

NAME:	SCIENCE TEACHER:	10C
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SCIENCE

Year 10 Examination 2006

10C – 40 marks

Make sure that you have answered all the questions in paper 10B before you start this paper

Time allowed for both examinations: 2 hours

Check you have pages 1 to 8 inclusive.

Answer all questions in the spaces provided on the paper.

You may use a calculator.

Show all your working in calculations; marks are awarded for it.

Give units for all answers (eg kg or m) unless they are already provided.

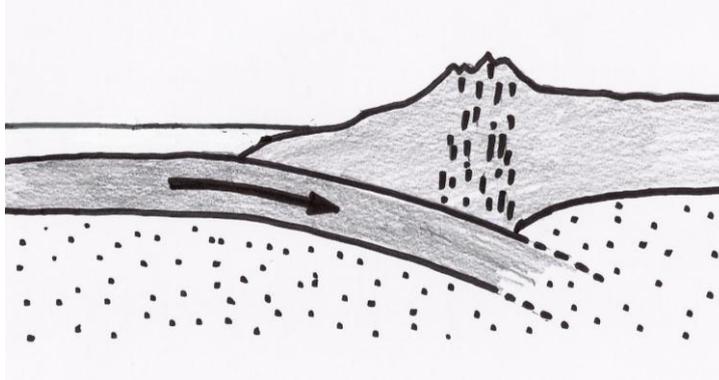
For Teacher Use

Question	1	2	3	4	5	6	7	8	Total
Marks gained									
Marks available	6	5	5	4	5	5	5	5	40

Question One Earth Science

Mary drew a diagram of a **Subduction zone** in the earth's crust and forgot to label it.

- (a) Add some important **labels** to her diagram **and explain** how this process occurs.



- (b) In a recent Geographic magazine there were photos of a ridge in the middle of the Pacific Ocean. The photos were taken from a mini submarine.
Explain with the help of a labelled diagram, how this ridge was probably produced.

Question Two

Making salt

In their science class, Mary and Tom were expected to make some sodium chloride salt by mixing hydrochloric acid and sodium hydroxide.

Mary measured 20 mL of sodium hydroxide solution into a small beaker, then added a few drops of Litmus indicator. Tom began to slowly add hydrochloric acid while stirring the mixture.

- (a) Describe how Tom would know when he had added enough acid.



- (b) Write the word equation for the reaction.

- (c) What is the name given to this type of reaction?

- (d) In their next reaction, Tom and Mary mixed sulfuric acid and sodium hydroxide. Name the salt they would produce.

Question Three

Fire Extinguishers

Mary was reading the instructions on the old fire extinguisher in her school laboratory. They said:

Turn the fire extinguisher upside down and bang the red button on the floor.

Then aim the nozzle at the fire and squeeze the trigger.



Her teacher said that when the red button was banged on the floor a bottle of acid inside was broken and the acid mixed with powdered calcium carbonate to make carbon dioxide gas.

- (a) Write a word equation for the reaction between the hydrochloric acid and the calcium carbonate.

(b) Name a substance you could use to test for CO₂ gas.

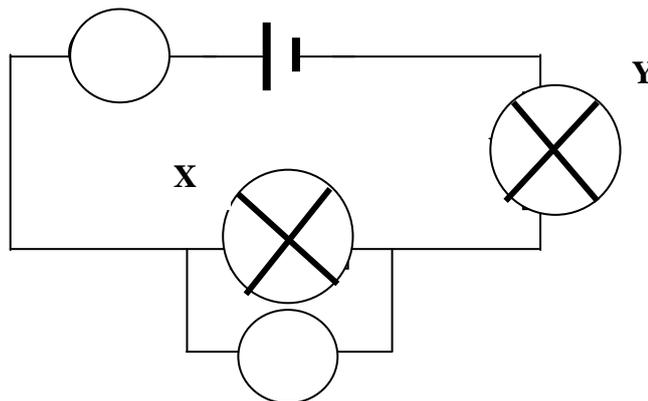
(c) Describe how you would do the test for CO₂ using the substance you have named. What would you see if CO₂ was present?



Question Four Electrical Circuits

In the circuit below, Mary wants to measure the voltage across the bulb X and the current through it.

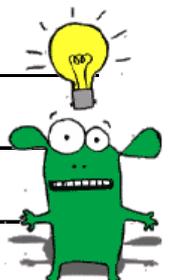
(a) In the empty circle symbols in the circuit, add the letters A and V to show which one should be the voltmeter and which one should be the ammeter.



(b) If the battery voltage is 10 Volts and the bulbs X and Y are identical, what reading would you expect to get for the voltage across bulb X.

(c) What would happen to the brightness of the light bulbs if the battery was changed and a 20 V battery was put in to replace the 10V one.

(d) What would happen to the brightness of the light bulbs if two more bulbs were added in series? Explain why this happens.

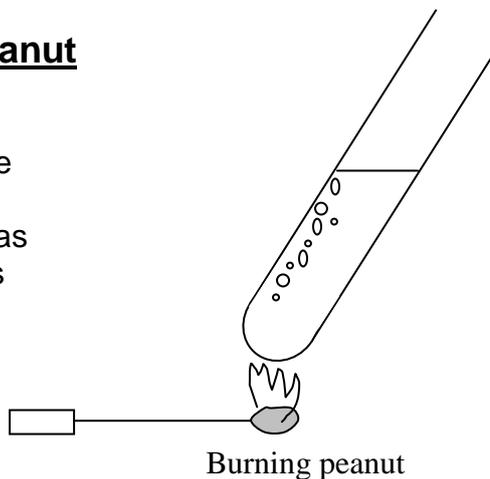


Question Five

The Burning Peanut

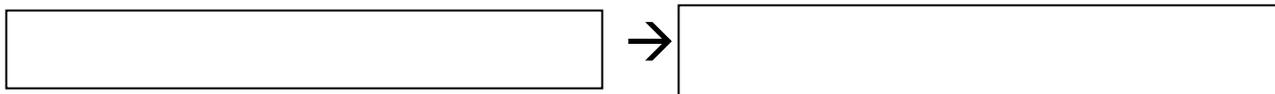
The oil stored in a peanut is a good source of energy. If the peanut is heated strongly it will catch fire and the oil in it will burn for several minutes.

An experiment was done in the lab where a peanut was set on fire and used to heat the water in a test tube as shown in the diagram.



- (a) What form of energy is represented by the oil stored in the peanut?

- (b) Complete the energy flow chart showing the energy change which occurs as the peanut burns.



- (c) The peanut burns for 200 seconds.
Water needs 4 Joules of energy to raise one gram of water by one degree Celcius,
The mass of water in the test tube is 20 grams.
The water temperature rises from 20°C to 50°C.
The energy that the peanut gave to the water was **2400 J**.
Using the information above, show how you would calculate this amount

- (d) How many Joules are being given to the water every second?



Question Six

The Kiwi and it's Environment

Read the following description of the Kiwi

The kiwi mainly lives in damp native forests, but they are also found in damp pine forest, scrub and rough farmland. Their nests may be in hollow logs, under tree roots, in natural holes or in burrows mainly dug by the male.

The kiwi comes out only at night time and eats the following: earthworms, spiders, larvae of beetles and cicadas, a mixture of forest invertebrates, and fallen fruits and seeds. They will even eat freshwater crayfish and frogs.

The main predators of the kiwi are introduced animals like stoats and ferrets, and cats and dogs.



(a) In the description of the Kiwi and how it lives there are a number of **biotic** and **abiotic** factors mentioned about its environment.

(i) Identify an **abiotic** factor.

(ii) Identify a **biotic** factor

(b) Describe one characteristic of the Kiwi's preferred habitat.

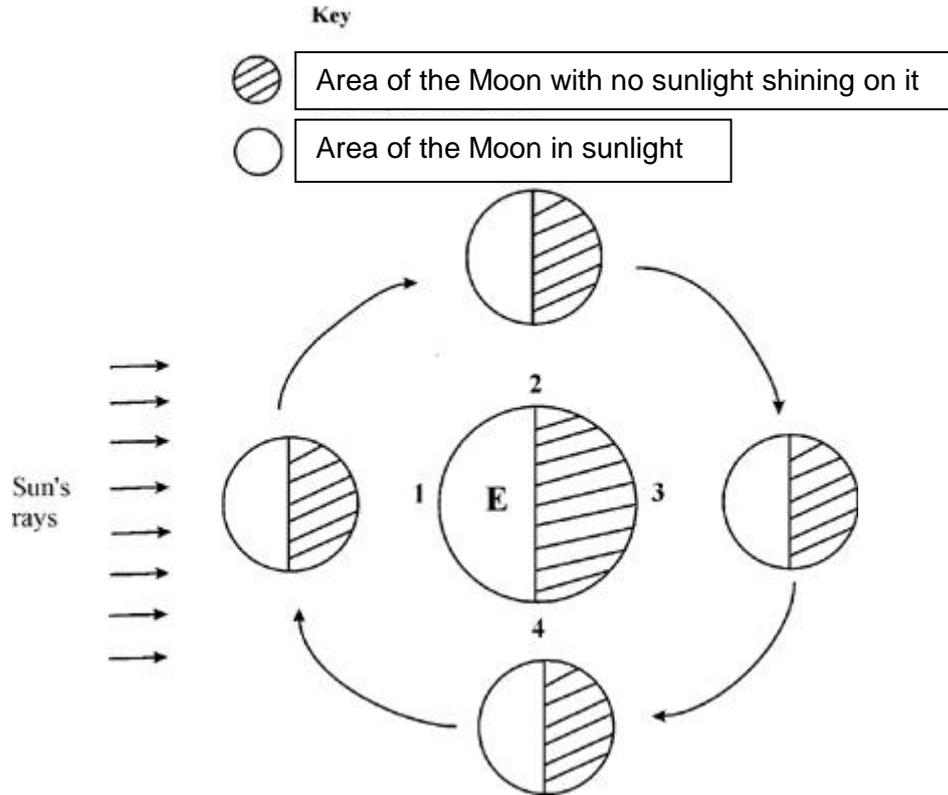
4. Explain the difference between a **community** and a **population**?



Question Seven

The Phases of the Moon

The diagram shows four positions of the Moon as it orbits the Earth.



(a) Which position on the Earth (1, 2, 3, or 4) would you have to be in to see a

i) First quarter? Position _____

ii) Third quarter? Position _____



b) Draw what the Moon would look like at point 3 in the box

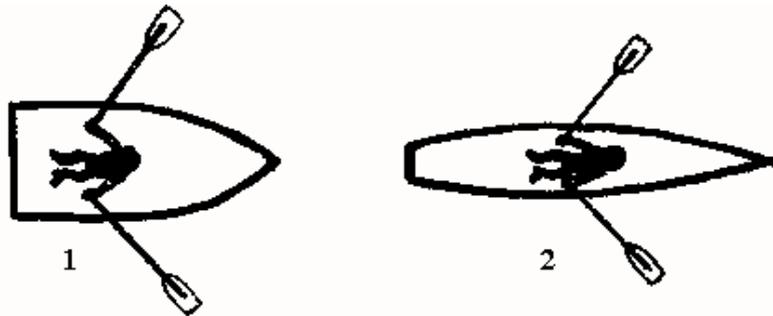
c) Which of the Moon(s) **labelled above** can we not see from the Earth? Position _____

Why not? _____

d) From the Earth, why does the Moon look like it has different shapes at different times?

- e) The moon does not produce its own light like the sun.
Explain why is it still possible to see the moon in the sky at night.

Question Eight **Rowboats**



- a) i) Both boats have the same mass and both rowers are equally strong. Which boat will move through the water faster?

Boat _____

- ii) Explain why.

- b) The oars are acting as a
 (A) ramp.
 (B) gear.
 (C) lever.
 (D) propeller.
 (E) pulley.

(Circle the correct letter)

- c) If the rowers were rowing with the same number of strokes per minute, but the oar **blades** were made 50% larger, would the boats move faster?

Yes / No (Circle one)

Explain your answer.

END OF EXAMINATION

