SECONDARY SCHOOL ANNUAL EXAMINATIONS 2007

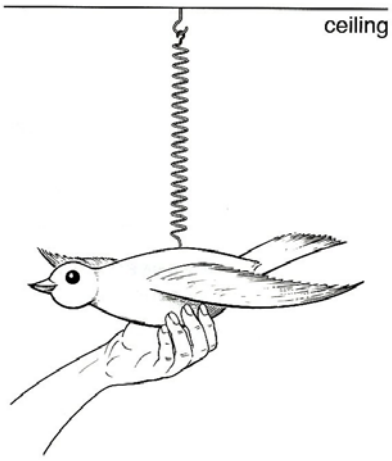
Educational Assessment Unit – Education Division

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**.
Match the words in column A to the clues in column B.
Write the numbers in the middle column.

	A		B
1	Newton		This force acts upwards on objects in water.
2	pull		The force that tends to stop movement.
3	gravity		Force is measured in this unit.
4	push		This stretches in a force meter.
5	upthrust		The force used to move things towards you.
6	spring		The force used to move things away from you.
7	friction		This force pulls objects towards the centre of the Earth.

7 marks

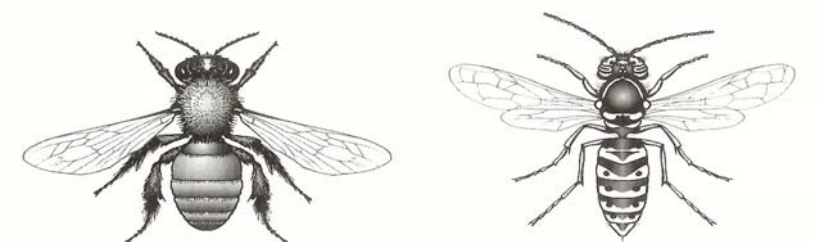
3) John has forgotten a lot of facts about the Earth, the Sun and the Moon.
Match each description with the correct word.

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 a 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

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



bee
bee sting pH 2

wasp
wasp sting pH10

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.

	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

5) a) Which of the pH numbers show that a liquid is an acid?
Circle your answer.

1 5 7 14

2 marks

b) Put these pH values in order, such that the first is a strong alkali:

3, 2, 9, 13

_____

2 marks

6) a) Write the meaning of each hazard label in the box next to it.

3 marks

b) What is the meaning of the word hazard? _____

1 mark

c) Underline the liquids on which you may find these labels.

soft drinks, orange juice, sodium hydroxide

hydrochloric acid, bleach

3 marks

7) The following question is about teeth and digestion.
Match the 1st part of each sentence with the correct ending to make a complete sentence.
Write the correct number in the middle column.

beginning of sentence		ending of sentence
1. The molar teeth are used		to form plaque
2. Bacteria and food help		food mixes with acid and digestive juices
3. In the stomach		water is absorbed
4. In the large intestine		to chew food

4 marks

8) Look at the nutritional information tables taken from different foods.

Tuna	
PROTEINS	26g
CARBOHYDRATES	0
FATS	0.2g
FIBRE	0

Cereal	
PROTEINS	14g
CARBOHYDRATES	75g
FATS	3g
FIBRE	2.5g
VITAMINS	115mg
MINERALS	10.7mg

Cake	
PROTEINS	4.6g
CARBOHYDRATES	48.1g
FATS	19.4g

a) Which of the above foods is:

i) the best source of proteins? _____

ii) rich in fibre? _____

2 marks

b) i) Which food will be the best to eat on the day you will be taking part in a sport activity?

_____

1 mark

ii) Why?

_____

_____

2 marks

c) i) Which food should you avoid if you want a healthy heart?

_____

1 mark

ii) Why?

_____

2 marks

d) James thinks that vitamins and minerals are not important because we only need a small amount every day. James is wrong.
Tick (✓) the statements that are true.

i) Vitamins make you fat. ☐

ii) The mineral calcium is needed for healthy bones and teeth. ☐

iii) Vitamin C helps you fight infections. ☐

iv) Vitamins make your skin dark. ☐

v) Vitamin A is good for the eyesight. ☐

vi) The mineral iron helps us to have healthy blood, nails and hair. ☐

4 marks

9) a) What do we call an object that lets light pass through? _____

1 mark

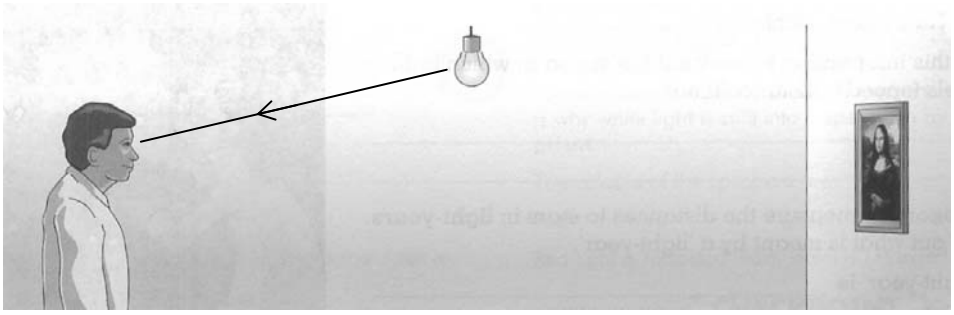
b) Draw a circle round all the objects that give off light.

Sun television mirror glass

lamp Moon eye

3 marks

c) The light ray on the diagram shows how the person sees the light.
Draw light rays to show how the person sees the picture on the wall.



2 marks

10) a)Find the correct ending of each sentence and join it by drawing a line.

i) Sound can travel through	vacuum
ii) Sound cannot travel through a	damage to the ear
iii) Sounds are produced when particles	solids, liquids and gases
iv) A loud sound can cause	vibrate

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

11) Some objects can burn and during burning many changes take place.

a) Underline the objects that can burn.

book, water, copper wire, coal, magnesium ribbon, wood

4 marks

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

1 mark

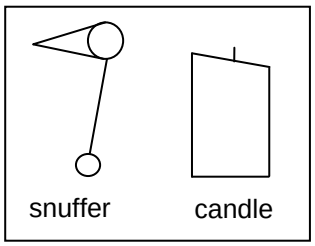
c) Where does this gas usually come from? _____

1 mark

d) Name a gas which is made when a wax candle burns. _____

1 mark

e) 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

f) Tick (✓) the changes that have taken place when the candle was burning.

i) The candle changed shape. ☐

ii) The candle became bigger. ☐

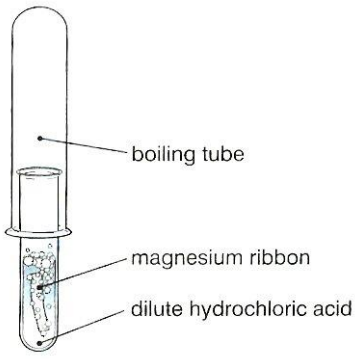
iii) New chemicals were made. ☐

iv) Energy was given off. ☐

v) It became heavier. ☐

3 marks

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



a) Which metal and which acid are reacting together?

metal _____ acid _____

2 marks

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

_____

1 mark

c) Where is the gas collected?

_____

1 mark

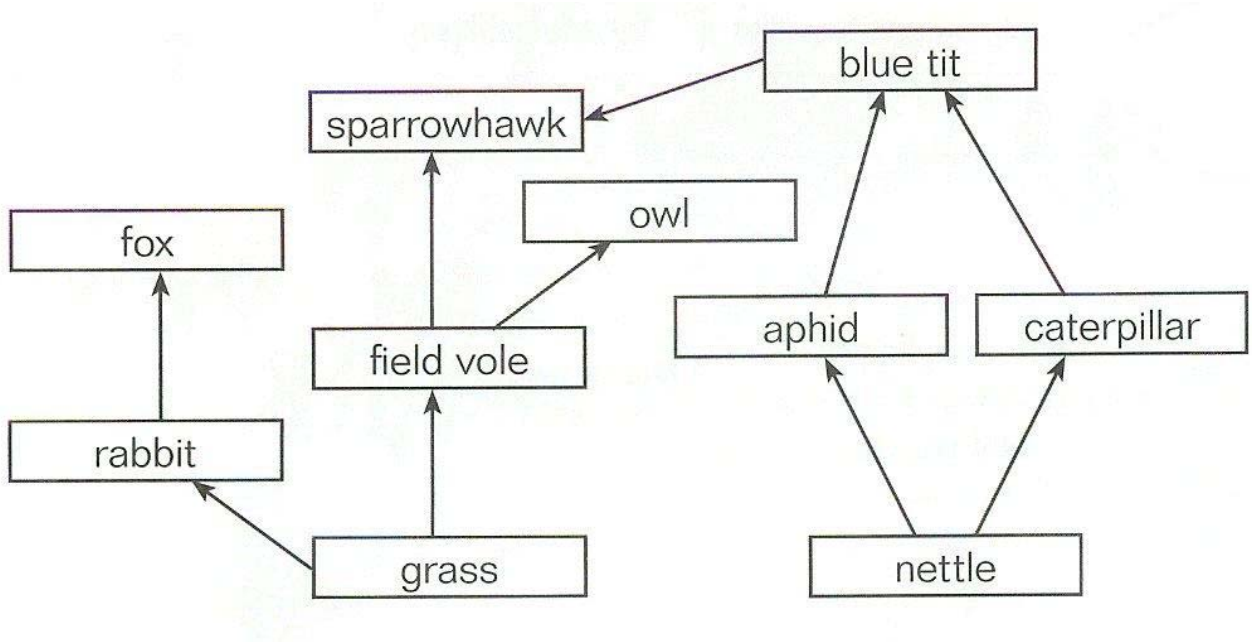
d) Explain how you would check that this gas is hydrogen.

_____

_____

2 marks

13) 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