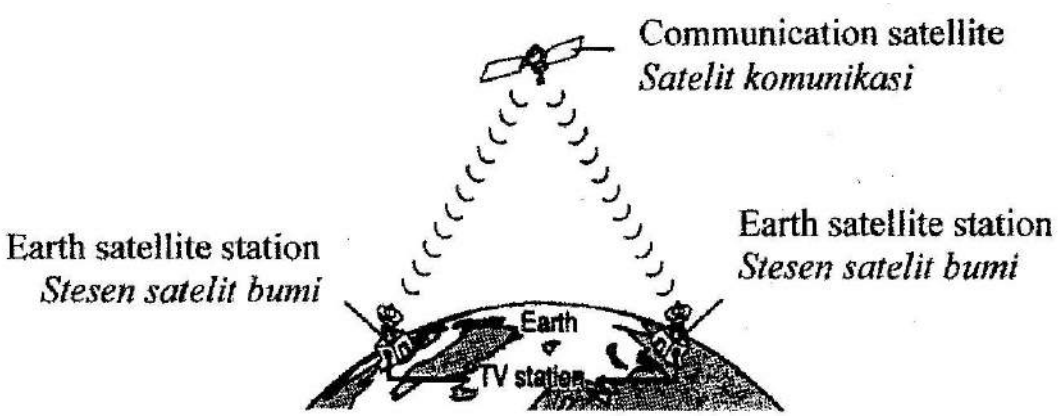


Diagram 22
Rajah 22

What type of wave is used in this communication?
Apakah jenis gelombang yang digunakan dalam komunikasi ini?

A Microwave
Gelombang mikro
B Long wave
Gelombang panjang
C Short wave
Gelombang pendek
D Medium wave
Gelombang sederhana

50 Diagram 23 shows components in a radio receiver system.
Rajah 23 menunjukkan komponen dalam satu sistem penerima radio.

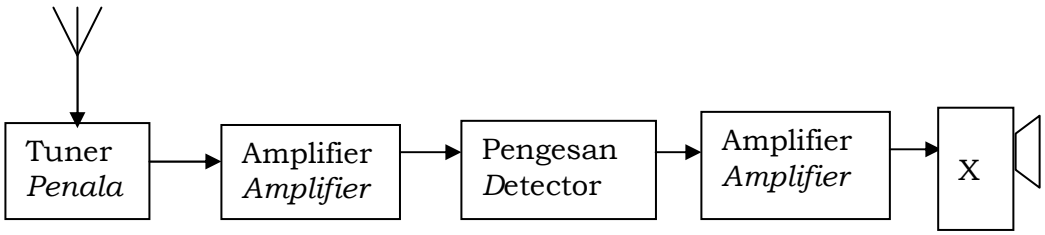


Diagram 23
Rajah 23

What is the function of X?
Apakah fungsi X ?

A Increases electric signals
Menguatkan isyarat elektrik
B Receives modulated radio wave
Menerima gelombang radio termodulasi
C Changes electric signal into sound energy
Menukarkan isyarat elektrik kepada tenaga bunyi
D Separates audio waves from radio waves
Mengasingkan gelombang audio daripada gelombang radio

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

[lihat sebelah

Sains
Kertas 1 & 2
Peraturan
Pemarkahan

PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA
SEKOLAH MENENGAH
NEGERI KEDAH DARUL AMAN

PEPERIKSAAN PERCUBAAN SPM 2011

SAINS

Kertas 1 & 2

PERATURAN PEMARKAHAN

UNTUK KEGUNAAN PEMERIKSA SAHAJA

AMARAN

Peraturan pemarkahan ini **SULIT** dan **Hak Cipta Jabatan Pelajaran Negeri Kedah.** Kegunaan khusus untuk pemeriksa yang berkenaan sahaja. Sebarang maklumat dalam peraturan pemarkahan ini tidak boleh dimaklumkan kepada sesiapa. Peraturan pemarkahan ini tidak boleh dikeluarkan dalam apa jua bentuk penulisan dan percetakan.

Peraturan pemarkahan ini mengandungi 12 halaman bercetak

1511/2(PP)

MARKING SCHEME (PAPER 1)

QUESTION NO	ANSWER	QUESTION NO	ANSWER
1	B	26	B
2	D	27	A
3	B	28	A
4	D	29	D
5	A	30	C
6	C	31	C
7	A	32	B
8	B	33	C
9	D	34	C
10	D	35	C
11	D	36	B
12	C	37	B
13	D	38	A
14	C	39	B
15	C	40	A
16	A	41	B
17	C	42	A
18	B	43	C
19	B	44	A
20	C	45	A
21	A	46	C
22	B	47	D
23	A	48	D
24	D	49	A
25	D	50	C

1511/2
Sains
Kertas 2
September
2011

Nama : ..... Tingkatan : .....

PERSIDANGAN KEBANGSAAN PENGETUA-PENGETUA SEKOLAH MENENGAH NEGERI KEDAH DARUL AMAN

PEPERIKSAAN PERCUBAAN SPM 2011

SAINS

Kertas 2

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Tulis nama dan tingkatan di ruangan yang disediakan di bahagian atas muka surat ini.*
2. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Melayu atau bahasa Inggeris.*
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. *Tulis jawapan pada ruangan jawapan yang disediakan pada kertas soalan. Kertas tulis tambahan sekiranya digunakan, perlu diikat bersama dengan buku soalan ini.*
5. *Langkah mengira hendaklah ditunjukkan.*
6. *Markah bagi setiap ceraian soalan ditunjukkan di dalam kurungan [ ].*
7. *Rajah tidak dilukis mengikut skala* ***kecuali*** *dinyatakan.*
8. *Penggunaan kalkulator saintifik yang tidak boleh diprogramkan adalah dibenarkan.*

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

Kertas soalan ini mengandungi 20 halaman bercetak

SECTION A
[20 marks]
Answer **all** questions.
*Jawab **semua** soalan*

1 Diagram 1.1 and Diagram 1.2 show an experiment to investigate the electrical conductivity of metal and non-metal.
Rajah 1.1 dan Rajah 1.2 menunjukkan satu eksperimen untuk mengkaji kekonduksian elektrik oleh bahan logam dan bukan logam.

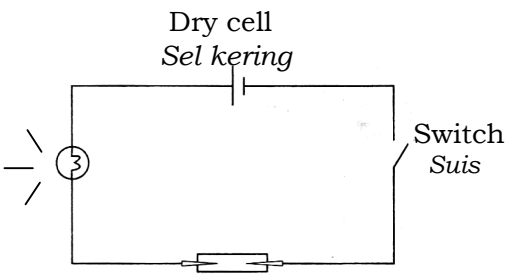


Diagram 1.1
Rajah 1.1

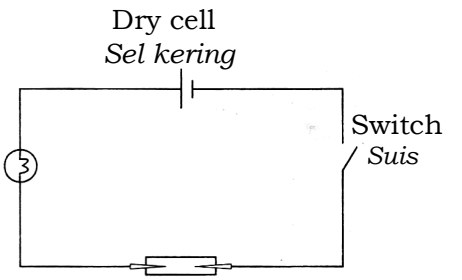


Diagram 1.2
Rajah 1.2

(a) (i) Based on Diagram 1.1 and Diagram 1.2, what is your observation on the condition of the bulb?
Berdasarkan Rajah 1.1 dan Rajah 1.2, apakah pemerhatian anda pada keadaan mentol?

.....

(ii) Based on the experiment, mark (√) the plat which is a metal.
Berdasarkan eksperimen, tandakan (√) bagi plat logam.

Plate A *Plat A*	Plate B *Plat B*

[2 *marks*]

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

(i) Manipulated variable
Pembolehubah dimanipulasikan

.....

(ii) Constant variable
Pembolehubah dimalarkan

.....

[2 *marks*]

(c) State the operational definition of metal.
Nyatakan definisi secara operasi bagi logam.

.....

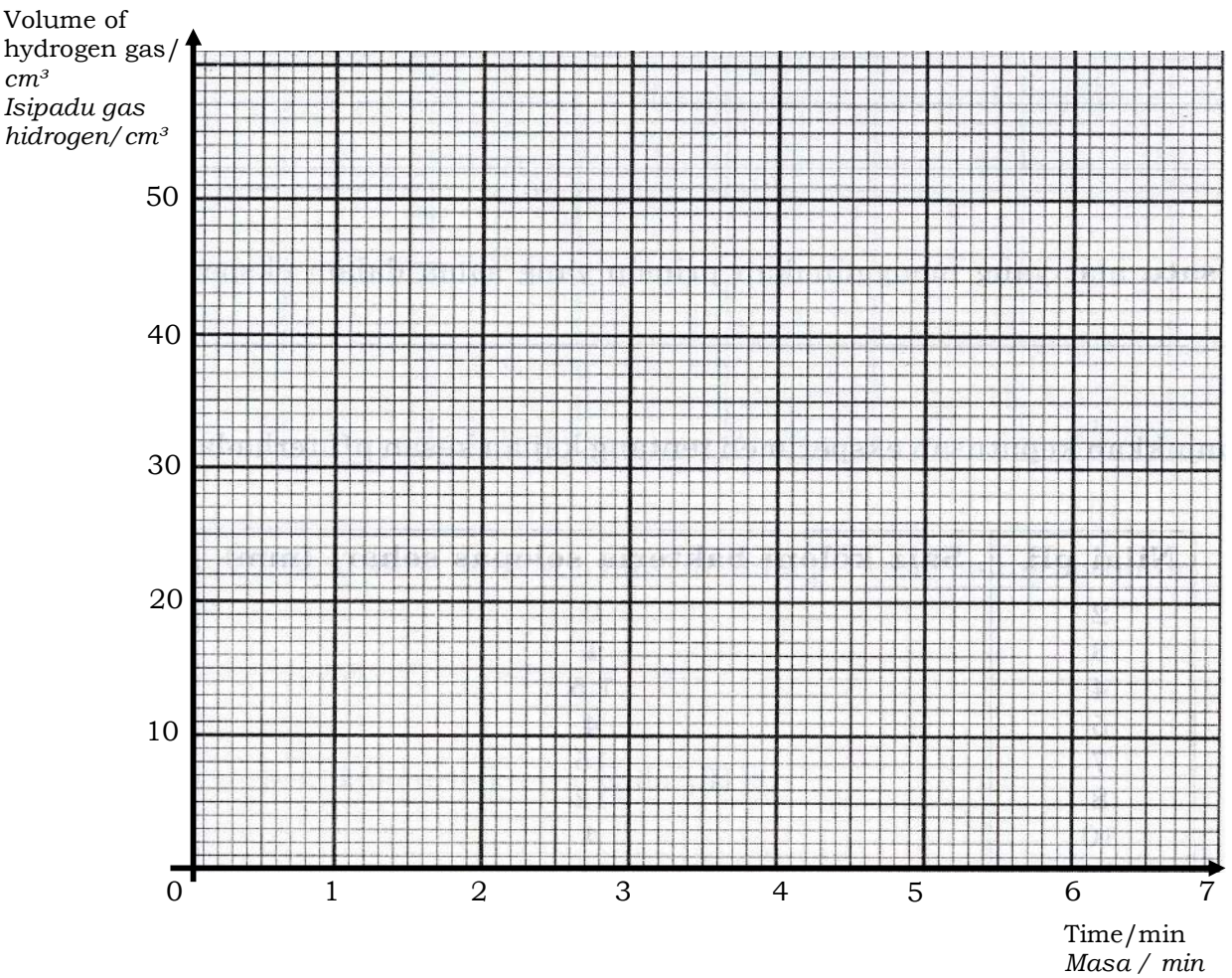
[1 *mark*]

2 Table 2 shows the result of the experiment to study the reactivity of calcium with water.
Jadual 2 menunjukkan keputusan satu eksperimen untuk mengkaji kereaktifan kalsium dengan air.

Time/min *Masa/min*	0	1	2	3	4	5	6
Volume of hydrogen gas Isipadu gas hidrogen/ cm^3	0	15	30	.....	41	43	43

Table 2
Jadual 2

(a) (i) Using the data in Table 2, draw the graph volume of hydrogen gas against time.
Berdasarkan data dalam Jadual 2, lukiskan graf isipadu gas hidrogen melawan masa.



[2 *marks*]

(ii) Based on the graph, state the volume of hydrogen gas on the third minute.
Berdasarkan graf, nyatakan isipadu gas hidrogen pada minit ketiga.

.....
[1 *mark*]

(b) What is the relationship between the volume of hydrogen gas and the reaction time in the first two minutes?
Apakah hubungan di antara isipadu gas hidrogen dengan masa tindakbalas dalam dua minit pertama ?

.....

.....
[1 *mark*]

(c) Predict the volume of hydrogen gas on the seventh minute.
Ramalkan isipadu gas hidrogen pada minit yang ketujuh.

.....
[1 *mark*]

3 Diagram 3.1 and Diagram 3.2 show an experiment to produce the secondary coloured lights.
Rajah 3.1. dan Rajah 3.2 menunjukkan satu eksperimen untuk menghasilkan cahaya warna sekunder.

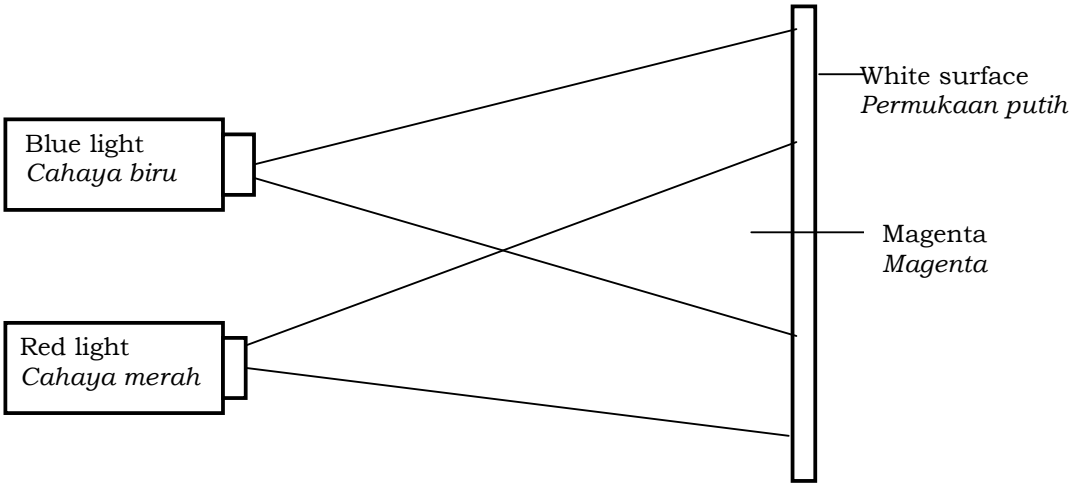


Diagram 3.1
Rajah 3.1

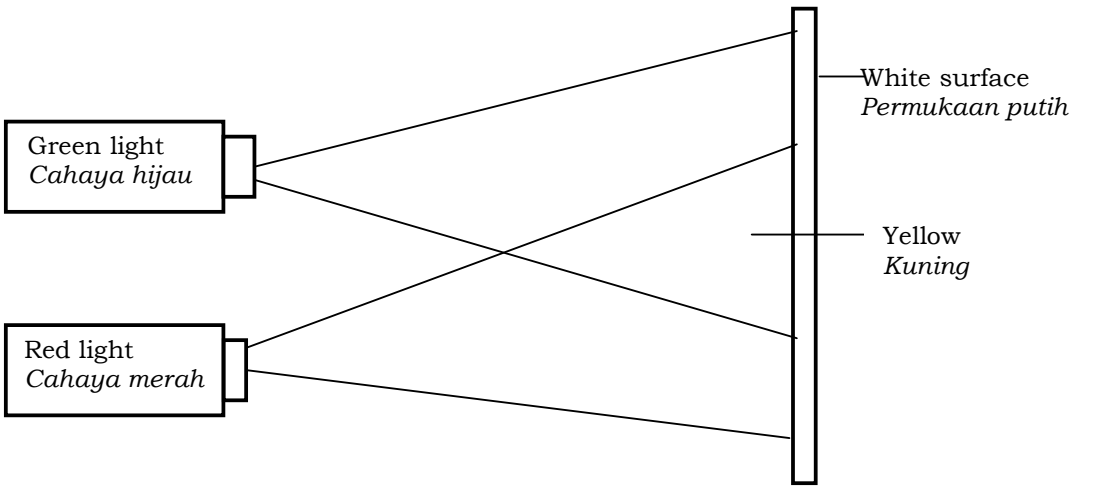


Diagram 3.2
Rajah 3.2

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

(i) Manipulated variable:
Pembolehubah dimanipulasikan:

.....

(ii) Responding variable:
Pembolehubah bergerakbalas:

.....
[2 marks]

(b) Based on Diagram 3.1, state one hypothesis.
Berdasarkan Rajah 3.1, nyatakan satu hipotesis.

.....

.....

[1 *mark*]

(c) Mark (√) in the boxes provided, the primary coloured lights.
Tandakan (√) pada petak yang disediakan, cahaya warna primer.

Magenta *Magenta*	Red *Red*	Blue *Biru*	Yellow *Kuning*

[1 *mark*]

(d) Diagram 3.3 shows the addition of coloured lights.
Rajah 3.3 menunjukkan penambahan cahaya berwarna.

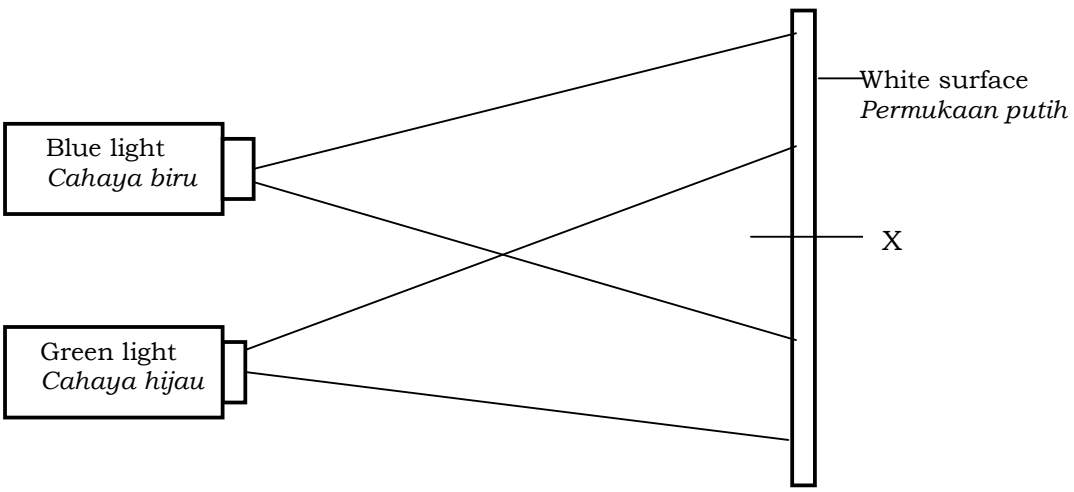


Diagram 3.3
Rajah 3.3

Predict the colour of light produces at area X?
Ramalkan warna cahaya yang terhasil di kawasan X?

.....

[1 *mark*]

4 Diagram 4.1 dan 4.2 show an experiment to study the effect of yeast on the dough.
Rajah 4.1 dan Rajah 4.2 menunjukkan satu eksperimen mengkaji kesan yis terhadap adunan roti.

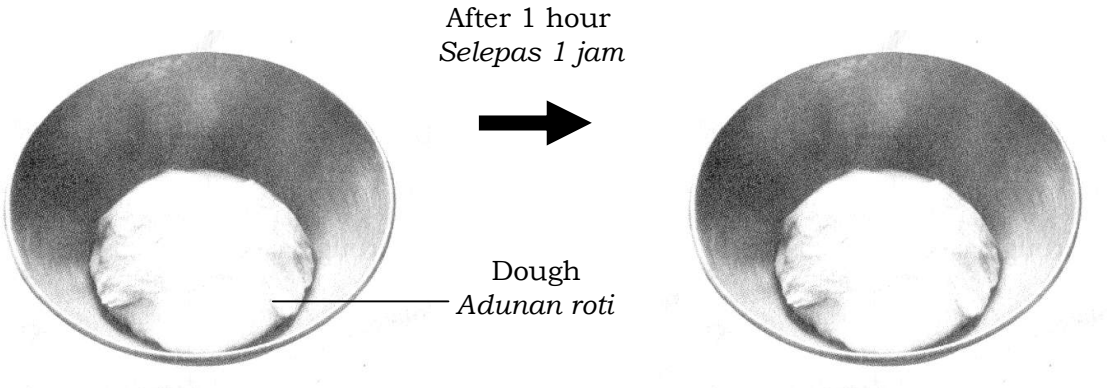


Diagram 4.1
Rajah 4.1

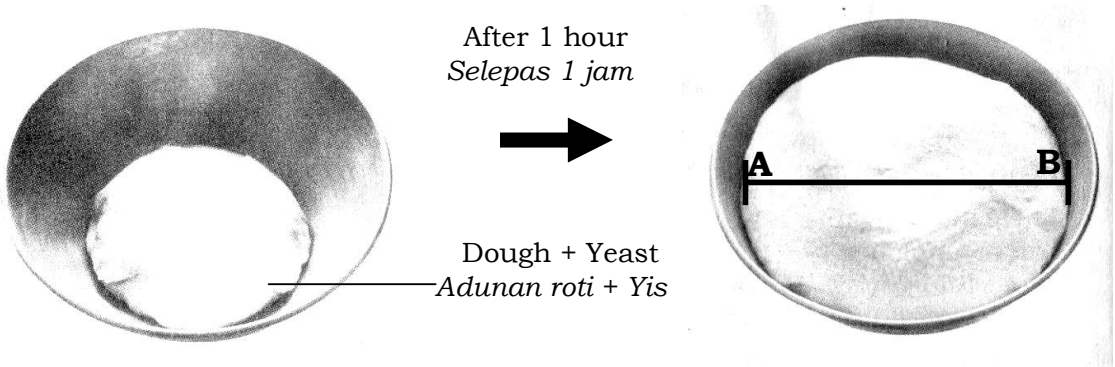


Diagram 4.2
Rajah 4.2

(a) Based on Diagram 4.2, state one observation from the result of the experiment.
Berdasarkan Rajah 4.2, nyatakan satu pemerhatian dari keputusan eksperimen.

.....

.....
[1 *mark*]

(b) Based on the observation in 4(a), state one inference.
Berdasarkan pemerhatian dalam 4(a), nyatakan satu inferens.

.....

[1 *mark*]

(c) Measure diameter of the dough between A and B at Diagram 4.2.
Ukur diameter adunan roti antara A dan B pada Rajah 4.2.

..... cm

[1 *mark*]

(d) State one constant variables in this experiment.
Nyatakan satu pembolehubah dimalarkan dalam eksperimen ini.

.....

[1 *mark*]

(e) Tick (√) in the box for the class of yeast.
Tandakan (√) pada kotak untuk kelas bagi yis.

Bacteria *Bakteria*	Fungi *Kulat*	Protozoa *Protozoa*

[1 *mark*]

SECTION B
[30 marks]
Answer **all** questions
*Jawab **semua** soalan*

5 Diagram 5 shows a process occur in a cell division.
Rajah 5 menunjukkan proses yang berlaku dalam suatu pembahagian sel.

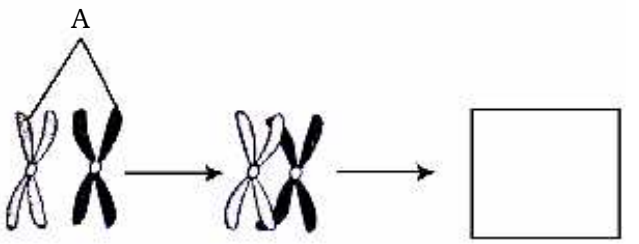


Diagram 5
Rajah 5

(a) Name the structure A.
Namakan struktur A.

.....
[1 *mark*]

(b) (i) Name the process in Diagram 5.
Namakan proses dalam Rajah 5.

.....

(ii) Draw the result of the process in the box provided in Diagram 5.
Lukis hasil proses tersebut dalam kotak yang disediakan pada Rajah 5.
[2 *marks*]

(c) Tick (√) the type of cell division involved in Diagram 5.
Tandakan (√) jenis pembahagian sel yang terlibat dalam Rajah 5.

Mitosis *Mitosis*	Meiosis *Meiosis*

[1 *mark*]

(d) Where does the process in Diagram 5 occur in human?
Dimanakah proses dalam Rajah 5 berlaku pada manusia?

.....
[1 *mark*]

(e) State the importance of the process.
Nyatakan kepentingan proses tersebut.

.....
[1 *mark*]

6 Diagram 6 shows the change in the state of matter of iodine crystals when it is heated.
Rajah 6 menunjukkan perubahan keadaan jirim bagi hablur iodin apabila dipanaskan.

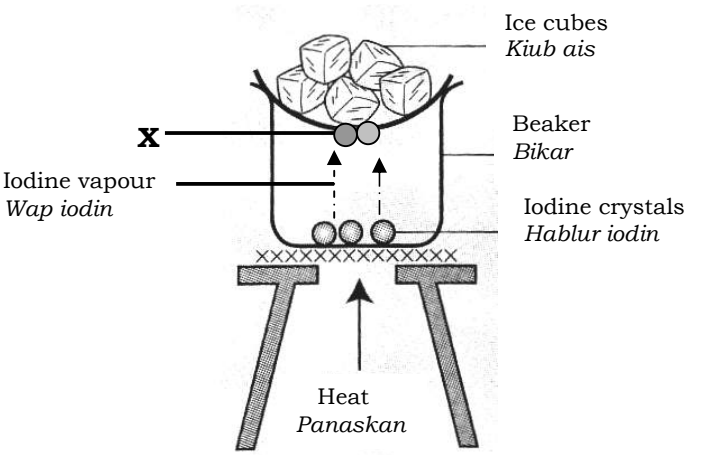


Diagram 6
Rajah 6

(a) (i) What is the function of ice in watch glass ?
Apakah fungsi ais dalam piring kaca ?

.....

(ii) What is X ?
Apakah X ?

.....
[2 *marks*]

(b) (i) Based on Diagram 6 name the type of change by using the following information:
Berdasarkan Rajah 6 namakan jenis perubahan dengan menggunakan maklumat berikut:

• Physical changes *Perubahan fizikal*	• Chemical changes *Perubahan kimia*

.....
[1 *mark*]

(ii) State **one** characteristic of change in (b) (i) ?
*Nyatakan **satu** ciri perubahan dalam b (i) ?*

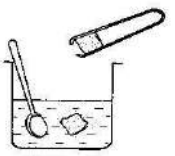
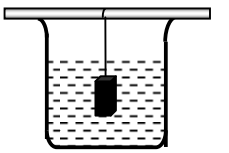
.....
[1 *mark*]

(c) Name the process in the beaker when iodine crystals is heated .
Namakan proses dalam bikar apabila hablur iodin dipanaskan.

.....

[1 *mark*]

(d) Mark (√) in the box provided other examples the type of change as in Diagram 6.
Tandakan (√) dalam kotak yang disediakan contoh lain jenis perubahan yang sama seperti dalam Rajah 6.

 Dissolving of sugar *Melarutkan gula*	 Burning match stick *Pembakaran batang mancis*	 Crystalisation of copper (II) sulphate solution. *Penghabluran larutan kuprum (II) sulfat*

[1 *mark*]

7 Diagram 7 shows the production ammonia in industry.
Rajah 7 menunjukkan penghasilan ammonia dalam industri.

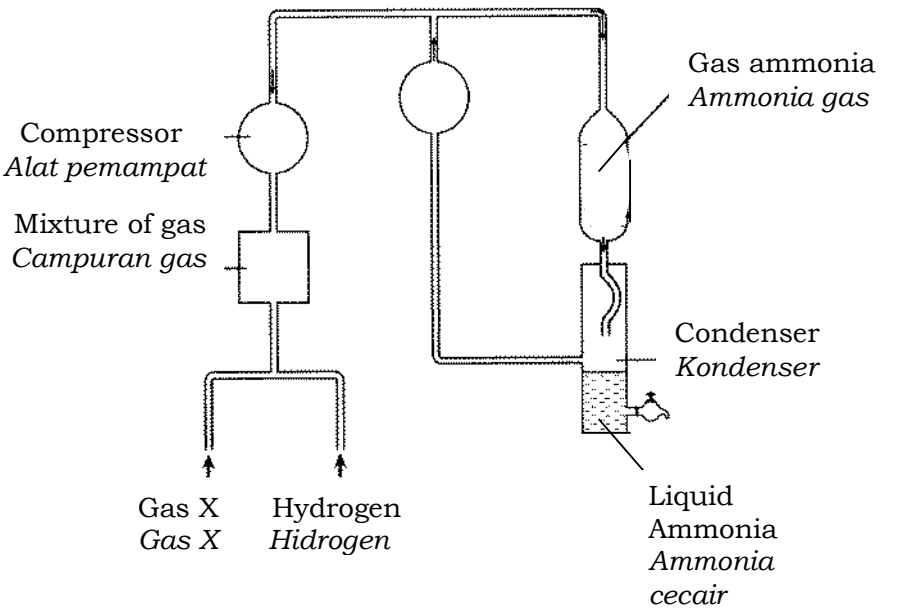


Diagram 7
Rajah 7

(a) Name the process as shown in Diagram 7.
Namakan proses untuk menghasilkan ammonia pada Rajah 7.

.....
[1 *mark*]

(b) (i) State gas X
Nyatakan gas X

.....

(ii) State the ratio of gas X to hydrogen
Nyatakan nisbah gas X kepada hidrogen

.....
[2 *marks*]

(c) State two conditions needed in producing ammonia in Diagram 7.
Nyatakan dua syarat penghasilan ammonia pada Rajah 7.

1 .....

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

(d) State one use of ammonia in rubber industry.
N

.....

[1 *mark*]

8 Diagram 8 shows the steps in making soap.
Rajah 8 menunjukkan langkah-langkah pembuatan sabun.

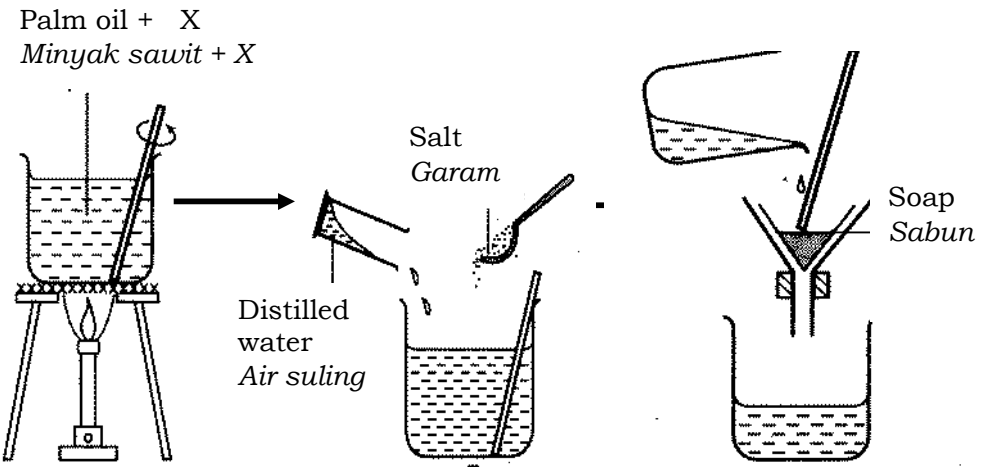


Diagram 8
Rajah 8

(a) Name the process in Diagram 8 using the following information.
Namakan proses dalam Rajah 8 menggunakan maklumat berikut.

Fermentation *Penapaian*	Saponification *Saponifikasi*	Esterification *Pengesteran*

.....

[1 *mark*]

(b) What is substance X?
Apakah bahan X?

.....

[1 *mark*]

(c) What is the function of salt?
Apakah fungsi garam?

.....

[1 *mark*]

(d) State one substance that can replace palm oil.
Nyatakan satu bahan yang boleh menggantikan minyak sawit.

.....

[1 *mark*]

(e) Draw the structure of a soap molecule.
Lukis struktur satu molekul sabun.

[1 *mark*]

(f) Diagram 8.1 shows a cloth dirtied by grease.
Rajah 8.1 menunjukkan kain yang dikotori oleh gris.

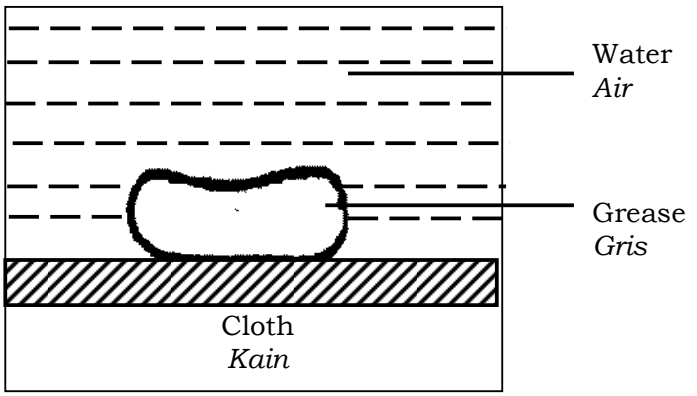


Diagram 8.1
Rajah 8.1

Draw the cleansing action of the soap molecule on grease in Diagram 8.1
Lukis tindakan pencucian molekul sabun ke atas gris dalam Rajah 8.1

[1 *mark*]

9 Diagram 9.1 shows three types of food.
Rajah 9.1 menunjukkan tiga jenis makanan.

(a) Draw lines to show the correct match between the type of food and the chemicals used.
Lukis garisan untuk menunjukkan padanan yang betul di antara jenis makanan berikut dengan bahan kimia yang digunakan.

Type of food *Jenis makanan*	Chemicals used *Bahan kimia yang digunakan*
 Tomato sauce *Sos tomato*	Boric acid *Asid borik*
 Dried mango *Mangga kering*	Starch *Kanji*
 Noodles *Mee kuning*	Aspartame *Aspartam*

Diagram 9.1
Rajah 9.1

[3 *marks*]

(b) Table 9.1 shows the chemicals used in foods.
Jadual 9.1 menunjukkan bahan kimia yang digunakan di dalam makanan.

Stabiliser *Penstabil*	Colouring *Pewarna*	Preservative *Pengawet*	Sweetener *Pemanis*

Table 9.1
Jadual 9.1

By using the information given in the table, state the chemicals used for the following functions.
Menggunakan maklumat yang diberi dalam jadual tersebut, nyatakan bahan kimia yang digunakan bagi fungsi berikut.

Complete the answer in Table 9.2.
Lengkapkan jawapan dalam Jadual 9.2.

Function of the chemicals used *Fungsi bahan kimia yang digunakan*	Chemicals used *Bahan kimia yang digunakan*
Improves the texture of the food. *Memperbaiki tekstur makanan.*	
To replace sugar in food *Menggantikan gula dalam makanan*	
Reduce food spoilage *Mengurangkan kerosakan makanan*	

Table 9.2
Jadual 9.2

[3 *marks*]

SECTION C
[*20 marks*]

Answer **Question 10** *and either* **Question 11** *or* **Question 12**
Jawab **Soalan 10** *dan sama ada* **Soalan 11** *atau* **Soalan 12**

10 Study the following statement.
Kaji pernyataan berikut.

> The mass of a moving object will affect the time to stop its movement.
> *Jisim suatu objek yang bergerak akan memberi kesan terhadap masa menghentikan gerakannya.*

(a) Suggest **one** hypothesis to investigate the above statement.
*Cadangkan **satu** hipotesis untuk menyiasat pernyataan di atas.*

[1 *mark*]

(b) Using two tins, sand, rope, hanging place and other apparatus, describe an experiment to test the hypothesis in 10(a) based on the following criteria:
Menggunakan dua tin, pasir, tali, tempat menggantung dan radas lain, huraikan satu eksperimen bagi menguji hipotesis di 10(a) berdasarkan kriteria berikut:

(i) The aim of the experiment
Tujuan eksperimen [1 *mark*]

(ii) The identification of variables
Mengenal pasti pembolehubah [2 *marks*]

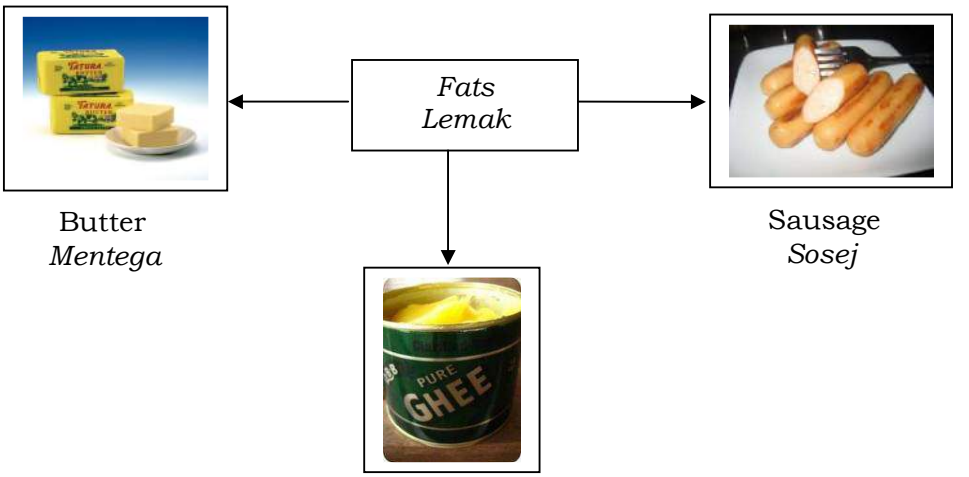
(iii) The list of apparatus and materials
Senaraikan radas dan bahan [1 *mark*]

(iv) The procedure or method
Prosedur atau kaedah [4 *marks*]

(v) The tabulation of data
Penjadualan data [1 *mark*]

11 (a) State **four** differences between saturated fat and unsaturated fat.
*Nyatakan **empat** perbezaan antara lemak tepu dengan lemak tak tepu.*
[4 *marks*]

(b) Diagram 11 shows the examples of products that contain fats.
Rajah 11 menunjukkan contoh produk yang mengandungi lemak.



Butter
Mentega

Sausage
Sosej

Ghee
Minyak sapi

Diagram 11
Rajah 11

Study the information in Diagram 11 and construct the concept of saturated fat.
Your answer should be based on the following steps:
Kaji maklumat dalam Rajah 11 dan bina konsep lemak tepu.
Jawapan anda hendaklah berdasarkan aspek-aspek berikut:

- Identify **two** common characteristics
*Kenal pasti **dua** ciri-ciri sepunya* [2 *marks*]

- Give **one** other example of product that contains saturated fat
*Berikan **satu** contoh lain produk yang mengandungi lemak tepu*
[1*mark*]

- Give two examples of products that contain unsaturated fat
Beri dua contoh produk yang mengandungi lemak tak tepu
[*2 marks*]

- Relate the common characteristics to construct the concept of saturated fat
Hubungkaitkan ciri sepunya untuk membina konsep lemak tepu
[*1 mark*]

12 (a) State two examples of radioactive substances and their uses.
Nyatakan dua contoh bahan radioaktif dan kegunaannya.

(4 *marks*)

(b) You are hired as a technician in a food industry.
Based on Diagram 12, you are asked to choose the most suitable radioactive source in the food packaging.

Anda diterima bekerja sebagai juruteknik dalam satu industri makanan. Berdasarkan Rajah 12, anda dikehendaki memilih sumber radioaktif yang paling sesuai digunakan dalam pembungkusan makanan.

alpha source *sumber alfa* α	beta source *sumber beta* β	gamma source *sumber gamma* γ

Diagram 12
Rajah 12

Your explanation should include the following:
Penjelasan anda mestilah mengandungi perkara berikut:

- Aim of choice
Tujuan pemilihan [1 *mark*]

- Explanation on the characteristics on each type of radioactive source based on penetrating power.
Penjelasan tentang ciri-ciri setiap jenis sumber radioaktif berdasarkan kuasa penembusannya. [3 *marks*]

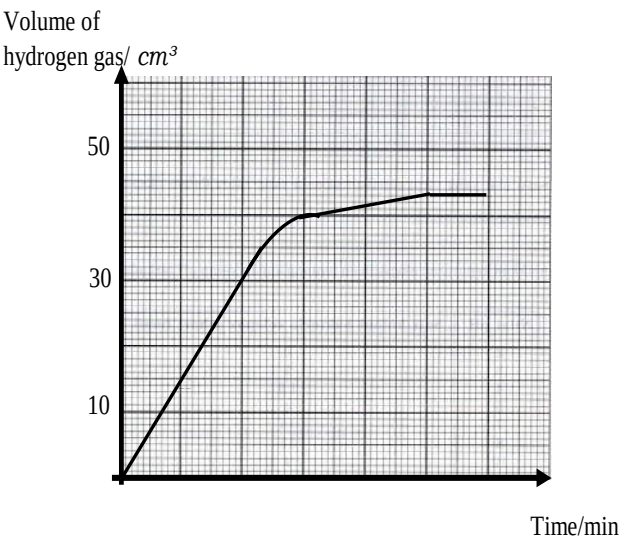
- List of type radioactive source according to its priority.
Senarai sumber radioaktif menurut keutamaannya. [1 *mark*]

- Give one reason for your choice.
Berikan satu sebab kepada pemilihan anda [1 *mark*]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

MARKING SCHEME (PAPER 2)

Quest No	Marking Criteria	Mark	Σ Marks
1	**SECTION A** (a) (i) In Diagram 1.1, bulb lights up and in Diagram 1.2, bulb does not lights up Note: Must have comparison	1	
	(ii) Plate A *Plat A*: √ Plate B *Plat B*:	1	2
	(b) (i) Manipulated Variable: Type of plate	1	
	(ii) Constant Variable : Number of dry cell	1	2
	(c) Metal is a substance which lights up the bulb	1	1
		TOTAL	**5**

Quest No	Marking Criteria	Mark	Σ Marks
2	(a) (i)  Note: 1. All points are transferred correctly – 1m 2. Smooth graph - 1m	2	2
	(a)(ii) 40 ± 0.1 (cm³)	1	1
	(b) 1. As the time increases, the volume of hydrogen gas increases 2. If the time increases, so the volume of hydrogen gas increases 3. The longer the time, the higher the volume of hydrogen gas 4. Volume of hydrogen gas is directly proportional to time *Any one*	1	1
	(c) 43 ± 0.1 (cm³)	1	1
		TOTAL	**5**

<table>
<tr><th>Quest No</th><th>Marking Criteria</th><th>Mark</th><th>Σ Marks</th></tr>
<tr><td>3</td><td>(a) (i) Manipulated variable:
1. Pair of primary coloured light
2. blue light and red light
3. green light and red light
4. blue light, red light and green light, red light
Any one

(ii) Responding variable:
1. secondary coloured light
2. magenta
3. yellow
4. magenta and yellow
Any one

(b) Addition of red light and blue light produced magenta

(c)
<table><tr><td>Magenta</td><td>Red</td><td>Blue</td><td>Yellow</td></tr><tr><td></td><td>√</td><td>√</td><td></td></tr></table>
(d) cyan</td><td>1

1

1

1

1

1

1

TOTAL</td><td>2

1

1

5</td></tr>
<tr><td>4</td><td>(a) 1. dough risen
2. size of dough increases
3. diameter of dough wider
4. dough is bigger /wider

(b) 1. Yeast is active
2. The presence of yeast causes the dough to rise
3. Yeast produces carbon dioxide

(c) AB = 4.3 ± 0.1 cm
(Note: actual answer base on the question paper)

(d) Constant Variable:
1. Initial size of dough
2. Size of dough before experiment
3. Mass of dough
4. Temperature
5. Time
(e)
<table><tr><td>Bacteria</td><td>Fungi</td><td>Protozoa</td></tr><tr><td></td><td>√</td><td></td></tr></table></td><td>1

1

1

1

1

1

1

TOTAL</td><td>1

1

1

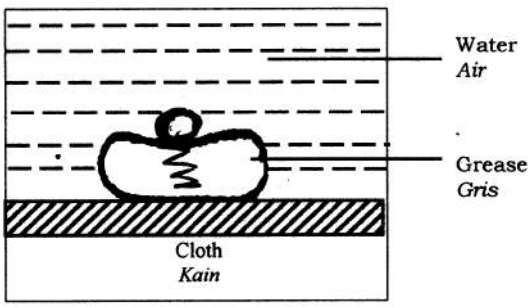
1

1

1

5</td></tr>
</table>

Quest No	Marking Criteria	Mark	Σ Marks
5	**SECTION B** (a) chromatids / chromosomes	1	1
	(b) (i) crossing over	1	
	(ii) 	1	2
	(c) Mitosis: Meiosis: √	1	1
	(d) testis /ovary / reproduction organ	1	1
	(e) causes genetic variation	1	1
		TOTAL	**6**
6	(a)(i) to cool (and condense) iodine vapour	1	
	(ii) 1. black (iodine) crystals 2. Iodine crystals	1	2
	(b) (i) physical changes	1	1
	(ii) 1. No new substances are formed 2. Less energy is needed 3. Change is reversible 4. Changes in physical properties	1	1
	Note (b)(ii): 1. Any one characteristic 2. If in (b)(i) student answer chemical change, accept any characteristics of chemical change for answer (b)(ii) - error carry forward		
	(c) sublimation	1	1
	(d) Dissolving of sugar: Burning match stick: Crystallisation of copper (II) sulphate solution: √	1	1
		TOTAL	6

Quest No	Marking Criteria	Mark	Σ Marks
7	(a) Haber (process)	1	1
	(b) (i) Nitrogen	1	
	(ii) 1 : 3	1	2
	(c) 1. pressure 2. catalyst 3. temperature Any **two** conditions	1 1 1	2
	(d) Prevent coagulation of latex	1	1
		TOTAL	6
8	(a) Saponification	1	1
	(b) 1. Sodium hydroxide (solutio) 2. Potassium hydroxide (solution) 3. Alkali	1	1
	(c) to solidify soap	1	1
	(d) coconut oil/ maize oil/ any plant oil	1	1
	(e)  (Hydrocarbon) tail (Ionic) head Note: Diagram without label can be accepted	1	1
	(f) 	1	1
		TOTAL	6

<table>
<tr><th>Quest No</th><th>Marking Criteria</th><th>Mark</th><th>Σ Marks</th></tr>
<tr><td>9</td><td>(a)
<table>
<tr><td>Type of food</td><td>Chemicals used</td></tr>
<tr><td>Tomato sauce</td><td>Starch</td></tr>
<tr><td>Dried Mango</td><td>Aspartame</td></tr>
<tr><td>Noodles</td><td>Boric acid</td></tr>
</table>
(b)
<table>
<tr><td>Function of the chemicals used</td><td>Chemicals used</td></tr>
<tr><td>Improves the texture of the food.</td><td>Stabiliser</td></tr>
<tr><td>To replace sugar in food</td><td>Sweetener</td></tr>
<tr><td>Reduce food spoilage</td><td>Preservative</td></tr>
</table></td><td>1
1
1

1

1

1</td><td>3

3</td></tr>
<tr><td></td><td></td><td>TOTAL</td><td>6</td></tr>
</table>

Quest No	Marking Criteria	Mark	Σ Marks
10	**SECTION C** (a) 1. The bigger the mass of (a moving) object, the longer the time to stop its movement	1	
	2. As the mass of (a moving) object increases, the time to stop its movement increases.	1	
	3. If the mass of (a moving) object increases, so the time to stop its movement increases	1	1
	(b)(i) 1. To study/investigate the relationship between the mass of (a moving) object and the time to stop its movement	1	
	2. To study the effect of mass of (a moving) object on the time to stop its movement.	1	1
	(ii) Constant : Size of tin// Length of rope	1	
	Manipulated: Mass of tin// Empty tin and tin with sand	1	Max 2
	Responding : Time of tin/ object to stop (moving)	1	
	(iii) 2 tins, sand, rope , hanging place, **(stop)watch**	1	1
	(iv) 1. Tin A is filled with sand and tin B is left empty// diagram – pt 1	1	
	2. Both tins are hung (to the hanging place) using the same length of rope //diagram– pt 2	1	
	3. Push both tins with the same force.-pt 3	1	
	4. Record the time for the tins to stop swinging/moving using (stop)watch. –pt 4	1	4
	(v) Tabulation of data *Note: Data Manipulated variable refer to mass **Or**	1	1
	TOTAL		**10**

Mass of tin/object	Time of tin/object to stop swinging/moving
Bigger	
Smaller	

Empty tin and tin with sand	Time of tin/object to stop swinging/moving
Tin with sand	
Empty tin	

<table>
<tr><th>Quest No</th><th>Marking Criteria</th><th>Mark</th><th>Σ Marks</th></tr>
<tr><td>11(a)</td><td>
Differences between saturated fat and unsaturated fat
Perbezaan antara lemak tepu dan lemak tak tepu
<table>
<tr><th>No.
Bil.</th><th>Saturated fat
Lemak tepu</th><th>Unsaturated fat
Lemak tak tepu</th></tr>
<tr><td>1</td><td>High melting point
Takat lebur tinggi</td><td>Low melting point
Takat lebur rendah</td></tr>
<tr><td>2</td><td>Solid at room temperature
Pepejal pada suhu bilik</td><td>Liquid at room temperature
Cecair pada suhu bilik</td></tr>
<tr><td>3</td><td>Originate from animal
Berasal daripada haiwan</td><td>Originate from plant
Berasal daripada tumbuhan</td></tr>
<tr><td>4</td><td>High cholesterol
Berkolesterol tinggi</td><td>No/less cholesterol
Tiada/ kurang kolesterol</td></tr>
<tr><td>5</td><td>Bad effects on health
Kesan buruk kepada kesihatan</td><td>Good effects on health
Kesan baik kepada kesihatan</td></tr>
<tr><td>6</td><td>Fats that have single bond between carbon atoms in their carbon chains
Lemak yang mempunyai ikatan tunggal antara atom karbon dalam rantai karbon</td><td>Fats that have double or triple bonds between the carbon atoms in their chains
Lemak yang mempunyai ikatan ganda dua atau tiga antara atom karbon dalam rantai karbon</td></tr>
</table>
*Note : Any four differences
</td><td>1
1
1
1
1
1</td><td>Max 4</td></tr>
</table>

<table>
<tr><th>Quest No</th><th>Marking Criteria</th><th>Mark</th><th>Σ Marks</th></tr>
<tr><td>11(b)</td><td>

Two common characteristics:
1. Substance originate from animal ;
2. Substance which is solid at room temperature
3. Substance that has high melting point
4. Substance that have high cholesterol
Note: Any two common characteristics

• **Other example of product**:
Burger meat // cheese //nugget// any products from animal

• **Two examples of products that contain unsaturated fat**
margarine, palm oil, maize oil //any oil from plant

• **Actual concept**
Saturated fat is a substance which originates from animal and has high melting point

Note:
Actual concept must have two correct characteristics and **must** be stated in common characteristics

</td><td>

1
1
1
1

1

2

1

</td><td>

max
2

1

2

1

</td></tr>
<tr><td></td><td></td><td>TOTAL</td><td>10</td></tr>
<tr><td>12(a)</td><td>

<table>
<tr><th>Radioactive substances</th><th>Uses</th></tr>
<tr><td>Iodine -131</td><td>Investigate the thyroid gland</td></tr>
<tr><td>Cobalt-60</td><td>Kill cancerous cells</td></tr>
<tr><td>Carbon-14</td><td>Carbon dating</td></tr>
<tr><td>Phosphorus-32</td><td>Study the absorption of fertilizer by plants</td></tr>
</table>

Note :
1. One radioactive substance and its uses correct - 2 marks
2. Only radioactive substance is stated and correct - 1 mark
3. Only uses is stated and correct - 0 mark

</td><td>

2
2
2
2

</td><td>Max 4</td></tr>
</table>

Quest No	Marking Criteria	Mark	Σ Marks
12(b)	**Aim:** To choose the most suitable radioactive source in food packaging	1	1
	Explanation: 1. Alpha • Has low penetrating power • Can be blocked by a sheet of paper	1	
	2. Beta • Has high penetrating power • Can be blocked by a thin aluminium sheet	1	
	3. Gamma • Has highest penetrating power • Can only be blocked by a thick lead/concrete	1	
	Note: Each radioactive source **must** has an **explanation**		3
	Priority list of radioactive source: 1. Gamma 2. Beta 3. Alpha	1	1
	Note: **Gamma must be the first choice**		
	Reason: Gamma is the **most suitable for food packaging** because it 1. can penetrate / pass through container 2. has highest penetrating power 3. can identify the quantity of food in container/pack 4. can kill microorganisms 5. can sterile food	1	1
	Note: Reason must have **most suitable for food packaging** and any relevant reason		
		TOTAL	**10**

END OF MARKING SCHEME

SKEMA PEMARKAHAN TAMAT