

**JUNIOR LYCEUM ANNUAL EXAMINATIONS 2007**

**Educational Assessment Unit – Education Division**

**FORM 2**

**INTEGRATED SCIENCE**

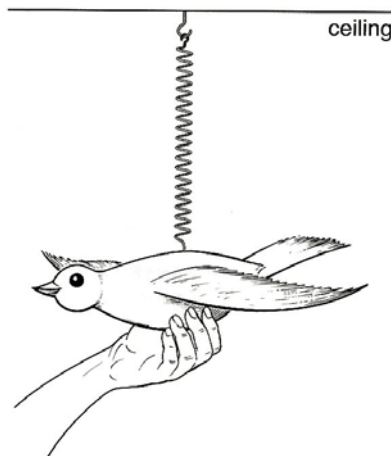
**Time 1hr 30 min**

Name \_\_\_\_\_

Class \_\_\_\_\_

**ANSWER ALL QUESTIONS**

1) Ann has a toy bird on a spring. She pulls the toy bird down.



a) On the diagram above, **draw an arrow** to show the direction of Ann's force on the bird. Label the arrow **F**.

1 mark

b) Which other force is pulling the toy down? \_\_\_\_\_

1 mark

c) Ann lets the bird go.

i) On the diagram above, draw another arrow to show which way the bird will start to move. Label this arrow **M**.

1 mark

ii) What makes the bird move in this direction?

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

d) The bird bounces up and down for several minutes, and then stops.

Why does the bird stop moving? Tick (✓) the correct answer.

Air resistance slows it down.

Gravity gets less.

The bird gets heavier.

The spring stretches.

1 mark

2) This question involves words about **forces**.

Use the clues to find the words and write them in the table below.

The word search diagram will help you to fill them in **correctly**.

Word	Clue
	This force acts upwards on objects in water.
	The force that tends to stop movement.
	Force is measured in this unit.
	This stretches in a force meter.
	The force used to move things towards you.
	The force used to move things away from you.
	This force pulls objects towards the centre of the Earth.

Word search diagram									
U	G	R	A	V	I	T	Y	F	O
P	H	C	P	F	B	E	V	P	I
T	S	A	U	S	O	D	A	U	N
H	P	L	L	S	P	R	G	S	E
R	R	F	L	P	J	U	C	H	W
U	I	W	O	H	X	T	S	E	T
S	N	M	A	G	N	E	T	H	O
T	G	F	R	I	C	T	I	O	N
B	Z	G	H	P	A	O	W	F	D

7 marks

3) Bees and wasps are both insects which use a sting to defend themselves.

The pH values of their stings are shown on the diagrams.

a) Complete the table below to show whether the stings are acidic or alkaline and what colour they would turn the universal indicator.



bee  
bee sting pH 2



wasp  
wasp sting pH10

	acidic or alkaline	colour of universal indicator
Bee sting (pH 2)		
Wasp sting (pH 10)		

4 marks

b) The table below shows 5 household substances and their pH.

Name of substance	pH of substance
bicarbonate toothpaste	8
lemon juice	3
vinegar	4
washing soda	11
water	7

Give the name of **one** substance in the table which would **neutralise** each sting.

i) bee sting \_\_\_\_\_ ii) wasp sting \_\_\_\_\_

2 marks

4) a) Which of the pH numbers indicates the most strongly acidic solution?  
Circle your answer.

1                  5                  7                  14

1 mark

b) Put these pH values in order, with the most strongly alkaline first and the most strongly acidic last:

3,                  13,                  2,                  9,                  11,                  6

1 mark

5) Write the meaning of each hazard label in the box next to it then draw a line to match each box with its application.



These substances are not corrosive but can cause reddening or blistering of skin.



These substances attack and destroy living tissue including eyes and skin.



These substances can cause death. They may have their effects when swallowed or breathed in or absorbed through the skin.

6 marks

6) a) Continue these sentences about sound.

i) Sound can travel through \_\_\_\_\_

ii) Sounds are produced when particles \_\_\_\_\_

iii) Sound cannot travel through a \_\_\_\_\_

iv) A loud sound can cause \_\_\_\_\_

4 marks

b) This picture shows an astronaut on the moon.

Write **true** or **false** near each of the following sentences.

- The light is coming from the left hand side. \_\_\_\_\_
- The astronaut uses the helmet to breathe in air. \_\_\_\_\_
- It is very windy on the Moon. \_\_\_\_\_
- The astronaut removes the helmet to speak. \_\_\_\_\_
- There is no air on the Moon. \_\_\_\_\_



5 marks

7) a) How do we describe an object that does not let light pass through? \_\_\_\_\_

1 mark

b) Draw a circle round all the luminous objects in the list below.

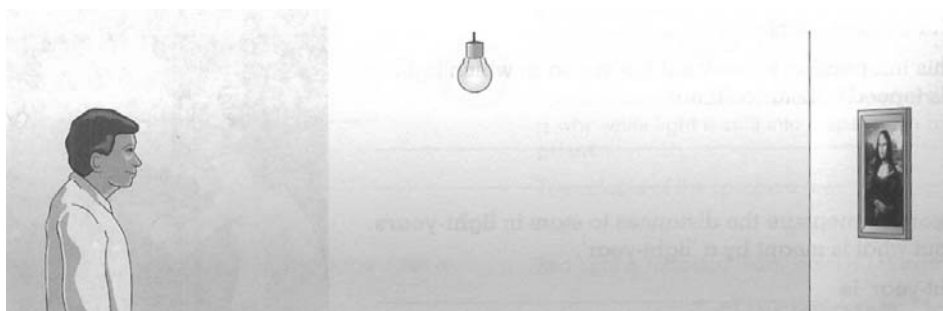
Sun                      flame                      mirror                      table                      lamp  
paper                      moon                      eye

3 marks

c) Draw light rays to show:

i) How the person sees the lamp.

ii) How the person sees the picture.



3 marks

8) a) Give **three** examples of chemical reactions that take place in everyday life.

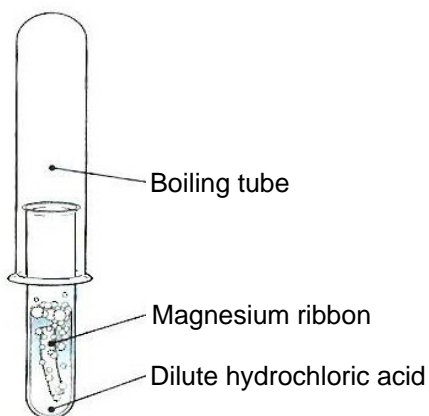
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3 marks

b) Many metals react with acid giving off hydrogen gas.  
The diagram shows an example of such a reaction.



i) Which metal and which acid are reacting together?

metal \_\_\_\_\_ acid \_\_\_\_\_

2 marks

ii) How can you tell that a gas is given off?

\_\_\_\_\_

1 mark

iii) Where is the gas collected?

\_\_\_\_\_

1 mark

iv) Explain how you would check that this gas is hydrogen.

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2 marks

9) Some materials can burn.

a) Underline the objects that can burn.

paper      water      tree      iron      limestone      coal      hydrogen

4 marks

b) What gas is needed for a material to burn? \_\_\_\_\_

1 mark

c) Where does this gas usually come from? \_\_\_\_\_

1 mark

d) What two gases are produced when a wax candle burns?

\_\_\_\_\_

2 marks

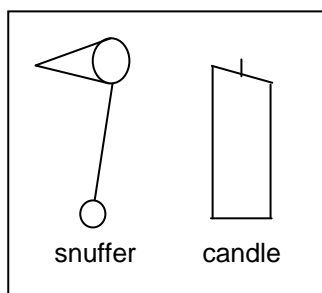
e) Explain why a candle doesn't burn unless it is lit by a match.

\_\_\_\_\_

\_\_\_\_\_

1 mark

f) Here is a picture of a candle and a snuffer, which is used to put out a candle.



Why does the snuffer put out the candle?

\_\_\_\_\_

\_\_\_\_\_

1 mark

g) i) Write one similarity between rusting and burning.

\_\_\_\_\_

1 mark

ii) Write one difference between rusting and burning.

\_\_\_\_\_

1 mark

10) The table shows the recommended daily intake of energy and some nutrients needed by different groups of people.

group of people	energy, in KJ	nutrients				
		protein, in g	carbohydrates, in g	fat, in g	minerals in mg	
					calcium	iron
male 15-18 yr	115110	55.2	360	109	1000	11.3
female 15-18 yr	8830	45.0	276	84	800	14.8
Male 19-50 yr	10600	55.5	331	100	700	8.7
female 19-50 yr	8100	45.0	253	77	700	14.8
pregnant female	8900	81.0	278	84	700	14.8

a) i) Which two types of nutrients provide most of the energy in our diet?

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

2 marks

ii) James and Robert are two 30 year-old males of the same weight. Explain why they might need different amount of energy.

\_\_\_\_\_

\_\_\_\_\_

2 marks

b) i) From the table above work out the difference between the amount of calcium needed by a 15 year-old male and a 30 year-old male.

\_\_\_\_\_ mg.

1 mark

ii) Calcium is needed for healthy bones. Explain the difference in the amount of calcium needed each day by the 15 year-old male and the 30-year old male.

\_\_\_\_\_

\_\_\_\_\_

2 marks

c) Look at the table.

Explain the difference in the amount of protein needed by a 25 year-old pregnant female and a 25 year-old female who is not pregnant.

\_\_\_\_\_

\_\_\_\_\_

2 marks

d) Iron is needed to make blood.

i) Which groups of people need to take the biggest amount of iron?

\_\_\_\_\_

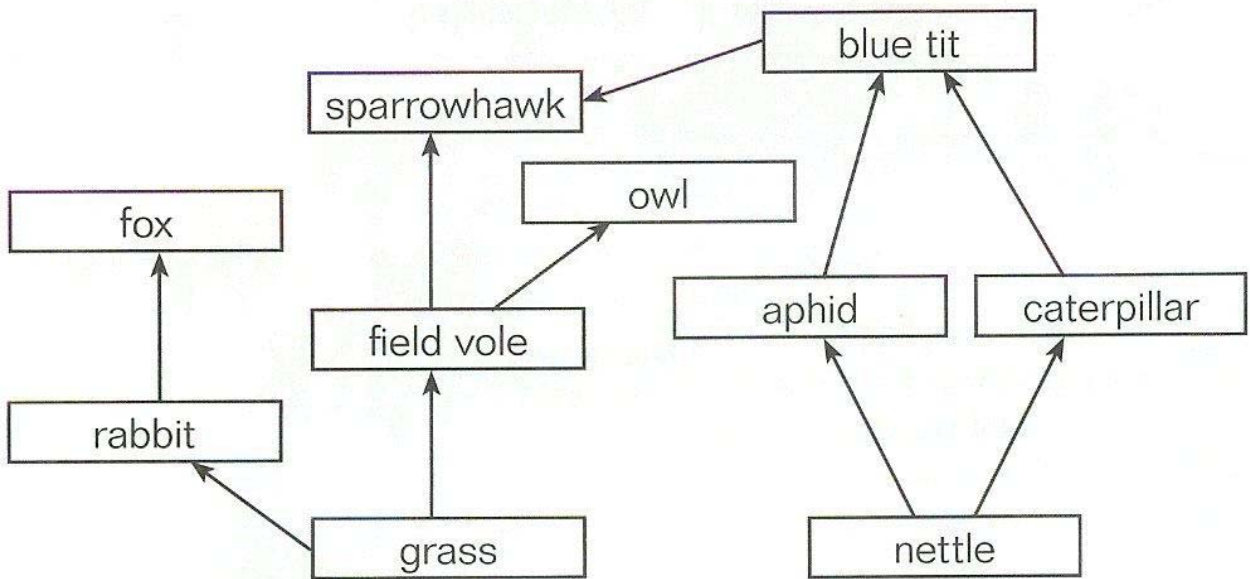
3 marks

ii) Name two foods that these groups can take to get the iron they need.

\_\_\_\_\_

2 mark

11) Look carefully at the food web, then answer the questions below.



- a) Name one producer in this food web. \_\_\_\_\_ 1 mark
- b) Name three consumers in this food web.
  - i) \_\_\_\_\_
  - ii) \_\_\_\_\_
  - iii) \_\_\_\_\_
 3 marks
- c) Name one herbivore in this food web. \_\_\_\_\_ 1 mark
- d) Name one carnivore in this food chain. \_\_\_\_\_ 1 mark
- e) Name one predator in this food web. \_\_\_\_\_ 1 mark
- f) Write out one food chain, beginning with a producer and containing only one consumer.
 

\_\_\_\_\_

 1 mark
- g) Write out each of the three food chains in this web that lead to the sparrowhawk.
  - i) \_\_\_\_\_
  - ii) \_\_\_\_\_
  - iii) \_\_\_\_\_
 3 marks

12) John has forgotten a lot of facts about the Earth, the Sun and the Moon.  
Match each description with the correct word.

Earth            night            day            Sun            daytime            sunset  
sunrise            axis            phases            year            Moon            lunar month

a spherical planet that orbits the Sun	
one turn of the Earth on its axis which takes 24 hours	
when the Sun appears in the sky at the beginning of the day	
a hot spherical star	
when the Sun disappears from view at the end of the day	
the time taken for the Earth to orbit the Sun	
the time when part of the Earth is facing the Sun	
a natural satellite of the Earth	
the time taken for the Moon to orbit the Earth	
the time when a part of the Earth is facing away from the Sun	
an imaginary line around which the Earth spins	
the changes in the appearance of the Moon as it orbits the Earth	

12 marks