DAMAI SECONDARY SCHOOL
End-of-Year Examination 2019

DAMAI
SECONDARY SCHOOL

CANDIDATE NAME					
CLASS				INDEX NUMBER	

SCIENCE

14 October 2019

Secondary 2 Express **2 hours**

Setter: Miss Candice Lui **100 Marks**

Additional Materials: Answer Sheet

READ THESE INSTRUCTIONS FIRST

Write your name, register number and class on all the work you hand in.
Write in dark blue or black ink.
Do not use paper clips, glue or correction fluid.

Section A
There are **thirty** questions in this section. Answer **all** questions. For each question there are four possible answers **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in **soft 2B-pencil** on the separate Answer Sheet.

Sections B and C
Answer **all** the questions.
Write your answers in the spaces provided on the question paper.

Electronic calculators may be used.
A copy of the Periodic Table is provided on Page **32**.

The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section A	
Section B	
Section C	
Total	

SECTION A (30 MARKS)

Answer **all** questions in this section.

1. Which of the following shows the **correct** number of elements and atoms in chromium(III) hydroxide, $Cr(OH)_3$?

	Number of elements	**Number of atoms**
A	7	3
B	7	7
C	3	3
D	3	7

2. The table shows the number of protons, neutrons and electrons in four atoms.

Which of the following shows the **correct** number of protons, neutrons and electrons in each atom?

	Atoms	**Number of**		
		Protons	**Neutrons**	**Electrons**
A	F	9	9	9
B	P	15	16	16
C	Ca	20	40	20
D	Na	11	12	11

3. Elements **Q**, **R** and **S** are in the same period of the Periodic Table. **Q** is a metal, **R** is chemically unreactive and **S** has a low boiling point.

What is the order of **Q**, **R** and **S** in increasing proton number?

	Increasing proton number →		
A	R	S	Q
B	S	R	Q
C	Q	S	R
D	R	Q	S

4. What colour does a yellow object appear to an observer under blue light?

A blue

B black

C green

D yellow

5. Which of the following statements about the property of mirror image is **incorrect**?

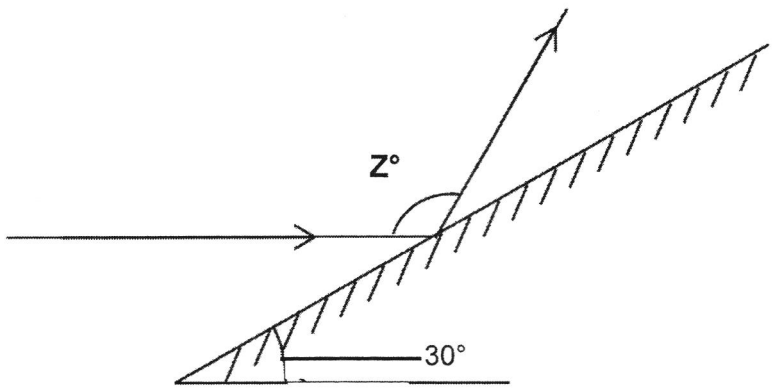
A The image is laterally inverted.

B The image is virtual.

C The image is upright.

D The image is twice the size of the object.

6. A ray of light that travels horizontally is incident on a mirror that is tilted 30° from the horizontal. Angle **Z** is the angle between the incident ray and the reflected ray. What is the value of angle **Z**?



A 102°

B 120°

C 150°

D 160°

7. Which of the following options **best** explains why a potato strip that was soaked in salt solution shrunk in size?

A The potato strip lost starch through diffusion.

B The potato strip lost water through diffusion.

C The potato strip lost water through osmosis.

D The potato strip absorbed the salt solution.

8. Which statements about transport systems in plants are **correct**?

I. The xylem transport water from the leaves to the roots.

II. Osmosis is the process responsible for water uptake into root hair cells.

III. The phloem transports dissolved minerals.

IV. Carbon dioxide enters the plant through the stomata by diffusion.

A I and II only

B II and IV only

C I, II and III only

D II, III and IV only

9. Which statements about the function of the heart are **correct**?

I. It pumps deoxygenated blood to the lungs.

II. It pumps deoxygenated blood to the rest of the body.

III. It pumps oxygenated blood to the lungs.

IV. It pumps oxygenated blood to the rest of the body.

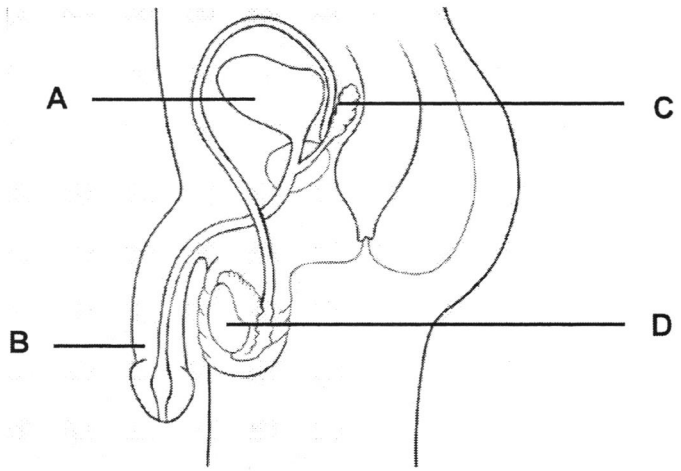
A I and II

B I and IV

C II and III

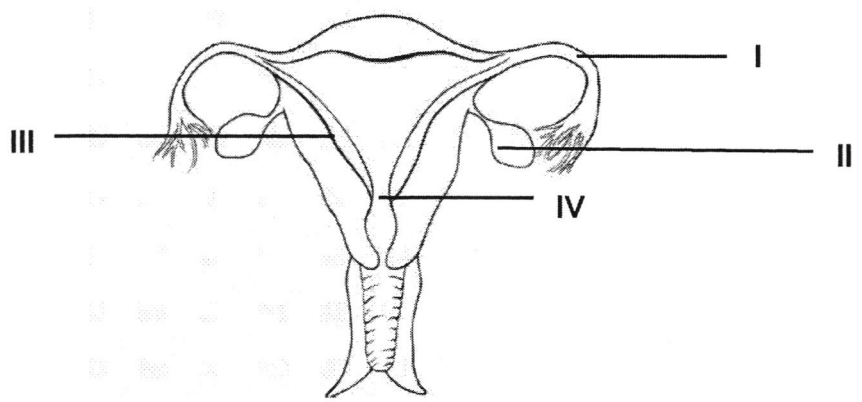
D III and IV

10. The diagram below shows the side view of the male reproductive system.



Which part produces a substance that can lead to changes in the body upon puberty?

11. The diagram below shows the female reproductive system.



In which regions do ovulation and fertilization take place?

	Ovulation	**Fertilisation**
A	II	I
B	II	III
C	III	II
D	III	IV

12. Which of the following statements about abortion is **false**?

A It is best carried out within the first 12 weeks of pregnancy.

B It involves surgery done by trained medical professionals.

C It may cause a lot of harmful effects to the woman.

D It involves the removal of the zygote before it can develop into an embryo or foetus.

13. Which of the following precautions could help prevent the spread of AIDS?

I. not sharing food with an infected person

II. only having one sexual partner

III. using the contraceptive pill

IV. wearing the condom during sexual intercourse

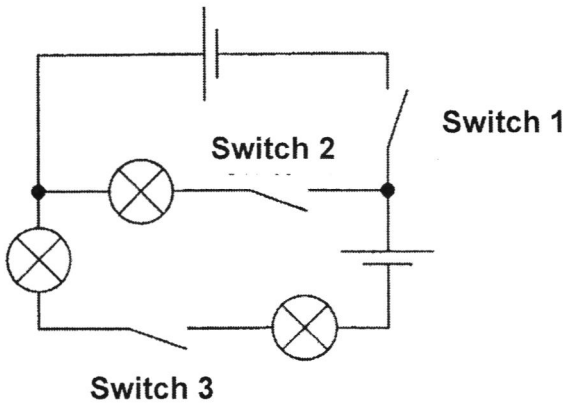
A I and III

B II and IV

C I, II and IV

D II, III and IV

14. A circuit is set up as shown below.



Which of the following combinations allows all three lamps to be lit?

	Switch 1	Switch 2	Switch 3
A	open	closed	closed
B	open	closed	open
C	closed	closed	open
D	closed	open	closed

15. An electric power tool is being used outdoors in the rain.

What is the greatest hazard to the user?

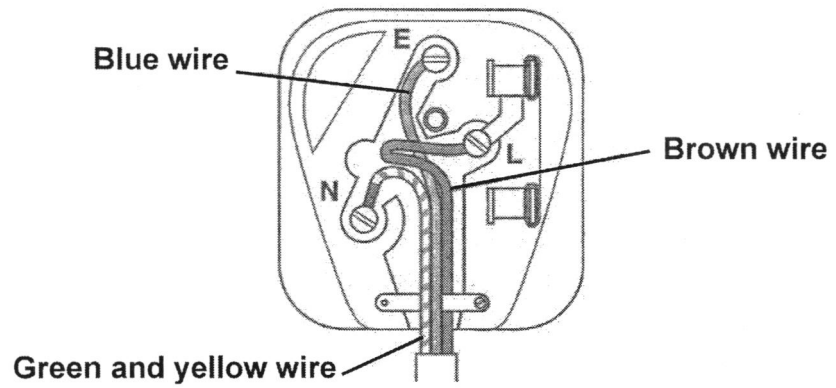
A The circuit-breaker cuts off the current.

B The current passes through water and causes an electric shock to the user.

C The cable gets hot and causes burns.

D The fuse heats up and melts due to the large current flow in the electric power tool.

16. The diagram below shows the wiring in a three-pin plug. An electrician made some mistakes when connecting the wire in the plug.



Which of the following are mistakes made by the electrician?

I. The earth wire is connected wrongly.

II. The fuse is missing.

III. The live wire is connected wrongly.

IV. The neutral wire is connected wrongly.

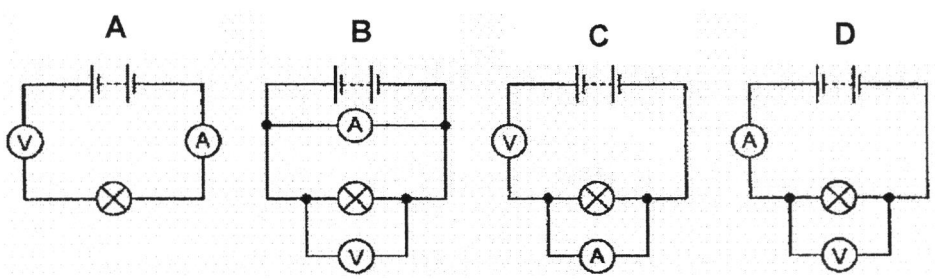
A I and II only

B I, II and IV only

C II, III and IV only

D I, II, III and IV only

17. Which circuit can be used to find the resistance of the light bulb?



18. Which one of the following is a suspension?

A detergent

B mercury

C calamine lotion

D salt water

19. Which of the following affects the solubility of a substance?

I. Temperature
II. Rate of stirring
III. Type of solvent

A I and II only

B I and III only

C II and III only

D I, II and III

20. Which of the following options contains an element, a compound and a mixture?

A milk, water and calcium chloride

B air, seawater and carbon dioxide

C copper, brass and silver chloride

D petroleum, bronze and oxygen

21. Which of the following methods can be used to obtain both salt and water from salt solution?

I. Filtration
II. Distillation
III. Chromatography
IV. Evaporation to dryness

A I only

B IV only

C II and IV only

D II and III only

22. Ahmad has a non-water soluble ink stain on his favourite shirt. Which of the following is the **best** way to remove the stain?

A wet the shirt with water

B used hot water to wash the shirt

C soak the shirt for a longer time in water

D rub the stain with another solvent for ink

23. The table shows some information about the solubility of three substances **S**, **T** and **U**, in water and in alcohol.

Substance	Solubility in water	Solubility in alcohol
S	Soluble	Insoluble
T	Insoluble	Soluble
U	Insoluble	Insoluble

The following are some steps that could be carried out to obtain **S** from the mixture of **S**, **T** and **U**.

1. Filter
2. Add water
3. Add alcohol
4. Evaporate to dryness

In which order should the above steps be carried out?

A 2, 1, 4 (Exclude step 3)

B 2, 3, 1, 4

C 3, 1, 4, 2

D 3, 1, 4 (Exclude step 2)

24. Which one of the following frequencies of sound cannot be detected by a human's ear?

A 9 Hz

B 150 Hz

C 9500 Hz

D 19300 Hz

25. A fork is made to vibrate at a frequency of 50 Hz. Which one of the following statements about this fork is **correct**?

A The fork produces 1 vibration in 50 minutes.

B The fork produces 1 vibration in 50 seconds.

C The fork produces 50 vibrations in 1 minute.

D The fork produces 50 vibrations in 1 second.

26. Which one of the following statements **best** explains why astronauts on the moon cannot hear each other when they are apart?

A The temperature is too low for sound waves to travel.

B Their spacesuits are sound proof.

C Their vocal chords cannot vibrate in space.

D There are no particles to transmit their sound waves.

27. A guitar player is able to play a note of higher pitch by _____.

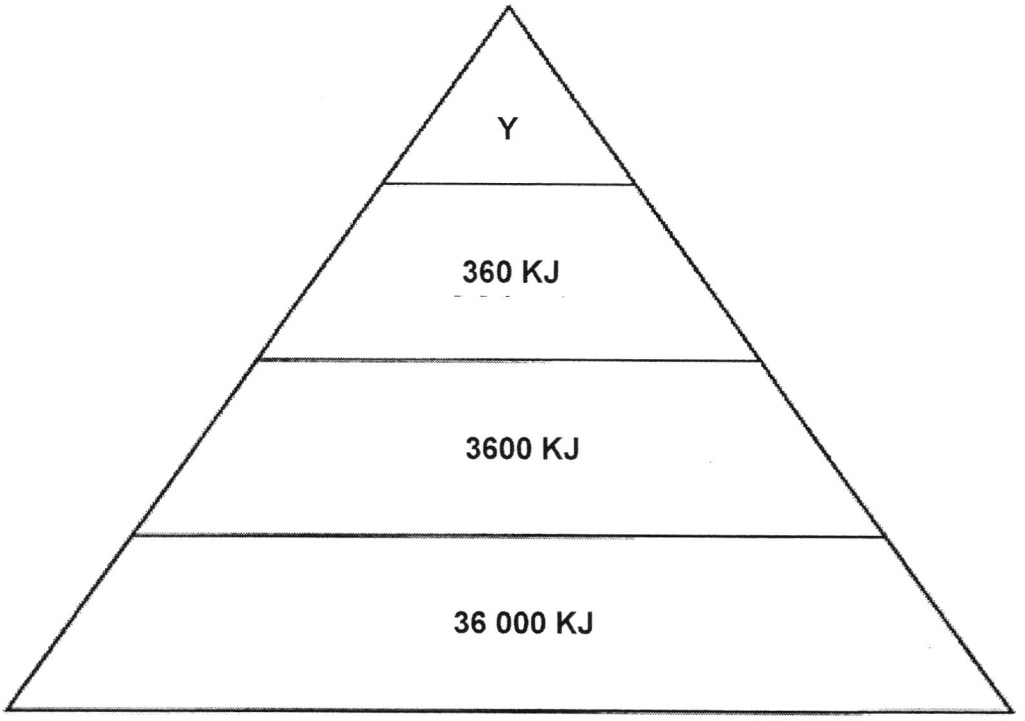
A using a thicker string

B loosening the string

C plucking the string with more force

D shortening the length of the string

28. The diagram below shows a pyramid of energy.



Which of the following statements about this pyramid of energy is **incorrect**?

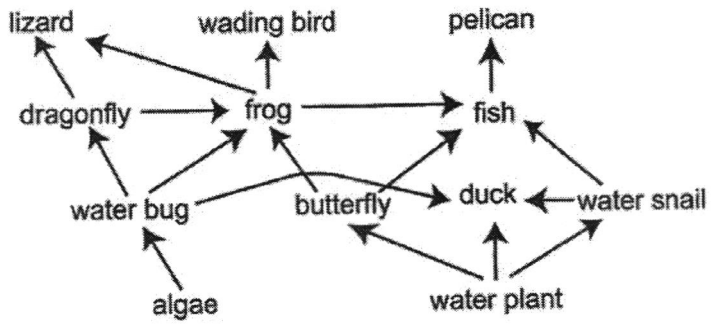
A The efficiency of this food chain is about 0.1%.

B An organism at **Y** receives only 36 kJ of energy from food.

C The trophic level containing 36 000 kJ of energy represents the producer.

D The secondary consumer receives only 3600 kJ of energy from the producer.

29. The diagram below shows a food web in a swamp.



Which organism is both a primary and a secondary consumer?

A duck

B lizard

C frog

D water bug

30. The African lungfish has a specialized lung for breathing. It can stay alive for a few months to a few years during dry periods by burrowing into the mud and staying dormant (inactive).

Which physical factors of its environment have the lungfish adapted to?

A air and water

B air and light

C light and temperature

D acidity and water

END OF SECTION A

SECTION B (40 MARKS)

Answer **all** questions in this section in the spaces provided.

B1. (a) Using the unshaded circle, '○', to represent each atom of oxygen and the shaded circle, '●', to represent each atom of sulfur, draw the molecular diagrams to represent oxygen gas (O_2) and sulfur dioxide gas (SO_2) in **Table 1** below. [2]

Table 1

Chemical formula	**O_2**	**SO_2**
Molecular diagram		

(b) From the chemical formulae of oxygen and sulfur dioxide, state **two** differences between a molecule of sulfur dioxide and a molecule of oxygen. [2]

.....

.....

.....

.....

.....

.....

B2. Alvin likes to perform magic tricks for his friends. He instructed his friend, Alice to place a small Lego brick at the bottom of a cup and to move away until she could not see the Lego brick inside the cup. Alvin then added water into the cup until Alice was able to see the brick again without moving the brick.

(a) Using ideas of refraction, explain how this trick of adding water to the cup works. [3]

.....

.....

.....

.....

(b) In **Fig. 2a**, complete the diagram to show how Alice will be able to see the brick. [3]

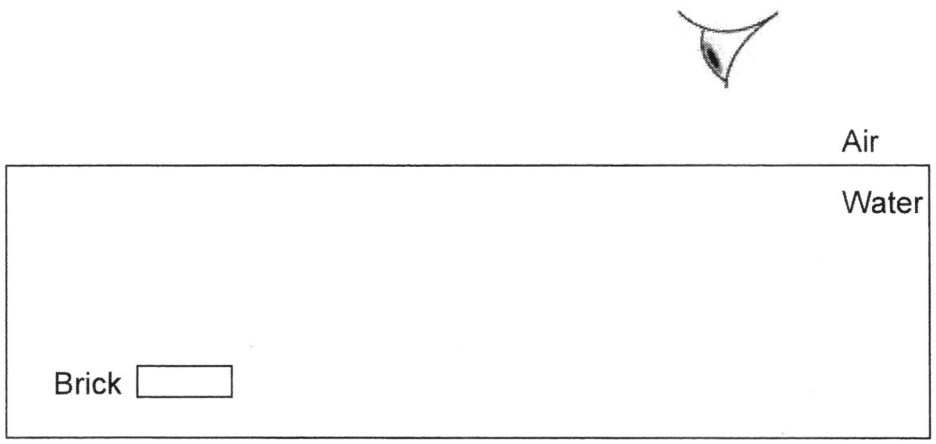


Fig. 2a

(c) Complete the ray diagrams for the following refracted light rays in both **Fig. 2b** and **Fig. 2c**. [1]

(i)

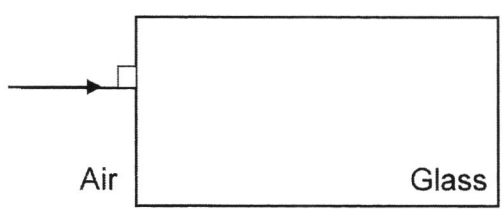


Fig. 2b

(ii) [3]

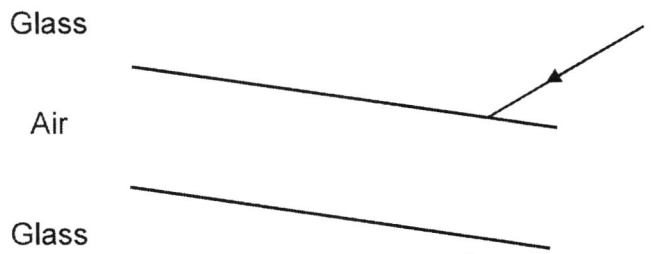


Fig. 2c

B3. **Fig. 3** below shows a cross section of a human heart.

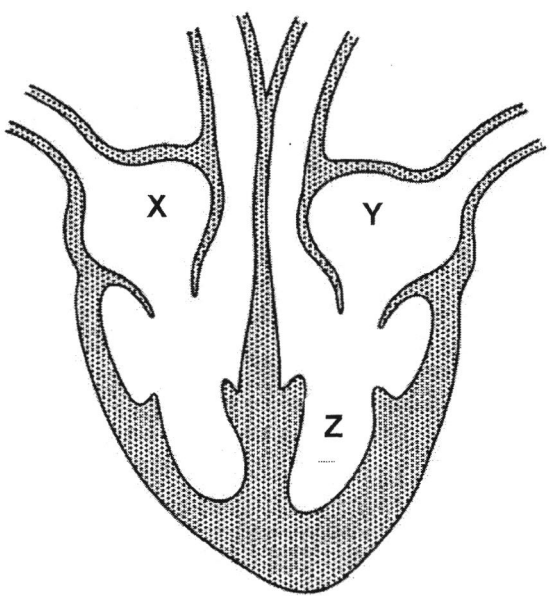


Fig. 3

(a) Name the parts **X** and **Z**. [1]

X: .....

Z: .....

(b) Shade the chambers that contain oxygenated blood. [1]

(c) Hypertrophic cardiomyopathy is a genetic disease of the heart muscles. It is a condition that causes the muscles of parts **Y** and **Z** to become abnormally thick.

Predict and explain the consequences of hypertrophic cardiomyopathy. [2]

.....

.....

.....

.....

B4. Charlotte performed an experiment on the movement of substances within a plant. She removed a portion of the tissues along the stem at regions **S** and **T** respectively as shown in **Fig. 4** below.

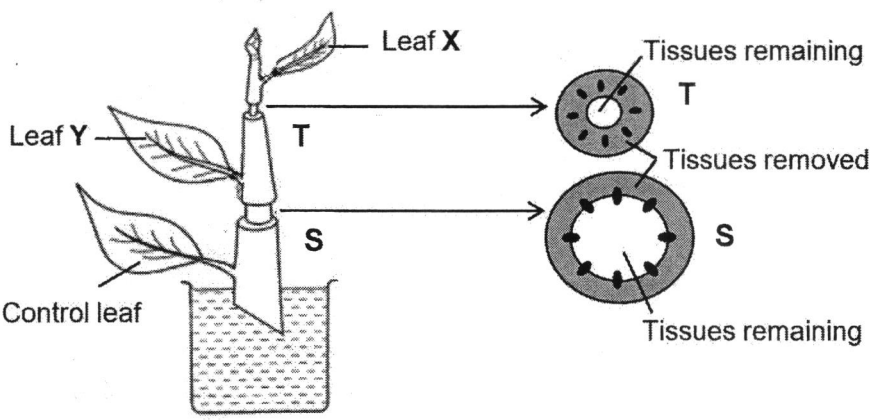


Fig. 4

(a) Name the vascular tissue(s) that have been removed at

(i) Region **S**: ..... [1]

(ii) Region **T**: ..... [1]

(b) Explain why after leaving the plant under sunlight for five hours, Charlotte notices swelling in the stem between regions **S** and **T**. [2]

.....

.....

.....

.....

.....

(c) Explain why after a week, Charlotte observes that only leaf **X** has withered. [2]

.....

.....

.....

.....

B5. The solubility of a substance can be determined by the maximum mass that will dissolve in 100g of water. **Fig. 5** shows the solubility for substance **V**.

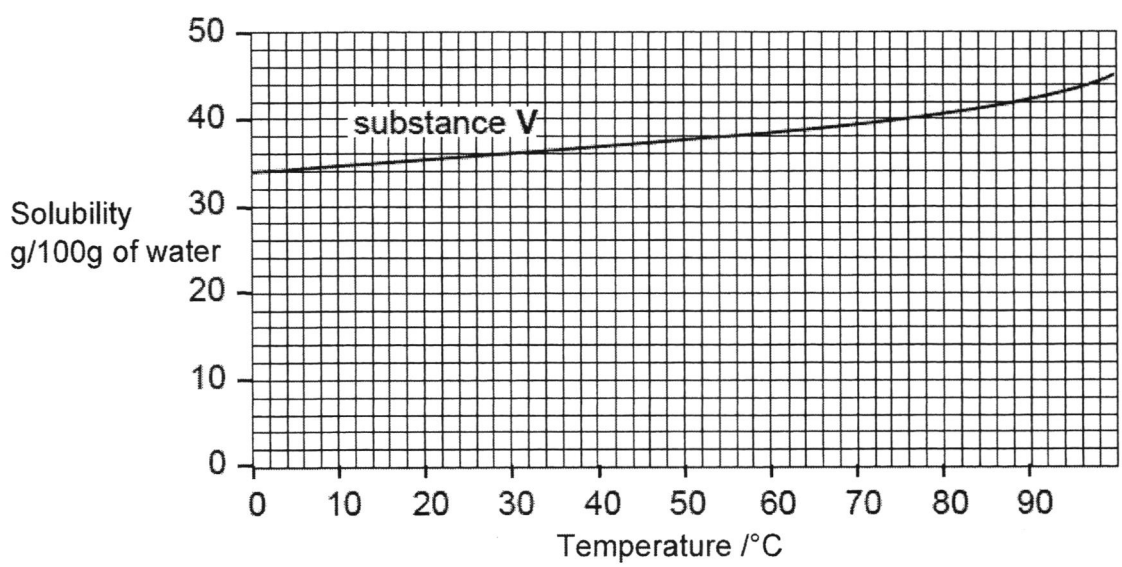


Fig. 5

(a) State the solubility of **V** at 30 °C. [1]

.....

(b) 100 g of **V** is added to 200 g of water at 54 °C.
Calculate how much solute will remain undissolved. Show your workings clearly.

.....g [2]

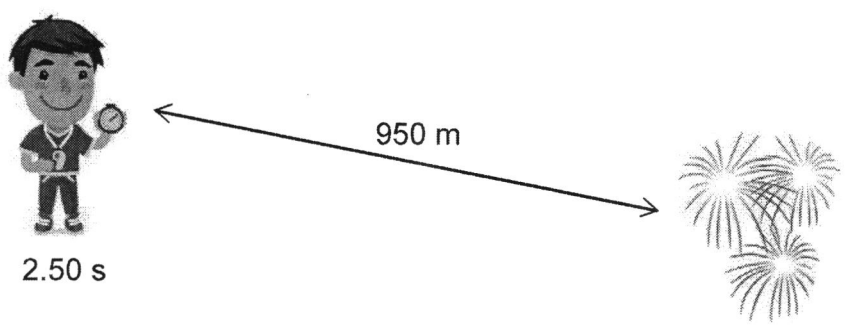
(c) State **two** factors other than the temperature of solvent that will affect the rate of dissolving. [2]

.....

.....

.....

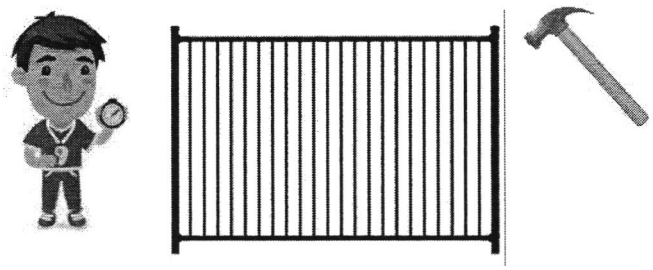
B6. Shawn sets up an experiment as shown below to determine the speed of sound. He started his stopwatch when he saw the fireworks exploding and stopped his stopwatch when he heard the sound of the explosion.



(a) Calculate the speed of sound in the above experiment.

Speed = ... m/s [1]

(b) In the second experiment, Shawn took the time taken for the sound of a knocking hammer to travel through a metal railing.



Predict and explain how the speed of sound in the second experiment would be different from the first experiment. [2]

.....

.....

.....

.....

(c) Shawn would like to be a pyrotechnician when he grows up. A pyrotechnician is someone who works with explosives such as fireworks.

(i) Explain, in terms of sound, **two** reasons why his working environment would not be good for human health. [2]

.....

.....

.....

.....

(ii) Suggest **one** advice for Shawn to protect himself, taking into consideration your answers in **(c)(i)**. [1]

.....

.....

B7. **Fig. 7** below shows a food web in the ocean.

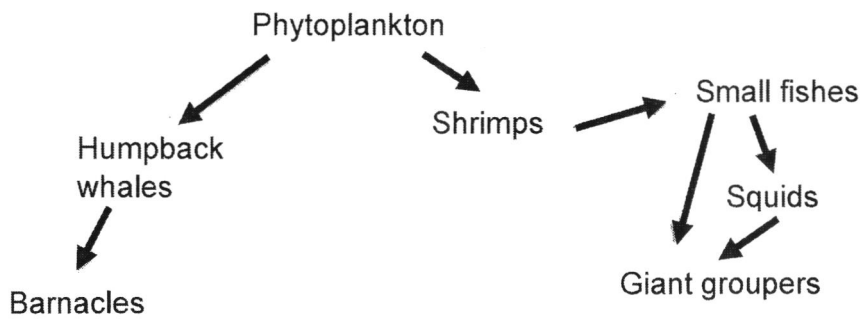


Fig. 7

(a) State the relationship between:

(i) groupers and squids [1]

.....

(ii) humpback whales and barnacles [1]

.....

(b) Phytoplankton contain green pigments which enable them to obtain food. Besides providing food for oceanic food chains, suggest another important role of phytoplankton in the ocean. [1]

.....

(c) A disease killed most of the humpback whales in this habitat.

(i) Identify the organism that will have a greater source of food because of this change. [1]

.....

(ii) Identify the organism that will have a reduced source of food because of this change. [1]

.....

END OF SECTION B

SECTION C (30 MARKS)

Answer **all** questions in this section in the spaces provided.

C1. Bella keeps track of her menstrual cycles using the calendar shown in **Fig. 8**. She has shaded the day in which she began menstruating.

October						
M	**T**	**W**	**T**	**F**	**S**	**S**
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	
November						
M	**T**	**W**	**T**	**F**	**S**	**S**
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Fig. 8

(a) Bella has a regular 28-day menstrual cycle. Predict the date of her next menstruation. [1]

.....

(b) Suggest **two** possible reasons as to why her menstruation may not necessarily start on the day identified in **(a)**. [2]

.....

.....

(c) State the date of her ovulation in October. [1]

.....

(d) Describe what would happen to the lining of the uterus wall in the days leading up to ovulation. [1]

.....

(e) State the dates in November that corresponds to the fertile period of her next menstrual cycle as stated in **(a)**. [1]

.....

(f) List **two** differences between fertilisation and implantation. [2]

.....

.....

.....

.....

(g) Explain why abortion is not considered a method of contraception. [2]

.....

.....

.....

.....

C2. A heater is connected to the 12 V battery as shown in **Fig. 9.1**.

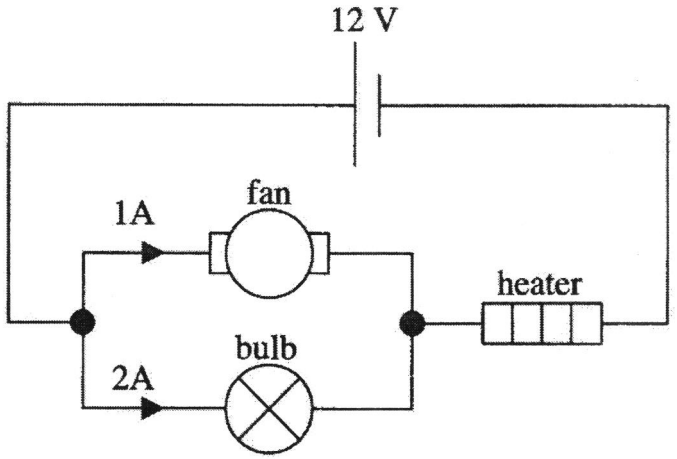


Fig. 9.1

(a) The fan has a potential difference of 6 V across it and a current of 1A flowing through it. The bulb has a current of 2A flowing through it.

(i) Calculate the resistance of the bulb.

.....Ω [1]

(ii) Calculate the potential difference across the heater.

.....V [1]

(iii) Calculate the resistance of the heater.

.....Ω [1]

(b) **Table 9.2** below shows the electricity consumption in a day at a particular house.

Table 9.2

Appliance	**Power / w**	**Amount of time used per day / hr**	**Energy used per day / kWh**
Air-conditioner	2000	8	**X**
Television	150	**Y**	0.225
Computer	**Z**	1½	0.375

(i) Find the unknown values, **X**, **Y** and **Z**.

X: .....w [1]

Y: .....hr [1]

Z: .....kWh [1]

(ii) The cost of 1 kWh is $0.30. Calculate the total cost of using electricity in one week.

..... [2]

(iii) Explain the use of a fuse in an electrical plug and explain how it should be connected in the plug. [2]

.....

.....

.....

C3. An officer from the organising committee suspects that athletes **F**, **A** and **T** use illegal performance-enhancing drugs to help them boost their running speed.

Paper chromatography is used to analyse the athletes' urine samples. The results are compared to some known illegal performance-enhancing drugs **EPO**, **HCG**, **IGF-1**, **ACTH** and **THG**.The results of the chromatogram are shown in **Fig. 10.1** below.

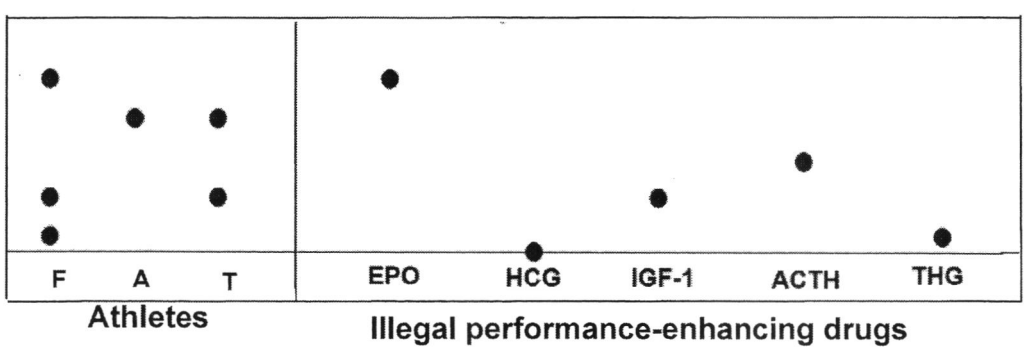


Fig. 10.1

(a) State the number of illegal performance-enhancing drugs present in athlete **F**. [1]

.....

(b) Suggest a reason why the positions of the samples of **EPO** and **ACTH** differ on the chromatogram. [1]

.....

(c) Explain why the sample of **HCG** remains at the starting line at the end of the experiment. [1]

.....

.....

(d) Besides athlete **F**, state which athlete should be eliminated from the Olympics. Explain your answer. [2]

.....

.....

.....

(e) Another officer performs the same experiment using a circular piece of filter paper. He places a spot of athlete **F's** urine sample in the centre of the filter paper. A few drops of water are dripped onto the sample.

The results are shown below on the chromatogram in **Fig. 10.2**.

On **Fig. 10.2**, identify each illegal performance-enhancing drug with reference to **Fig. 10.1**. [2]

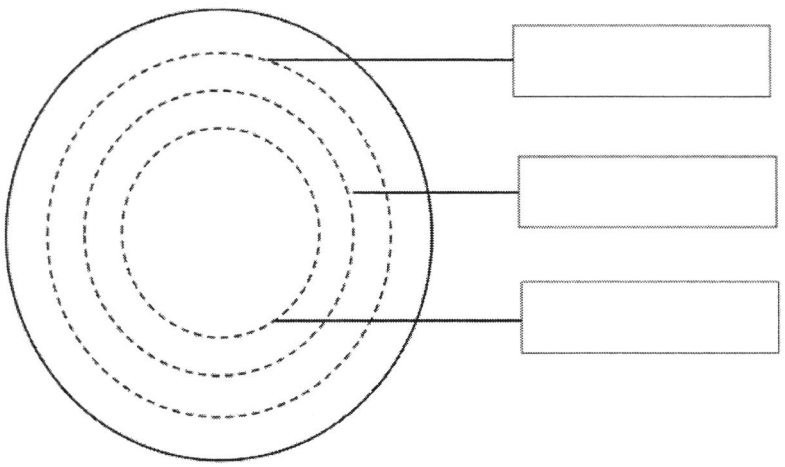


Fig. 10.2

(f) Explain why a pencil instead of a pen is used to draw the starting line. [1]

.....

.....

(g) Apart from solving crimes, state **two** other applications of chromatography. [2]

.....

.....

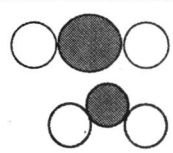
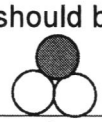
--End of Paper--

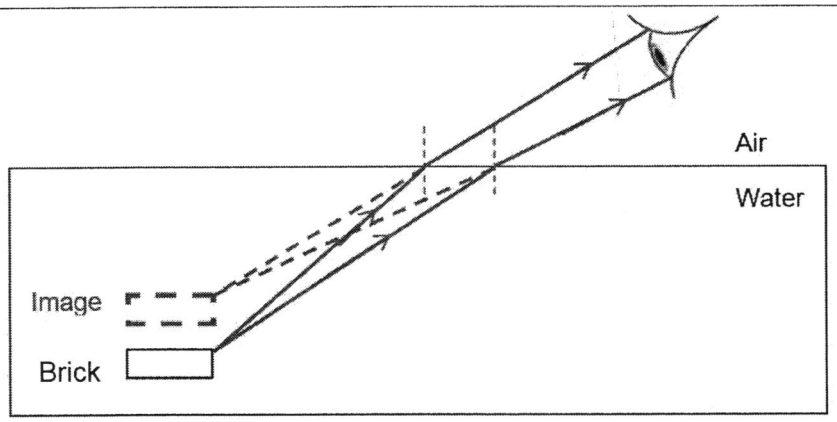
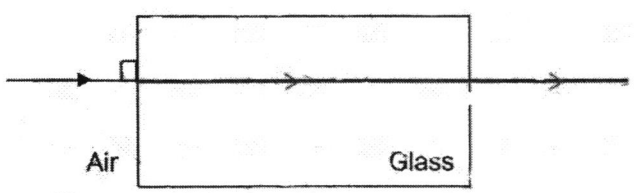
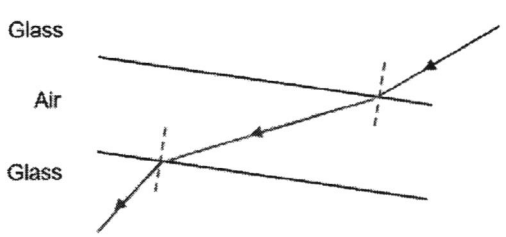
SEC 2E SCIENCE EOY ANS 2019

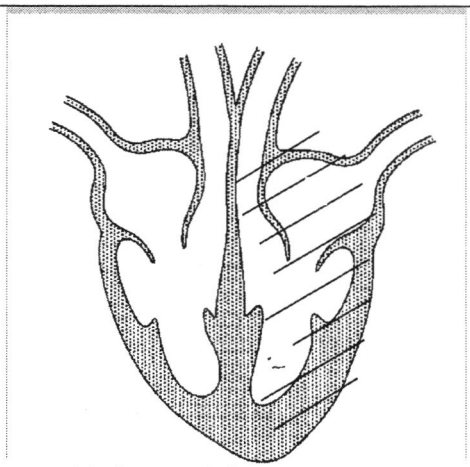
SECTION A: 30 MARKS

1. D	2. D	3. C	4. B	5. D
6. B	7. C	8. B	9. B	10. D
11. A	12. D	13. B	14. A	15. B
16. B	17. D	18. C	19. B	20. C
21. C	22. D	23. A	24. A	25. D
26. D	27. D	28. D	29. A	30. A

SECTION B: 40 MARKS

<table>
<tr><td>B1 (a)</td><td>
<table>
<tr><td>Chemical formula</td><td>O_2</td><td>SO_2</td></tr>
<tr><td>Molecular diagram</td><td>  </td><td>  or</td></tr>
</table>
*unshaded circles should be same size in both O_2 and SO_2, marks are deducted if size is very different.
*shaded circle should be in the middle
*no marks for  </td><td>1 each</td></tr>
<tr><td>B1 (b)</td><td>a) A molecule of oxygen is made up of atoms of one element / the same type, whereas a molecule of sulfur dioxide is made up of atoms of two different elements / different types.
OR oxygen molecule is made up of only oxygen atoms, whereas sulfur dioxide is made up of sulfur and oxygen atoms.
b) A molecule of oxygen is made up of only two atoms but a molecule of sulfur dioxide is made up of three atoms.
c) A molecule of sulfur dioxide is bigger than a molecule of oxygen.</td><td>1 each</td></tr>
<tr><td>B2 (a)</td><td>a) When water is added, light from the brick travels from water, an optically denser medium in water to an optically less dense medium in air to reach the eye.
b) Light increases speed and bends away from the normal.
c) Hence Alice is able to see the brick as it appears nearer to the surface.</td><td>1 each</td></tr>
</table>

B2 (b)	 Note: a) image dotted, nearer to surface and not too far away from actual brick, about same size as brick b) virtual rays dotted, straight with the refracted rays to the eyes, and starting from corresponding point as the incident rays from actual brick c) light bend away from normal, with arrows from brick to eye, and normal drawn	1 each
B2 (c)	**(i)**  a) No bending of the ray with arrows from left to right **(ii)**  a) light ray in middle bends away from normal with arrows b) light ray at bottom bends towards normal with arrows c) light ray at bottom parallel to original ray, with both normals drawn	1 1 each
B3 (a)	**X**: Right atrium **Z**: Left Ventricle	1

B3 (b)	 Shaded left atrium and left ventricle	1
B3 (c)	**Predict**: • chest pain / heart attack / racing heartbeat **Explain**: • The heart needs **to pump harder to compensate for the reduced / restricted oxygenated blood flow** due to the **reduced volume of blood** in the chambers that could be carried with each pump. **OR** **Predict**: • There will be **lack of oxygen supplied to the organs / parts of the body /** The person may experience shortness of breath / fatigue / lightheadedness / dizziness / fainting spells / loss of consciousness / **Explain**: There is **less oxygenated blood** pumped by the heart to be **delivered to body parts** due to the **reduced volume of blood** in the chambers that could be carried with each pump. **Reject:** • Heart pumps lesser oxygen • Muscles cannot work properly • Sudden death / patients will die • High blood pressure	1 for predict 1 for explain
B4 (a)	**(i)** Phloem	1
	(ii) Phloem and Xylem / vascular bundle Note: Must state both to receive 1 m	1
B4 (b)	a) The **absence of phloem** vessels at regions **S** and **T prevents transportation of food to other parts of the plant.** b) The **food** produced by **Leaf Y** during **photosynthesis** will get **accumulated in the stem** between regions **S** and **T**, resulting in swelling between regions **S** and **T**.	1 each

	Reject: Swelling is be due to water build up (when xylem is cut, transpiration pull can no longer occur, so water will not be able to go up the plant). **Mark deducted from (a).**	
B4 (c)	a) The leaf will not receive **water** (and mineral salts) b) the **removal of xylem vessels** at region **T prevents water to be transported to leaf X**, causing it to wither. **Reject:** Wither is due to no food. **Mark deducted from (a).**	1 1
B5 (a)	36 g/100g of water Note: Unit must be written for mark to be awarded.	1
B5 (b)	Solubility at 54°C = 38 g Residue = 100 – 2(38) = 24 g	1 for working 1 for answer
B5 (c)	• Rate of stirring • Size of solute particles / exposed surface area of solute particles	1 each
B6 (a)	Distance / time = 950 m / 2.5 s = 380 m/s	1
B6 (b)	a) The speed of sound is higher / sound is faster in the second experiment. b) Sound travels faster through solids than in gases. OR **Particles in solids are very closely packed compared to gases** hence they are able to **transfer sound energy from one end to another at a greater rate** **Note: need comparison with air for (b) mark**	1 each
B6 (c)	**(i)** a) Loud sounds can lead to hearing impairment / loss or deafness due to burst eardrums. b) Loud sounds can cause headaches.	1 each
	(ii) Wear ear plugs / ear mufflers **Reject:** headphones, earphones, earduds (theses are listening devices)	1
B7 (a)	**(i)** Predator-prey	1
	(ii) Parasitism	1
B7 (b)	Provide **oxygen**	1
B7 (c)	**(i)** Shrimps	1
	(ii) Barnacles	1

SECTION C: 30 MARKS

<table>
<tr><td>C1 (a)</td><td>31 October</td><td>1</td></tr>
<tr><td>C1 (b)</td><td>Stress, tiredness, illness, unbalanced diet / malnutrition, pregnancy
Reject: hormonal imbalance (as all above causes the imbalance)</td><td>1 each</td></tr>
<tr><td>C1 (c)</td><td>16 October</td><td>1</td></tr>
<tr><td>C1 (d)</td><td>The lining of the wall thickens.</td><td>1</td></tr>
<tr><td>C1 (e)</td><td>10th to 16th November</td><td>1</td></tr>
<tr><td>C1 (f)</td><td><table><tr><th>Fertilisation</th><th>Implantation</th></tr><tr><td>Fusion of nucleus of ovum and sperm</td><td>Fertilised ovum embeds / attaches onto uterus wall</td></tr><tr><td>Site: oviduct/ fallopian tube</td><td>Site: uterus</td></tr><tr><td>Involves 2 cells (sperm, egg)</td><td>Involves 1 cell (embryo)</td></tr></table></td><td>1 each</td></tr>
<tr><td>C1 (g)</td><td>a) Abortion is a deliberate ending of a pregnancy where pregnancy has already taken place.
b) Contraception is the prevention of pregnancy (prevents either ovulation, fertilisation or implantation).</td><td>1 each</td></tr>
<tr><td>C2 (a)</td><td>(i) R = V/I
= 6/2 = 3 Ω
Reject: If working shows V = 12 - 6 = 6V then followed by above working (do not need to subtract p.d. across parallel circuit)</td><td>1</td></tr>
<tr><td></td><td>(ii) V = 12 – 6 = 6 V
Reject: If no working shown or using current (3A) x the combined resistance of the fan and bulb</td><td>1</td></tr>
<tr><td></td><td>(iii) R = V/I
= 6/ (2+1)
= 2 Ω
<u>Note:</u> allow for e.c.f. where V is from (ii)</td><td>1</td></tr>
<tr><td>C2 (b)</td><td>(i) X = 8 x 2 = 16 kWh
Y = 0.225 / 0.15 =1.5 h
Z = 0.375 / 1.5 x 1000 = 250 W
Reject: fractions</td><td>1 each</td></tr>
</table>

	(ii) Cost of electricity = (16 + 0.225 + 0.375) x 7 x 30 = $34.86 Note: allow for e.c.f. where energy from X is used in (i)	1 for working 1 for answer
	(iii) a) It serves to protect the equipment from a surge of current by **melting and breaking / opening the circuit** when the **current** that passes through it **exceeds the fuse rating.** b) Fuse is placed **on the live wire.**	1 each
C3 (a)	3	1
C3 (b)	• **EPO is more soluble than ACTH in the solvent OR** • EPO and ACTH have **different solubilities in the solvent.**	1
C3 (c)	HCG is **insoluble / has very low solubility in the solvent.**	1
C3 (d)	• Athlete T. • The urine sample of T contains IGF-1.	1 1
C3 (e)	Outer ring: EPO 2nd ring: IGF-1 Inner ring: THG Note: 1 correct – 0 mark	2
C3 (f)	**Pencil is insoluble in water** and **will not contaminate the result.**	1
C3 (g)	• To identify the colours in dyes **OR** To identify types of coloured substances used in food products **OR** separate the various inks or dyes from the mixture. • Used in food testing for food safety and security **OR** test for harmful substances in drinking water **OR** To separate the contaminants, traces of harmful chemicals and other micro-organisms in food. • Used to detect presence of alcohol or some other drugs in blood or urine. • Used to test for purity of substances.	1 each