DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Department for Curriculum Management and eLearning
Educational Assessment Unit
Annual Examinations for Secondary Schools 2010

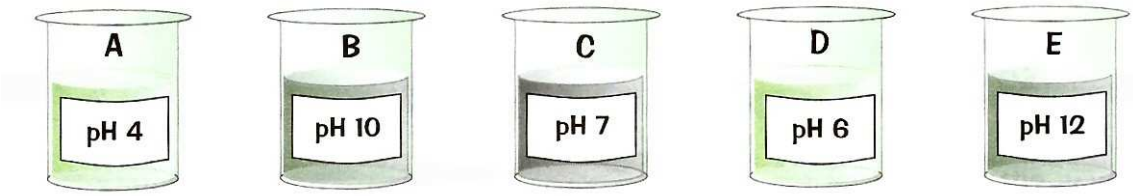
Track 2

FORM 2 **INTEGRATED SCIENCE** **TIME: 1h 30min**

Name: _____ **Class: _____**

ANSWER ALL QUESTIONS

1. **Below are five beakers each containing 100cm^3 of different solutions. Their pH are shown on them.**



a. Answer the following questions:

i) Which beaker contains a neutral solution? _____ (1)

ii) Which beakers contain an acidic solution? _____ (2)

iii) Which beakers contain an alkaline solution? _____ (2)

iv) Which two beakers could be mixed to make a neutral solution? _____ (2)

v) Give an example of one acid: _____

and one alkali: _____

(2)

b. The pH of the above solutions was found using Universal Indicator. Write down the colour when using this indicator. The first one has been done as an example.

Solution	**Colour of indicator**
Solution A (pH 4)	orange
Solution B (pH 10)	
Solution C (pH 7)	
Solution D (pH 6)	
Solution E (pH 12)	

(4)

2. **Match each hazard sign to its meaning.**

Draw lines between the columns to show the correct links.

	corrosive
	irritant
	flammable
	toxic

These substances are not corrosive but can cause reddening or blistering of the 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.
These substances catch fire easily.

(4)

3. **Chemical reactions make new materials. They are irreversible changes.**

The table shows a number of changes.
Tick (✓) the correct column to show whether these are chemical or physical changes.

	chemical change	physical change
a) burning toast under a grill		
b) turning water into ice in a freezer		
c) boiling an egg		
d) lighting a Bunsen burner		
e) salt disappearing as it is stirred into a beaker of water		
f) water droplets forming on a kitchen window		
g) green copper carbonate powder turning to black copper oxide when it is heated strongly		

(7)

4. **Burning and rusting are similar because they are reactions where oxides are formed. However, each reaction requires different things.**

a) Complete these sentences.

i. For BURNING to take place, there must be a FUEL, OXYGEN and _____.

ii. For RUSTING to take place, there must be IRON, OXYGEN and _____.

(2)

b) In the box provided, draw the FIRE TRIANGLE.

(3)

c) To put out a fire we should remove one of the three things found in the fire triangle. What thing are you removing when:

i. you throw water over a fire? _____

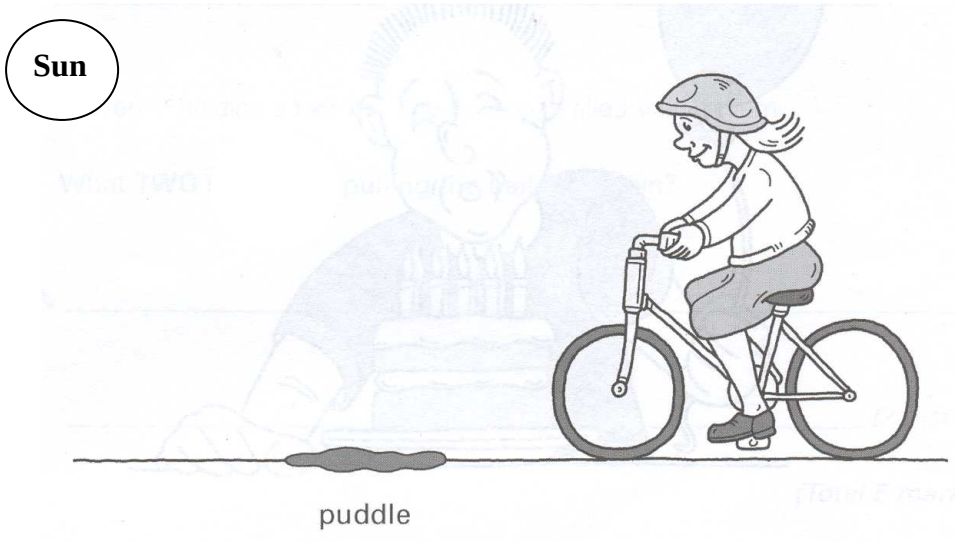
ii. you put a fire blanket over a fire? _____

iii. you remove a gas cylinder from a burning kitchen?

_____ (3)

5. **Nicole is riding her bicycle. She sees a water puddle. Using arrows, draw rays of light which show how she can see the water puddle.**

(Use a ruler for your drawings.)



(2)

6. **Compare light and sound by answering TRUE or FALSE in the following pairs of sentences.**

   i. a) **Light** can be produced by the human body _____

      b) **Sound** can be produced by the human body _____

   ii. a) **Light** can be reflected _____

      b) **Sound** can be reflected _____

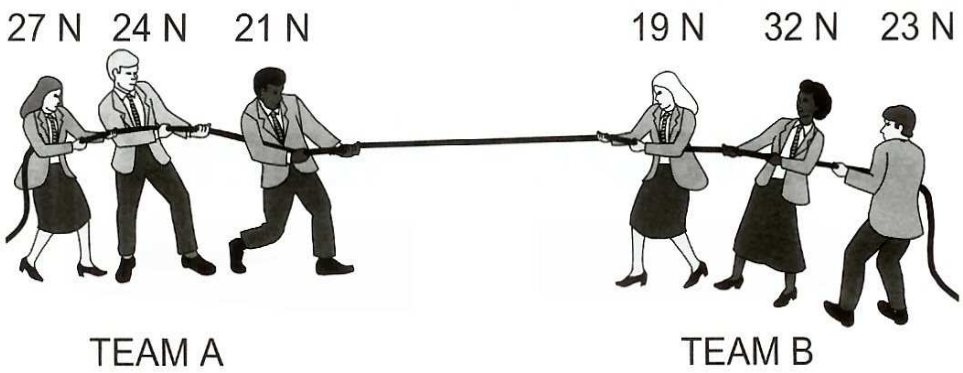
   iii. a) **Light** travels in space _____

      b) **Sound** travels in space _____

(6)

7. **Some friends are having a tug of war.**

The diagram shows the two teams and the force with which each person is pulling.



a. What does N stand for? _____ (1)

b. Which instrument can be used to measure forces? _____ (1)

c. Calculate the total force produced by team A: _____ (1)

d. Calculate the total force produced by team B: _____ (1)

e. Which team is winning? _____ (1)

f. Underline the correct answer:

The forces on each side of the rope are (**balanced** / **unbalanced**). (1)

8. **The picture shows the beginning of a bobsleigh race on a slope of ice.**
The team has to push the bobsleigh as hard as they can. As the bobsleigh gains speed the team jumps on board.

a. On the diagram draw an arrow to show:

i) The pushing force. Label this arrow P. (2)

ii) The friction between the bobsleigh and ice. Label this arrow F. (2)

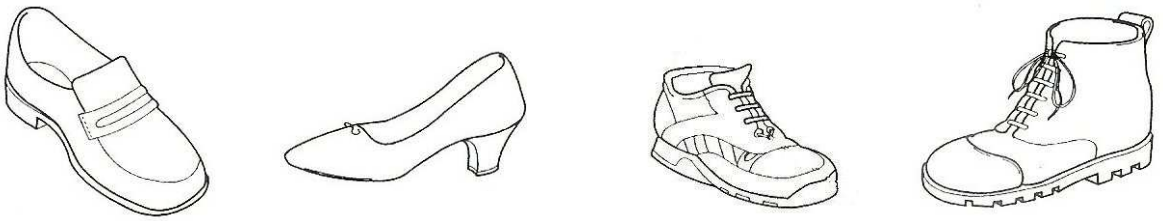
b. There are other forces acting on the bobsleigh. On the diagram draw an arrow to show ONE of these forces. Label the force. (2)

c. What happens to the speed of the bobsleigh as it travels down the slope?

_____

(1)

The picture below shows four different shoes.



d. i) Put a circle around the best shoes that the team members have to wear to prevent them from slipping on the ice.

(1)

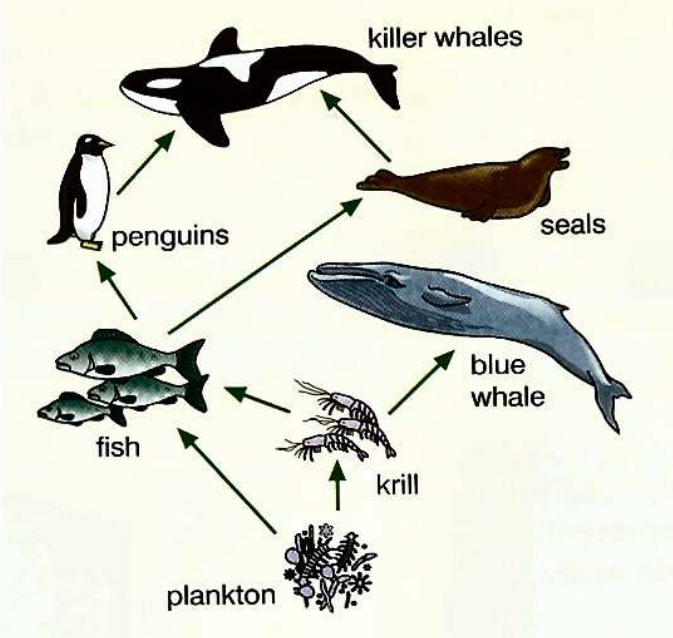
ii) Explain why this is the best shoe.
Use the word **friction** in your answer.

_____

_____

(2)

9. **The diagram shows a food web in the South Atlantic Ocean.**
Answer the following questions using the food web below.



a) Which organism is a producer? _____

(1)

b) Name: one herbivore: _____

one carnivore: _____

one prey: _____ (3)

c) Name one animal which is both a predator and a prey. _____

(2)

d) From the above food web, write down any food chain.

_____

(2)

e) The seal is a good swimmer and lives in a cold environment.
Give one characteristic which makes the seal:

i) a good swimmer

_____

(2)

ii) adapted to live in a cold environment

_____

_____

(2)

10. **This question is about nutrients in food.**

a) Match up each nutrient with its use by the body.

NUTRIENT	USE BY THE BODY
Proteins	to give energy
Minerals	for growth and repair of cells
Carbohydrates	for a healthy digestive system
Vitamins	for strong bones and healthy teeth
Fibre	to prevent disease

(5)

b) Fat is also needed by the body but a lot of fat causes many problems.
Write down TWO of these problems.

_____

_____

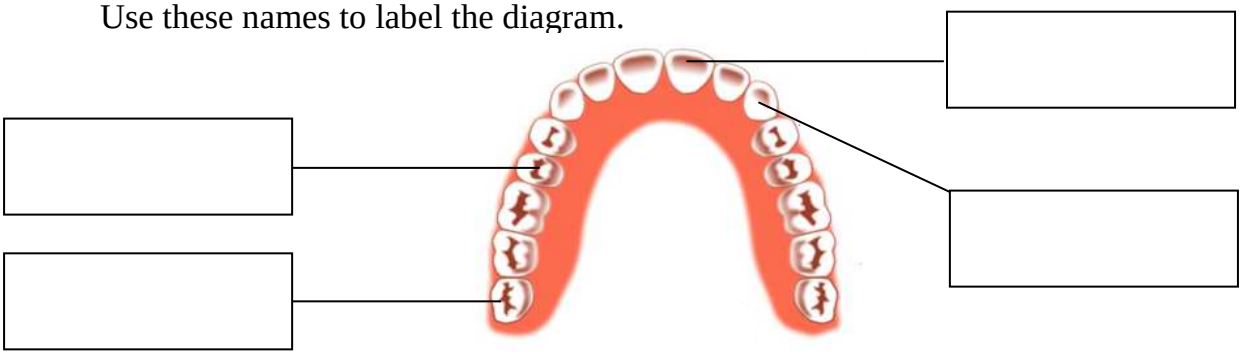
(2)

11. **This question is about teeth.**

a) These are the names of the four types of teeth.

premolar **canine** **molar** **incisor**

Use these names to label the diagram.



(4)

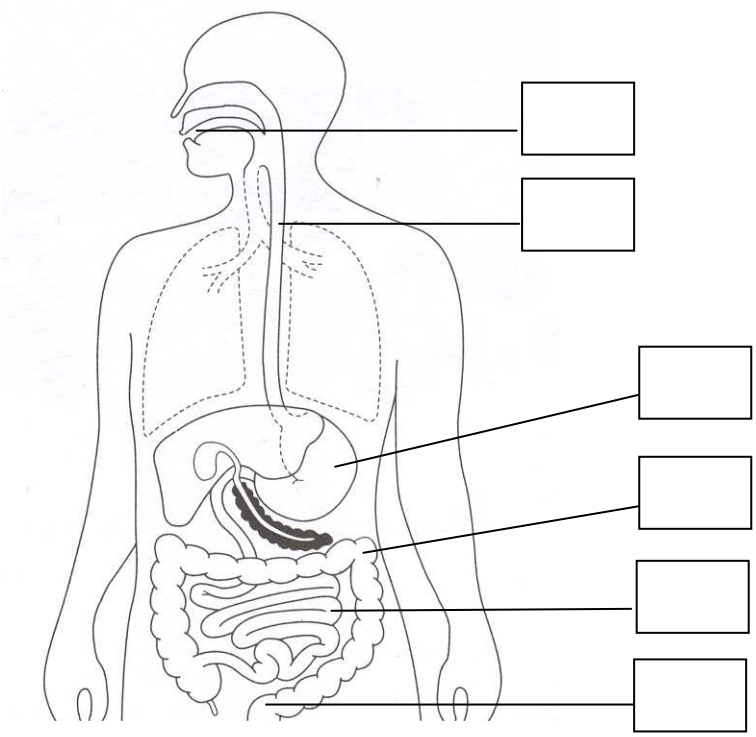
b) Toothpaste prevents tooth decay by removing acid from the mouth. How does toothpaste neutralize the acid in the mouth?

_____

(2)

12. **The following diagram shows the human digestive system**.

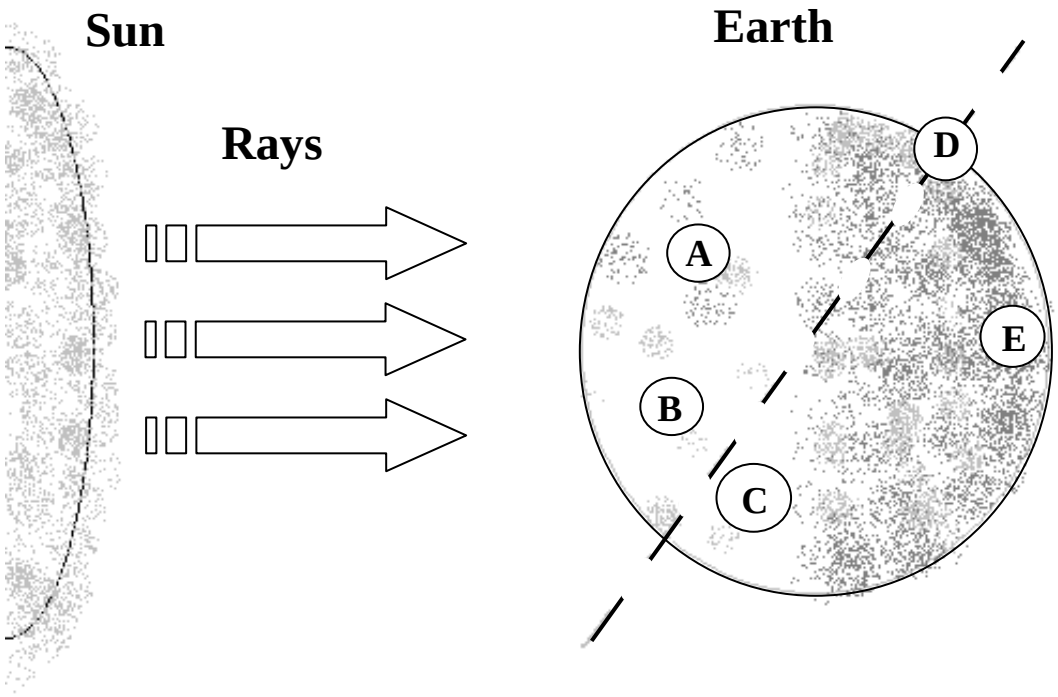
Use the following table to mark the diagram with the LETTERS showing where the following take place.



What happens	**Place**
Water is reabsorbed here	A
Food is broken down into a fine paste	B
Food is absorbed into the blood	C
Chewed food is passed through this	D
Food is taken in	E
Waste is removed from here	F

(6)

13. **The picture below shows the Earth in its orbit during early January.**



a. i. What is the dotted line called? _____ (1)

ii. Underline the correct answer:
The tilt of the dotted line causes (**day and night / eclipses / a leap year / the seasons**).
(1)

b. The letters show 5 places on Earth. Answer the following questions by writing the correct letters. Each letter can be used once, more than once or not at all.

i) Here it is dark: _____

ii) Here it is summer: _____

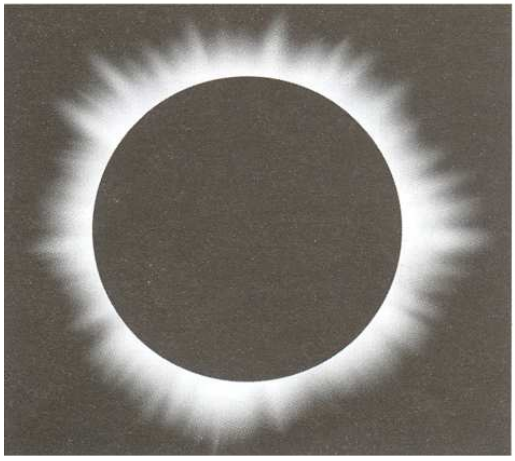
iii) Place A shows where Malta is. Complete these sentences.

The season is _____

The month is _____

(6)

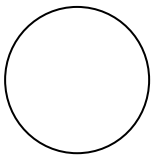
14. **The picture shows an eclipse in which the moon is blocking off the Sun's light.**



a. What is this kind of eclipse called?

_____ (2)

b. During an eclipse the Sun, the Earth and the Moon are arranged in a straight line. In the box below draw a diagram to show how the Sun, the Earth and the Moon are arranged in the type of eclipse shown in the above diagram.
Use these shapes when drawing your diagram:

Sun  Earth  Moon 

(Draw your diagram of the eclipse in this box)

(3)

END OF PAPER
PLEASE CHECK YOUR WORK AGAIN