4 (a) Read from Diagram 1.1. Avoid parallax error.

Answers:

30.0 cm^3

(b) Compare the volumes of gas displaced by sodium and calcium.

Answers:

A reactive metal can displace more gas from water.

Logam yang lebih reaktif boleh menyesarkan lebih banyak gas daripada air.

(c) Compare the variables in Diagram 1.1 and Diagram 1.2. The variables are the mass of the metal, the time taken and the volume of gas collected.

Answers:

(i) The mass of the metal/The time taken
Jisim logam/Masa yang diambil

(ii) The volume of gas collected
Isi padu gas terkumpul

(d) The volume of gas collected is larger when sodium is used. Sodium is more reactive.

Answers:

Sodium ✓

Natrium

1 *(a)*

Diagram *Rajah*	**Colour of light on white screen** *Warna cahaya pada skrin putih*
Diagram 2.1 *Rajah* 2.1	Red *Merah*
Diagram 2.2 *Rajah* 2.2	Green *Hijau*

Review: By looking at the screens in Diagram 2.1 and Diagram 2.2, state the colours on the screen.

(b) The colour on the screen is the same as the colour of filter used.
Warna pada skrin adalah sama dengan warna penapis yang digunakan.
Review: A hypothesis is a statement relating manipulated variable (types of coloured filter) and the responding variable (colour on the screen).

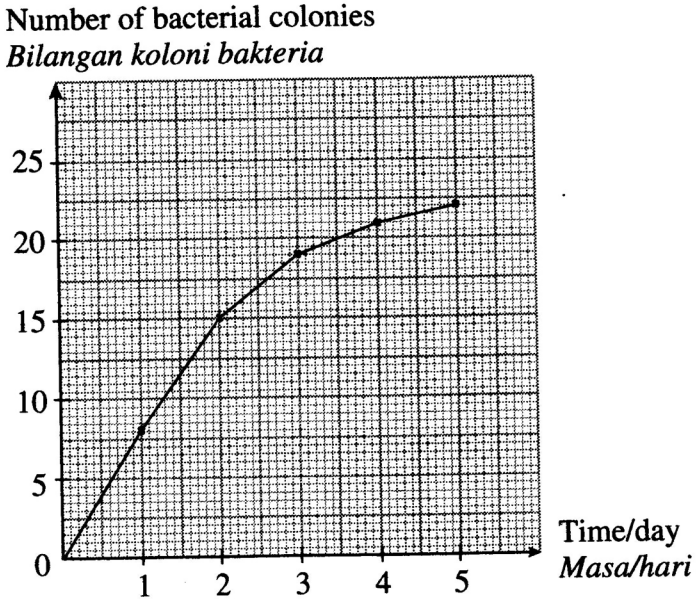
(c) Types of coloured filter
Jenis penapis berwarna
Review: Two types of coloured filter are used. The manipulated variable is the types of coloured filter.

(d) Blue/*Biru*
Review: Red, green and blue are primary colours. A primary colour filter only allows its own colour to pass through it.

1 (a) You have to draw a graph of the number of bacterial colonies against time.

Hints:
- mark the coordinates given in the graph
- draw a smooth line through all the coordinates marked

Answers:



(b) You have to determine the relationship between the number of bacterial colonies and time.

Hints:
- Refer to the graph drawn in (a)

Answers:

The number of bacterial colonies increases with time.

Bilangan koloni bakteria bertambah apabila masa bertambah.

(c) You have to predict the number of bacterial colonies produced on the 6th day.

Hints:
- Refer to the graph drawn in (a)

Answers:

22 or 23/22 *atau* 23

4

Answers:

The elasticity of natural rubber that has been soaked in sulphur monochloride solution (rubber Q) is higher than the elasticity of natural rubber (rubber P).

Kekenyalan getah asli yang telah dicelupkan ke dalam larutan sulfur monoklorida (getah Q*) lebih tinggi berbanding dengan getah asli (getah* P*).*

(b) (i) You have to state the controlled variable.

Hints:

- factor (variable) which has to be kept the same in this experiment

Answers:

The mass of the weight, length of the natural rubber strip

Jisim pemberat, panjang jalur getah asli

(ii) You have to state the manipulated variable.

Hints:

- factor (variable) which has to be changed in this experiment

Answers:

Natural rubber soaked or not soaked in sulphur monochloride

Getah asli yang telah dicelupkan atau tidak dicelupkan ke dalam larutan sulfur monoklorida.

(c) You have to identify the rubber which is more elastic.

Hints:

- refer to Diagram 4
- compare the extensions made by rubber P and rubber Q
- the more elastic the rubber is, the less the extension made by the rubber will be

Answers:

Natural rubber that has been soaked in sulphur monochloride solution or rubber Q is more elastic.

Getah asli yang telah dicelupkan ke dalam larutan sulfur monoklorida atau getah Q *lebih elastik.*

(d) You have to mark (✓) the objects which are made of natural rubber that has been processed in the same way as rubber Q.

Hints:

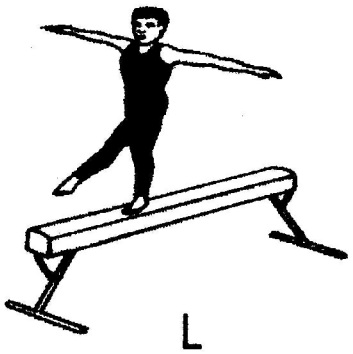
Based on the properties of natural rubber that has been soaked in sulphur monochloride solution, i.e. harder, stronger, more elastic

Answers:

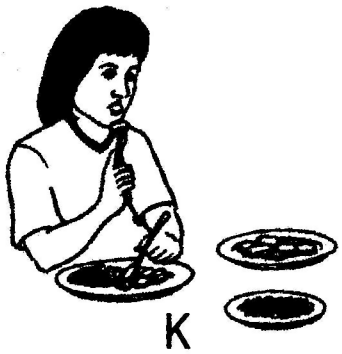
		
Tyre *Tayar*	Balloon *Belon*	Shoe sole *Tapak kasut*
✓		✓

5 *(a)* K: Cerebrum/*Serebrum*
M: Medulla oblongata/*Medula oblongata*
Review: K is cerebrum, L is cerebellum and M is medulla oblongata.

(b)



L



K

Review: Cerebrum (K) controls voluntary actions. Cerebellum (L) maintains balance and posture.

(c)

Paralysis *Lumpuh*
✓

Review: Medulla oblongata controls all involuntary actions. Injury in the medulla oblongata may cause paralysis.

(d) Receptor → Sensory neurone → Spinal cord → Motor neurone → Effector
Reseptor → *Neuron deria* → *Saraf tunjang* → *Neuron motor* → *Efektor*
Review: A reflex arc:
Receptor → Sensory neurone → Spinal cord → Motor neurone → Effector

Answers:

P: Melting/*Peleburan*

Q: Freezing/*Pembekuan*

R: Condensation/*Kondensasi*

(b) You are asked to state what happens to the kinetic energy of the particles when ice changes to water. When ice melts to water, the particles have energy to move away from one another. So their kinetic energy increases.

Answers:

During melting, the kinetic energy of the particles increases.

Semasa peleburan, tenaga kinetik zarah-zarah meningkat.

(c) You are required to state what happens to the movement of the particles during freezing.

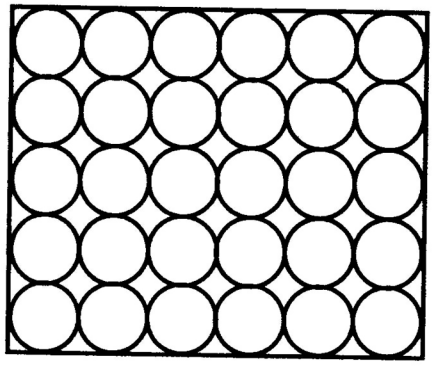
Answers:

During freezing, the particles slow down in their motion and form a pattern, becoming a solid.

Semasa pembekuan, zarah-zarah bergerak dengan semakin perlahan dan membentuk satu susunan teratur untuk menjadi pepejal.

(d) You are asked to draw the particle arrangement in a solid. Remember that the particles in a solid are closely packed and vibrate in their own positions.

Answers:



7

(a) (i) Steel/*Keluli*

Review: Steel is an alloy consisting of 99.5% iron and 0.5% carbon.

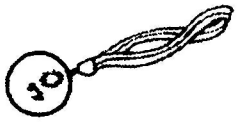
(ii) Alloying/*Pengaloian*

Review: The process of turning pure metal into alloy is called alloying.

(iii) Zinc/*Zink*

Review: The percentage of zinc is lower. The foreign atom is the zinc atom.

(b)

Types of alloys ***Jenis aloi***	**Use of alloys** ***Kegunaan aloi***
Bronze *Gangsa*	 Medal *Pingat*
Duralumin *Duralumin*	 Aeroplane *Kapal terbang*

Review: Bronze is used to make medals, statues and cups. Duralumin is used to make bodies of aircraft, boats and buses.

(c) Superconductor alloy

Aloi superkonduktor

Review: A superconductor alloy is an electric conductor without resistance. It is used in making trains and used to generate power.

2.1 Body Coordination

1 *(a)* 1. Nervous coordination
Koordinasi saraf
2. Hormonal coordination
Koordinasi hormon
Review: Body coordination involves nervous coordination.

(b) Eye
Mata

(c) Secretes adrenaline and prepares the body for emergency.
Merembeskan hormon adrenalina dan menyediakan badan untuk kecemasan.
Review: Adrenal gland secretes adrenaline and prepares the body for emergency.

(d) Receptor
Reseptor

Endocrine gland
Kelenjar endokrin
Reaction
Gerak balas
Review: Receptor sends the stimulus to the brain.
The endocrine gland secretes hormone.
The muscle reacted.

9

(a) You are required to identify two chemicals written on the label. The chemicals used in processing food are called food additives. Benzoic acid is an example of a preservative. Flavouring is an example of a food additive.

Answers:

1. Benzoic acid
   Asid benzoik
2. Flavouring
   Perisa

(b) You are required to determine the chemical that is used as a preservative. Benzoic acid is an example of a preservative.

Answers:

Benzoic acid
Asid benzoik

(c) You are required to state the method of food processing shown in Diagram 8. The diagram has already given the answer. Besides that, fruits such as mangoes are normally processed by canning.

Answers:

Canning
Pengetinan

(d) You are required to give two other pieces of information that should be written on the label in Diagram 8 according to the Food Regulations of 1985. To answer this question, you should know the Food Regulations of 1985.

Answers:

- Name of manufacturer
  Nama pihak pengilang
- Address of manufacturer
  Alamat pihak pengilang

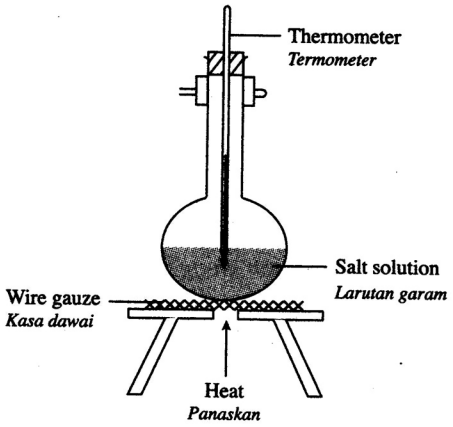
6 *(a)* Salt solution has a higher boiling point than distilled water.
Larutan garam mempunyai takat didih yang lebih tinggi daripada air suling.
Review: The hypothesis must compare the boiling point of salt solution and distilled water.

(b) (i) Aim of the experiment
Tujuan eksperimen:
To show that the boiling point of salt solution is higher than distilled water.
Untuk menunjukkan takat didih larutan garam adalah lebih tinggi daripada air suling.
Review: We have to carry out an experiment to compare the boiling point of salt solution and distilled water.

(ii) Variables
Pemboleh ubah:
- Manipulated variable
Pemboleh ubah dimanipulasikan
Types of solution/*Jenis larutan*
- Responding variable
Pemboleh ubah bergerak balas:
Boiling point/*Takat didih*
- Constant variable
Pemboleh ubah dimalarkan:
Volume of solution/Thermometer used
Isi padu larutan/Termometer yang digunakan
Review: State the three variables of the experiment.

(iii) List of apparatus and materials
Senarai radas dan bahan:
Beakers, Bunsen burner, distilled water, salt, thermometer, round-bottomed flask, wire gauze and retort stand
Bikar, penunu Bunsen, air suling, garam, termometer, kelalang berdasar bulat, kasa dawai dan kaki retort
Review: List all the materials and apparatus required for the experiment.

(iv) Procedure/*Prosedur:*
1. The apparatus is set up as shown in the diagram.



2. 100 cm^3 of salt solution is heated until it boils.
100 cm^3 larutan garam dipanaskan sehingga mendidih.
3. The boiling point of the salt solution is recorded.
Takat didih larutan garam direkod.
4. The experiment is repeated by using 100 cm^3 of distilled water.
Eksperimen itu diulangi dengan menggunakan 100 cm^3 air suling.
Review: State the procedure for carrying out the experiment. It is better to include a labelled diagram. Instructions must be short and clear.

(v) Tabulation of data/*Penjadualan data*:

Solution ***Larutan***	**Boiling point (°C)** ***Takat didih (°C)***
Salt solution *Larutan garam*	
Distilled water *Air suling*	

Review: Construct a table to record the results. The results must be sufficient for us to make conclusion.

6 *(a)*

Aspects *Aspek*	**Identical twins** *Kembar seiras*	**Non-identical twins** *Kembar tak seiras*
Number of ova involved *Bilangan ovum yang terlibat*	One *Satu*	Two *Dua*
Number of sperms involved *Bilangan sperma yang terlibat*	One *Satu*	Two *Dua*
Number of placenta formed *Bilangan plasenta yang terbentuk*	One *Satu*	Two *Dua*
Number of zygotes formed *Bilangan zigot yang terbentuk*	One *Satu*	Two *Dua*
Genetic information *Maklumat genetik*	Same *Sama*	Different *Berbeza*
Characteristics *Ciri-ciri*	Same *Sama*	Different *Berbeza*
Sex *Jantina*	Always the same *Sentiasa sama*	Maybe the same or different *Mungkin sama atau berlainan*

(choose any four aspects)

Review: State the differences between identical twins and non identical twins

(b) – There are only two types of hair: Straight hair and curly hair.
Terdapat hanya dua jenis rambut; Rambut lurus dan rambut kerinting.

– There are only two types of ear lobes: Free ear lobes and attached ear lobes.
Terdapat hanya dua jenis cuping telinga: Cuping bebas dan cuping telinga lekap.

– Variations are the differences between individuals of the same species.
Variasi adalah perbezaan di antara individu daripada spesies yang sama.

– Discontinuous variations refer to variations which can be categorised into just a few groups.
Variasi tak selanjar merupakan variasi yang boleh dikategorikan kepada beberapa kumpulan sahaja.

– Types of hair is a discontinuous variation because the variations can be put into two groups only.
Jenis rambut ialah variasi tak selanjar kerana variasi itu boleh dimasukkan ke dalam dua kumpulan sahaja.

– Same as types of hair, types of ear lobes is also a discontinuous variation.
Sama seperti jenis rambut, jenis cuping telinga juga adalah variasi tak selanjar.

Review: There are two types of variation: Continuous and discontinuous.

– Continuous variation (height, skin colour and intelligence)

– Discontinuous variation (types of hair, types of ear lobes and blood group)

4 (a) You are required to explain the chain structure of the polymers in a thermoset and state one property of a thermoset that is caused by the chain structure of the polymer. Thermosets are made from polymer chains which form cross linkages between one another whenever they are heated for the first time. The cross linkages make thermoset hard and heat resistant. This makes it difficult to change the structure by heating after it has been moulded. Once thermoset are cooled, they remain hard.

Answers:

The chain structure of the polymers in a thermoset is made up of polymer chains which have cross linkages between one another after it has been heated for the first time.

Struktur rantai polimer dalam suatu termoset terdiri daripada rantai-rantai polimer yang membentuk rangkai silang antara satu dengan yang lain selepas dipanaskan pada kali pertama.

The cross linkages between the polymer chains in a thermoset make the thermoset hard and heat resistant.

Rangkai silang antara rantai-rantai polimer dalam termoset menjadikan termoset itu keras dan tahan panas.

(b) You are required to construct the concept of thermoplastic. The explanation should include the aspects given. You have to know the facts about the common characteristics of thermoplastics. Besides that, you also must remember the examples of thermoplastic and thermosetting plastics. Use common characteristics based on the effect of heat and number of time it can be moulded to construct the concept of thermoplastic.

- Two common characteristics of thermoplastic:

Answers:

1. Can be moulded more than once
   Boleh diacu semula lebih daripada satu kali
2. Soft when heated and hard when cooled
   Lembut apabila dipanaskan dan keras apabila disejukkan

- One other example of thermoplastic:

Answers:

Nylon, Perspex, polypropene, terylene
Nilon, Perspeks, polipropena, terilena
(any one)/(*mana-mana satu*)

- Two examples of non-thermoplastic:

Answers:

Melamine, bakelite, epoxyl glue, kevlar, mylar, nomex
Melamin, bakelit, gam epoksi, kevlar, mylar, nomex
(any two)/(*mana-mana satu*)

- The concept of thermoplastic:

Answers:

Thermoplastics are polymers that can be melted and moulded repeatedly. They are soft when heated and hard when cooled.
Termoplastik adalah polimer yang boleh dilebur dan diacu dengan berulang kali. Termoplastik adalah lembut apabila dipanaskan dan keras apabila disejukkan.