

**JUNIOR LYCEUM ANNUAL EXAMINATIONS 2008**  
DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION  
Educational Assessment Unit

**FORM 2**

**INTEGRATED SCIENCE**

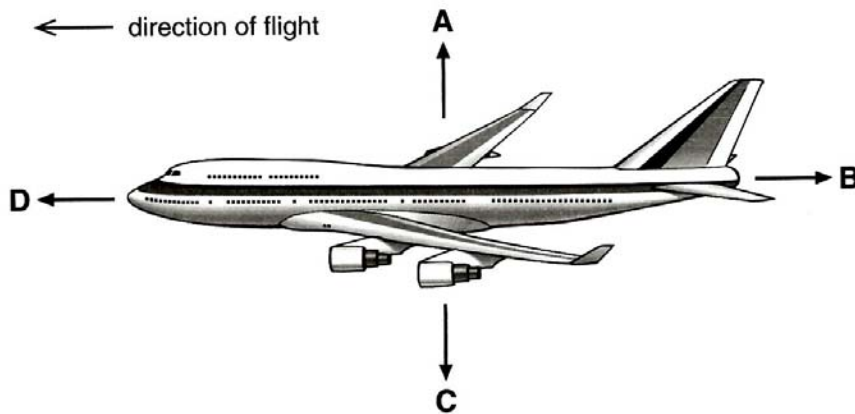
**Time 1hr 30 min**

Name \_\_\_\_\_

Class \_\_\_\_\_

**ANSWER ALL QUESTIONS**

1) The diagram shows four forces acting on a plane in flight.



- a) Which arrow shows **weight**? Write the letter. \_\_\_\_\_  
1 mark
- b) Which arrow shows **air resistance**? Write the letter. \_\_\_\_\_  
1 mark
- c) i) When the plane is flying at a **CONSTANT HEIGHT**, which two forces must be balanced?  
\_\_\_\_\_ and \_\_\_\_\_  
2 marks
- ii) When the plane is flying at a **CONSTANT SPEED**, which two forces must be balanced?  
\_\_\_\_\_ and \_\_\_\_\_  
2 marks
- d) Just before take-off, the plane is **speeding up** along the ground.  
At this moment which is the greater force **D** or **B**? \_\_\_\_\_  
1 mark
- e) Which statement is true about the plane just as it leaves the ground at take-off?  
Underline the correct statement.  
Force C is greater than force A.  
Force A is greater than force C.  
Force A is equal to force C.  
1 mark

2) Andrew is measuring the force needed to pull his shoe across a wooden floor. He attaches an instrument to measure his pulling force.

a) What is the name of the instrument he is using?

\_\_\_\_\_ 1 mark



b) The reading on the meter is 9N. What does N stand for?

\_\_\_\_\_

1 mark

c) Andrew and Peter want to find out if a different floor surface will affect the force needed to pull the shoe.

i) What is the **one** thing they should change to carry out their investigation?

\_\_\_\_\_

1 mark

ii) Name the **one** thing they should keep the same to make their investigation fair.

\_\_\_\_\_

1 mark

d) They carry out their investigation three times on each surface. Here are their results.

Floor surface	Force needed to pull the shoe (N)		
	test 1	test 2	test 3
carpet	12	12	13
wood	9	4	10
ceramic tiles	3	4	3

i) There seems to be a mistake in one of the results in the table. Put a circle around the wrong answer.

1 mark

ii) Which floor surface needed the most force to move the shoe?

\_\_\_\_\_

1 mark

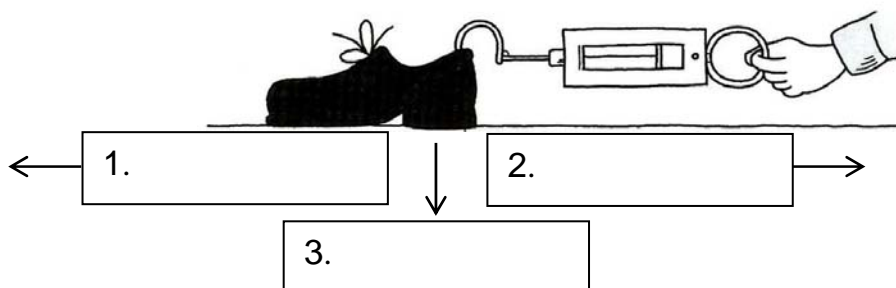
iii) Give a reason for your answer? Use the word **friction** in your answer.

\_\_\_\_\_  
\_\_\_\_\_

1 mark

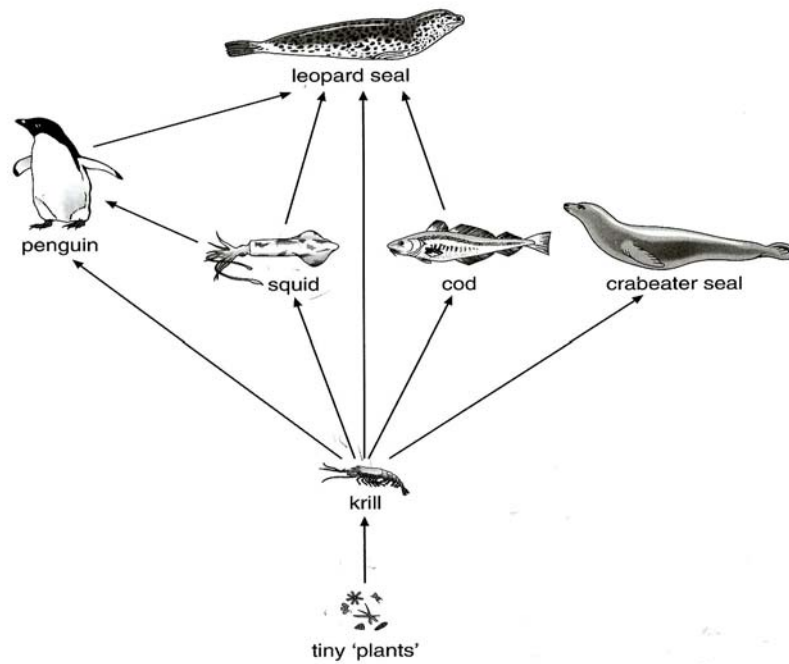
e) The picture shows Andrew pulling the shoe.

Label the arrows on the picture to say what forces they show.



3 marks

3) The drawing below shows part of a food web in the sea round Antarctica



- a) From the food web name:
- i) a herbivore \_\_\_\_\_
  - ii) a carnivore \_\_\_\_\_
  - iii) a producer \_\_\_\_\_
  - iv) a predator \_\_\_\_\_
  - v) a prey of the predator you wrote in iv) \_\_\_\_\_

5 marks

b) From the food web, give the names of **two** animals that **only** eat krill.

1. \_\_\_\_\_ 2. \_\_\_\_\_

2 marks

c) Write down a food chain with **five** organisms which includes **squid**.

\_\_\_\_\_

2 marks

d) i) Crabeater seals eat only krill.

Fishermen catch large amounts of krill from the sea.  
What would happen to the number of crabeater seals?

\_\_\_\_\_  
\_\_\_\_\_

1 mark

ii) Leopard seals also eat krill.

A decrease in the number of krill will affect the crabeater seals sooner than it affects leopard seals.  
Give a reason for this.

\_\_\_\_\_  
\_\_\_\_\_

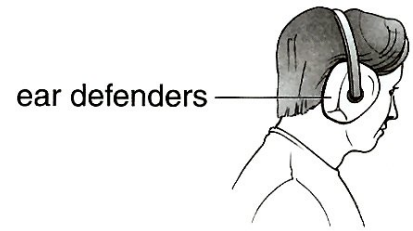
2 marks

e) What is the first source of energy in the above food web? \_\_\_\_\_

1 mark

4) Three people watched a fireworks display.

- a) A man lit the fireworks. He wore ear defenders.  
Why should he wear ear defenders when he is close to loud fireworks?



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1 mark

- b) A rocket exploded making a loud sound and a bright flash.  
Peter, Sabrina and Nicole were standing at different distances from the rocket.



When the rocket exploded, Nicole heard the quietest sound.  
Why did she hear the quietest sound?

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1 mark

- c) Nicole saw the flash before she heard the sound.  
What does this tell you about the speed of light and the speed of sound?

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1 mark

- d) Nicole, Sabrina and Peter could **see** the fireworks because they gave out light.  
**On the diagram above** draw rays of light to show how these three people could see the fireworks.

3 marks

- e) How did the sound arrive to the ears of these people?

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1 mark

- f) When the rocket stopped burning it fell to the ground.  
What **force** caused it to fall to the ground?

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1 mark

5) A burning candle is floating on water and a beaker is placed over the burning candle.

a) What happens to the flame after a short time?

\_\_\_\_\_

1 mark

b) Why?

\_\_\_\_\_

\_\_\_\_\_

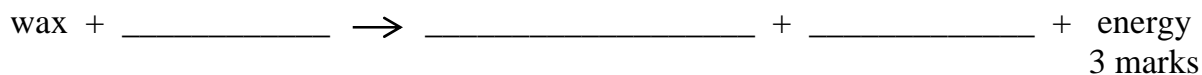
1 mark

c) What happens to the water in the beaker?

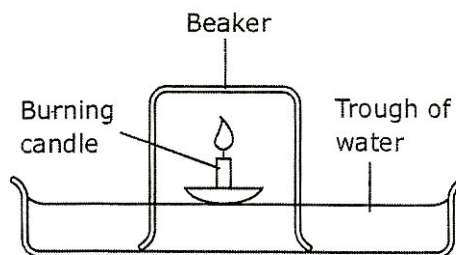
\_\_\_\_\_

1 mark

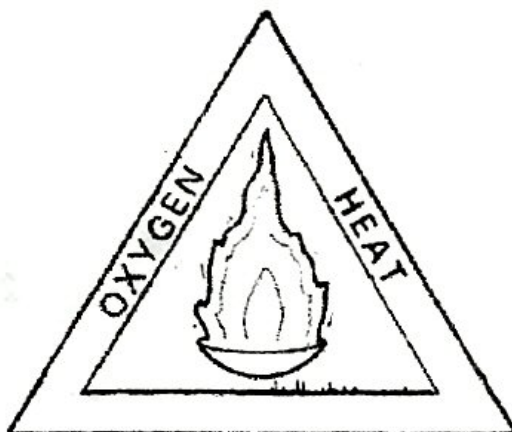
d) Complete the word equation which shows the burning of wax.



3 marks



6) The diagram shows the fire triangle.



a) On the diagram fill in the missing word in the fire triangle.

1 mark

b) What does the fire triangle mean?

\_\_\_\_\_

\_\_\_\_\_

1 mark

c) Fire-fighters use this knowledge to put out a fire.

Fill in the blanks:

i) Cool things down with water. This removes \_\_\_\_\_.

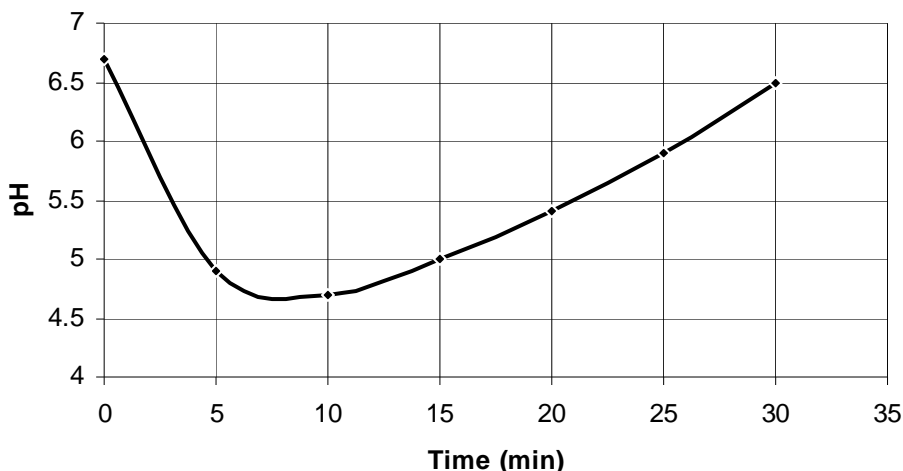
ii) Choke a fire with foam. This removes \_\_\_\_\_.

iii) Let it burn out. This removes \_\_\_\_\_.

3 marks

7) Bacteria in the mouth changes sugar into acid. The acid attacks our teeth causing tooth decay.

Eric eats a sweet. The graph below shows how the pH of his mouth changes after eating the sweet.



a) What does the pH measure? \_\_\_\_\_ 1 mark

b) When the pH in the mouth is 5.5 or less tooth decay takes place.

Use your graph to estimate:

i) When the teeth start to decay: \_\_\_\_\_ 1 mark

ii) How long the teeth continued to decay. \_\_\_\_\_ 2 marks

c) Is toothpaste acidic or alkaline? \_\_\_\_\_ 1 mark

d) How does toothpaste help to reduce tooth decay?  
 \_\_\_\_\_  
 \_\_\_\_\_ 2 marks

8) Fill in the blanks.

- Indicators change \_\_\_\_\_ in acids and alkalis.
- \_\_\_\_\_ indicator tells you how strong an acid is.
- In an acid, the colour of litmus is \_\_\_\_\_.
- In an alkali, the colour of litmus is \_\_\_\_\_.
- pH 1 shows a strong \_\_\_\_\_.
- pH 7 shows a \_\_\_\_\_ substance.
- The reaction between an acid and an alkali is called \_\_\_\_\_.
- Two acids found at home are \_\_\_\_\_ and \_\_\_\_\_.
- Two alkalis found at home are \_\_\_\_\_ and \_\_\_\_\_.

11 marks

9) We eat food.

a) Give **three** reasons why we need food?

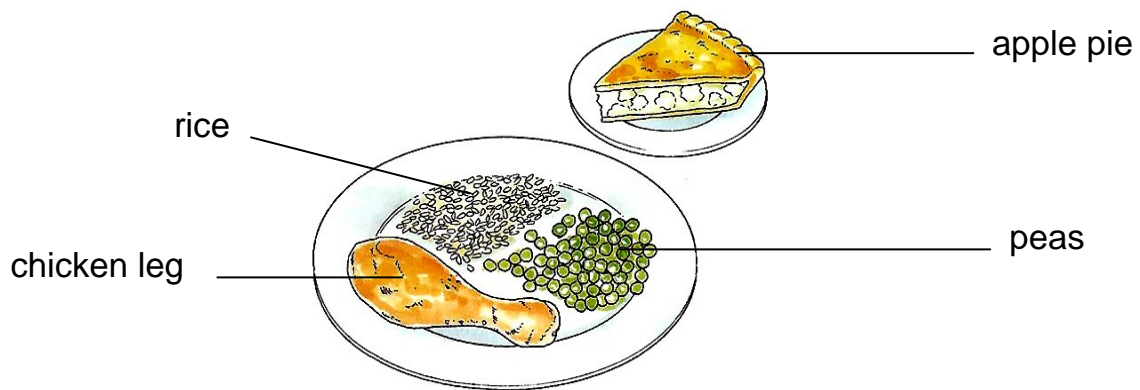
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3 marks

b) The diagram shows a typical meal.



i) Name **two** parts of this meal that are good sources of **carbohydrates**?

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2 marks

ii) a. Which part of this meal is rich in proteins?

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1 mark

b. Give one reason why we need proteins in our diet.

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1 mark

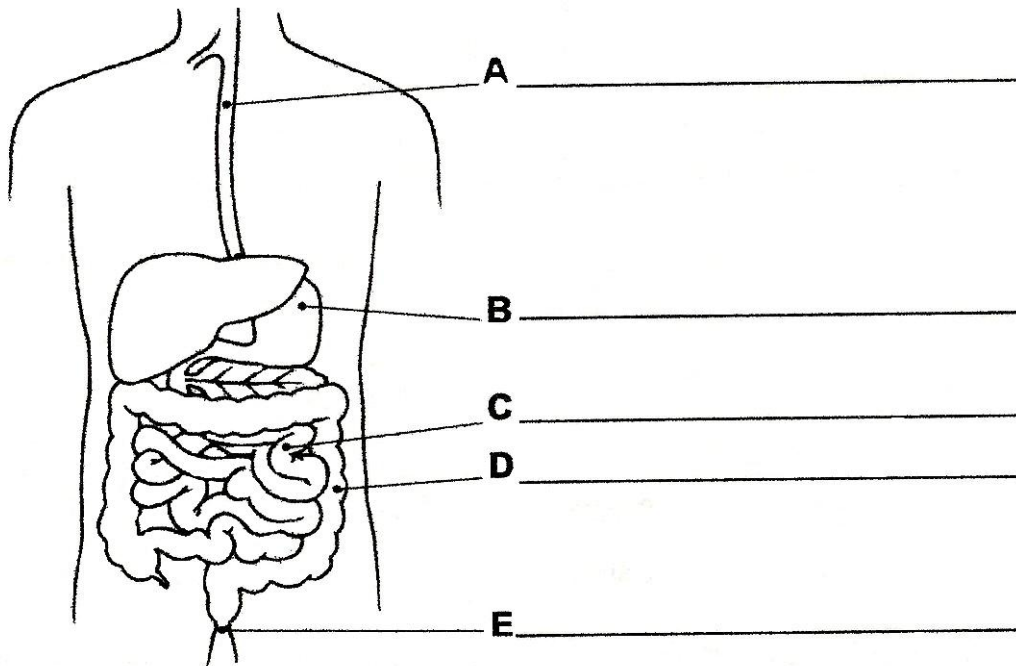
c) Brown bread contains a lot of fibre.

Why is it important that we eat food that is rich in fibre?

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1 mark

- 10) The food we eat is digested in the digestive system.  
 The diagram shows the digestive system.  
 a) Label the diagram.



5 marks

- b) Explain why food has to be digested before it can be absorbed into the bloodstream?

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1 mark

- c) Where in the digestive system is food broken down mechanically?

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1 mark

- d) What is the work of the enzymes in the digestive system?

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1 mark

- e) Where is acid mixed with the food?

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1 mark

- f) Where is digestion completed and food absorbed into the bloodstream?

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1 mark



11) The diagram shows the part of the Sun and the Earth. (not to scale)



- a) Shade the part of the Earth that is in darkness. 1 mark
- b) A, B and C are three places on Earth.
- i) Which place has the highest temperature?
- \_\_\_\_\_ 1 mark
- ii) Why?
- \_\_\_\_\_ 1 mark
- c) What season would it be in the northern hemisphere when the Earth is in this position?
- \_\_\_\_\_ 1 mark
- d) If the Earth's axis were not tilted how would the seasons be affected?
- \_\_\_\_\_ 1 mark
- e) How long does it take for the Earth to turn once on its axis?
- \_\_\_\_\_ 1 mark
- f) How long does it take the Earth to travel once in its orbit?
- \_\_\_\_\_ 1 mark

12) Read the following passage then answer the questions below.

Mark decided to use his telescope just as the Sun was going down. He could see Venus shining brightly in the evening sky. The Moon was also clear, and as the sky became darker he could see more stars. Some of the objects he saw are in the solar system.

a) Which two objects mentioned in the above passage are **sources of light**?

\_\_\_\_\_

2 marks

b) Which two objects mentioned in the above passage **reflect light**?

\_\_\_\_\_

2 marks

c) Which objects seen by Mark are not parts of our solar system?

\_\_\_\_\_

1 mark

d) Write the objects below in order of size starting with the smallest first.

Earth                  Sun                  Moon                  solar system

\_\_\_\_\_

2 marks

End of paper. Please check your work again.