

JUNIOR LYCEUM ANNUAL EXAMINATIONS 2006
Educational Assessment Unit – Education Division

FORM 2

INTEGRATED SCIENCE

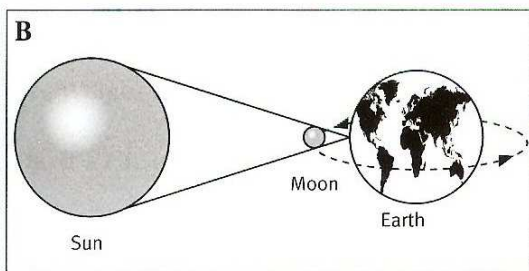
Time 1hr 30 min

Name _____

Class _____

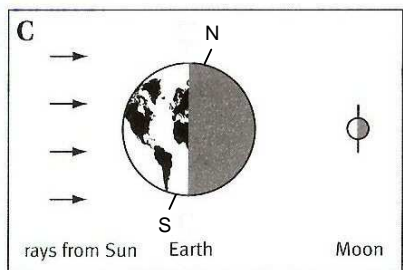
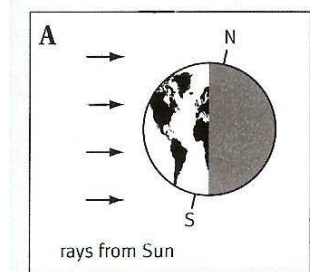
ANSWER ALL QUESTIONS

- 1) During the year the Earth and the Moon are found in different places in their orbit. The diagrams below describe what happens at different times.
Draw lines to match each diagram with its description.

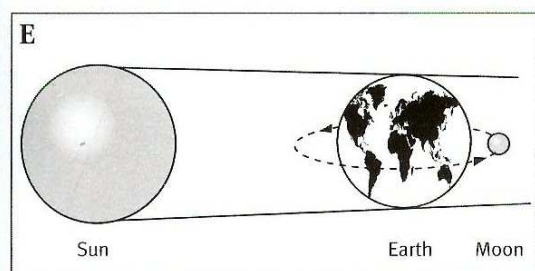


It is summer in the southern hemisphere

An eclipse of the Sun

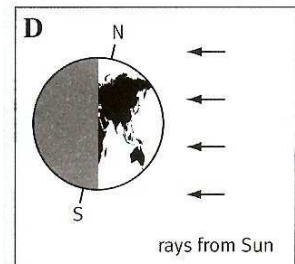


An eclipse of the Moon



It is summer in the northern hemisphere

A full Moon

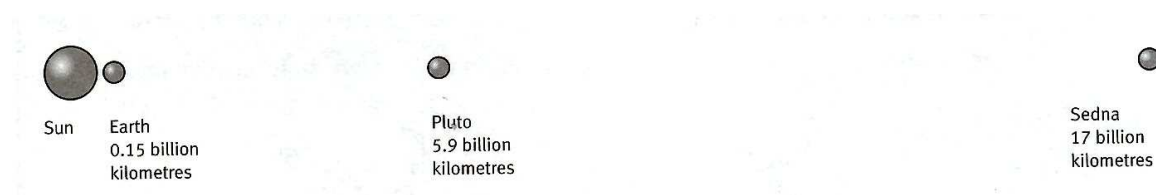


5 marks

- 2) In 2003, scientists discovered the most faraway object to orbit the Sun.

This object is called Sedna.

The diagram shows the distance of Sedna from the Sun compared to two planets in our Solar System, Pluto and Earth.



- a) What force keeps Sedna in orbit round the Sun?

_____ 1 mark

- b) The table gives information about five objects that orbit the Sun.

object	time to orbit the Sun in Earth years	average temperature in °C	time to rotate once on axis in Earth days
Saturn	29	-190	0.4
Uranus	84	-210	0.7
Neptune	165	-220	0.7
Pluto	248	-240	6.4
Sedna	10,500	-240	20

Use the table to answer the following questions.

- i) Which object in the table rotates on its axis most slowly? _____ 1 mark

- ii) Give **one** reason why it takes Sedna more time to orbit the Sun than Pluto.

 _____ 1 mark

- iii) Give **one** reason why Pluto and Sedna are colder than the other objects in the table.

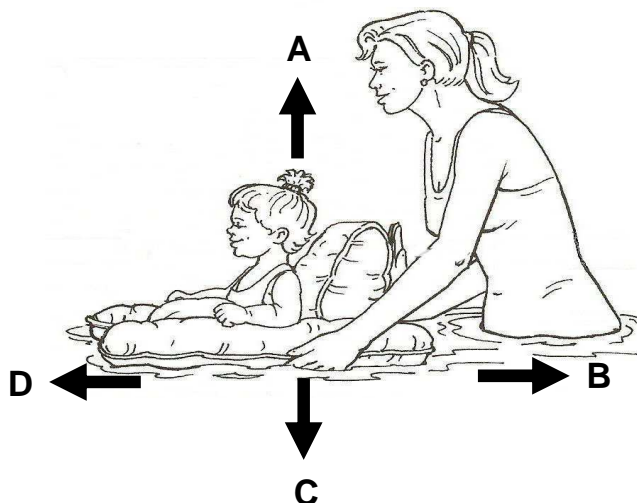
 _____ 1 mark

- c) Sedna is not a light source but scientists have seen it through telescopes.

Explain why scientists can see Sedna even though it is not a light source.

 _____ 1 mark

3) The picture shows a baby in an inflatable raft.



- a) There are four forces on the raft, A, B, C, D.
Write the name of each force

A _____ B _____
C _____ D _____

4 marks

- b) Which **two** forces are balanced when the raft is floating?

1 mark

- c) If the lady stops pushing, the raft will soon stop moving.
Why will the raft stop moving?

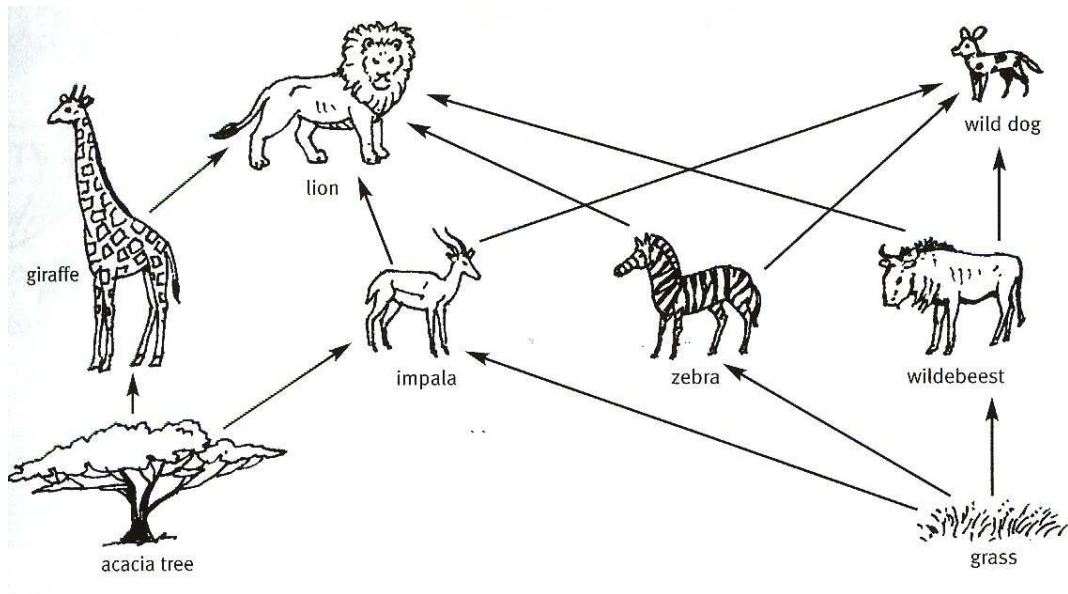
1 mark

4) Write **True** or **False** near each of the following statements.

- a) A hamster has a smaller weight on Earth than on the Moon. _____
- b) If a motorbike moves at a steady speed the forces on it are balanced. _____
- c) The friction between a car tyre and a smooth road surface is greater than the friction between the same car tyre and a rough surface. _____
- d) Weight is measured in kilograms. _____
- e) Mass is measured in kilograms. _____
- f) If a car is speeding up, the forces on it are balanced. _____
- g) Friction is a force that tries to stop two surfaces sliding over each other. _____
- h) You can reduce friction between two surfaces with oil. _____

8 marks

5) The drawing shows a food web for plants and animals that live in African grasslands.



a) From the food web, give the names of:

(i) one producer _____ (ii) one predator _____

(iii) one prey _____ (iv) one herbivore _____

4 marks

b) Which animal has a choice of four different preys? _____

1 mark

c) In the space below write **two** food chains from the **food web**.

i) One food chain including the **giraffe**.

2 marks

ii) One food chain including the **wildebeest**.

2 marks

d) In the dry season thousands of wildebeest migrate long distances. Suggest one possible reason for this.

1 mark

e) How is the wild dog affected during the dry season?

2 marks

f) What will happen to the population of zebras during this season?

1 mark

6) a) Complete the passage below by choosing the correct words from the box.

neutral	acidic	6	neutralised	14	acid	alkali	lower
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Sodium hydroxide is an _____. Its pH is _____. If you add _____ to sodium hydroxide the pH gets lower. When the pH is 7, the solution is _____ - the acid has _____ the alkali. If you add more acid the pH gets even _____. The solution is now _____.
7 marks

b) Tick ☒ the five **true** statements from the list below:

- i) Paul's hair shampoo is pH 5.5. It is neutral. ☐
- ii) Wasp's stings are alkaline. ☐
You can treat them with lemon juice (pH3).
- iii) Acid rain can make lakes too acidic for some fish. ☐
You can add alkali to make a lake less acidic.
- iv) Nettle stings contain acid. ☐
You can neutralise them with vinegar (pH3).
- v) Cola drinks are acidic and can damage tooth enamel. ☐
- vi) Vinegar is acidic and is used to preserve food ☐
- vii) The hydrochloric acid in your stomach can kill bacteria. ☐

5 marks

c) Look at the table below.

Crop	pH at which the crop grows best
Potatoes	4 – 6
Peanuts	5 – 6
Grapes	6 – 7

Use the table to decide whether to add an **alkali**, an **acid** or **nothing** to the soil

i) The soil on Jo's field is pH 8. She wants to grow potatoes.

What should she add? _____

1 mark

ii) The soil on Sarah's field is pH 6. She wants to grow peanuts.

What should she add? _____

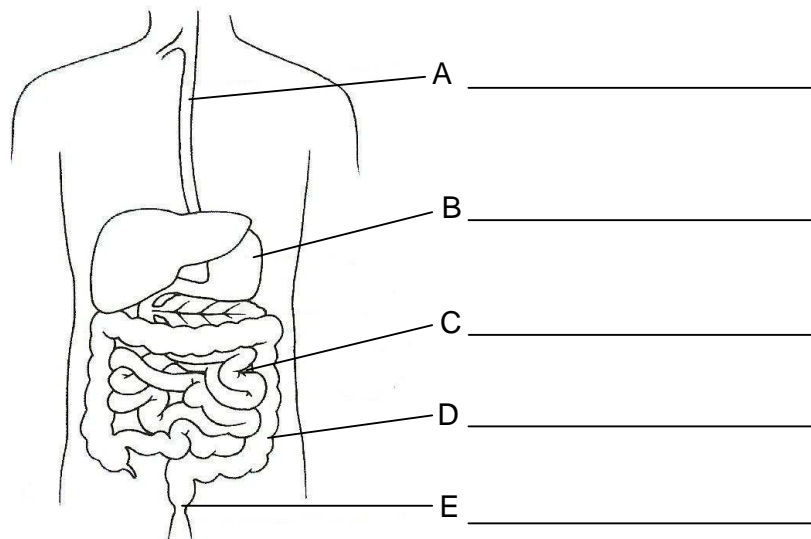
1 mark

iii) The soil on Frank's field is pH 5. He wants to grow grapes.

What should he add? _____

2 marks

7) The diagram shows the digestive system.



a) Using the words in the box below, write down the correct name next to the letters A to E.

small intestine,	anus,	gullet,	large intestine,	stomach
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5 marks

b) Where is digestion completed and food passed into your blood? _____

1 mark

c) Where does the solid waste leave your body? _____

1 mark

d) Where is acid added to your food? _____

1 mark

e) Why is acid added to the food in our bodies?

2 marks

8) Read the following statements and write **true** or **false** near each statement.

a) Micro-organisms are used to make cheese. _____

b) You can catch disease by eating dirty food. _____

c) Bacteria are always harmful. _____

d) Respiration means taking out energy from glucose. _____

e) If you get wet you will get a cold. _____

5 marks

- 9) Column A shows some things that make an unbalanced diet.
Match each one to the problem it causes in column B.

Column A

too much sugar

too much fat

not enough fibre

not enough iron

Column B

bowel cancer

tooth decay

heart disease

weak blood cells

4 marks

- 10) New materials are made by chemical reactions.

- a) Which of the following changes are chemical reactions and which are physical changes?

changes	chemical reaction /physical change
i) Burning toast under a grill.	
ii) Turning water into ice in the freezer.	
iii) Boiling an egg.	
iv) Lighting a Bunsen burner.	
v) Salt disappearing as it is stirred into a beaker of water.	
vi) Water droplets forming on a kitchen window near a kettle of boiling water.	
vii) Green copper carbonate powder turning to black copper oxide when it is heated strongly.	

7 marks

- b) Write down **two** differences between a chemical reaction and a physical change.

2 marks

- c) These word equations show what happens when some chemicals are heated in air.
Complete the word equations below:

magnesium + oxygen → _____

iron + _____ → iron oxide

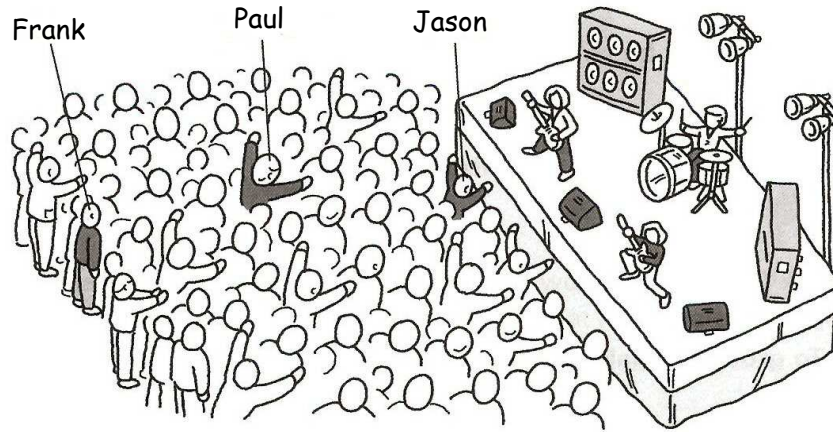
zinc + oxygen → _____

_____ + oxygen → Sulphur dioxide

4 marks

11) Jason, Frank and Paul go to a rock concert.

Jason stands near the stage. Frank and Paul are further back.



a) Who of the three boys hears the loudest noise and why?

2 marks

b) The drummer hits the drum skin with his drumstick.
What happens to the drum skin when it makes a sound?

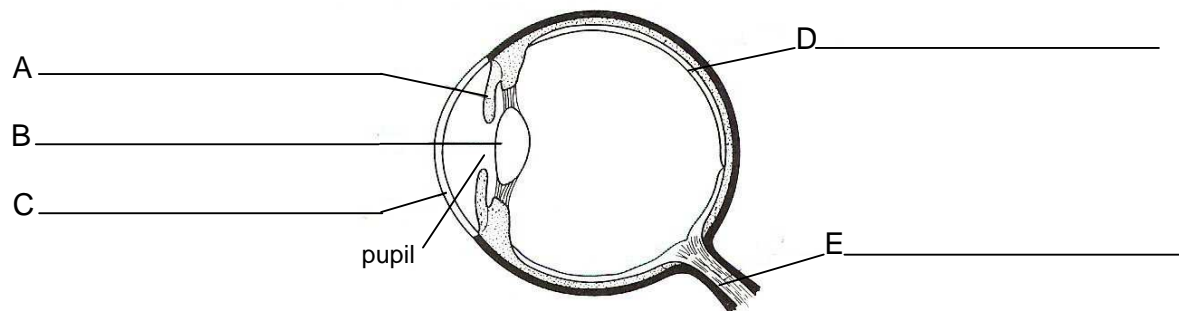
1 mark

c) What other instruments are the other people in the band playing? _____
1 mark

d) How is the sound produced by their instruments?

2 marks

12) The diagram shows the inside of the eye.



a) Label the parts A, B, C, D and E shown on the diagram.

5 marks

b) The pupil is a hole through which light rays enter the eye.

i) Which part of the eye controls the size of the pupil? _____
1 mark

ii) What happens to the **size** of the pupil when you go in a dark place? Why?

3 marks