Centre No.						Paper Reference (complete below)					/	1	P	Surname		Initial(s)
Candidate No.											/	1	P	Signature		

Edexcel GCSE

Science: Single Award B (1535)
Science: Double Award B (1536)
Physics B (1549)
(Modules 5 and 6)
Paper 1P

Foundation Tier

Monday 6 June 2005 – Afternoon

Time: 30 minutes

Materials required for examination	**Items included with question papers**
Nil	Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature, and complete the paper reference.
Answer ALL questions in the spaces provided in this question paper.
Show all stages in any calculations and state the units. Calculators may be used.
Include diagrams in your answers where these are helpful.

Information for Candidates

The marks for the various parts of questions are shown in round brackets: e.g. (**2**).
There are 6 questions in this question paper. The total mark for this paper is 30.
There are 8 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

This symbol shows where the quality of your written answer will also be assessed.

N 2 1 4 1 7 A 0 1 0 8

Turn over

edexcel

Answer ALL the questions. Write your answers in the spaces provided.

1. Draw a straight line from the name of each piece of apparatus to its symbol. One has been done for you.

name		symbol
ammeter		⊣⊢- - -⊣⊢
battery		—(A)—
lamp		—(V)—
variable resistor	——————	variable resistor symbol
voltmeter		—(⊗)—

(Total 4 marks)

2. (a) Choose a word from the box to complete each sentence.
Each word may be used once, more than once or not at all.

friction	gravity	radioactive	thermal

(i) The force that keeps a planet in orbit is ....

(ii) The force which causes a nebula to contract and form a star is ....

(2)

(b) Name a scientific theory that describes the beginning of the Universe.

....

(1)

(c) The graph shows that the Universe has been expanding since it began. Many scientists believe it will continue to expand and then contract, as shown by the dotted line.
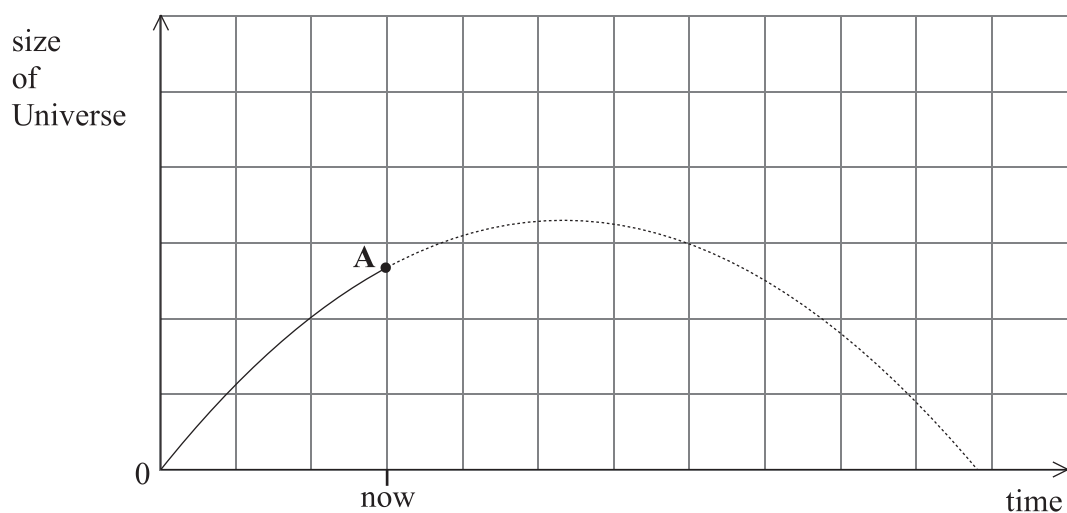
(i) Other scientists believe the universe will continue to expand forever.
Draw a line from **A** on the graph to show this.

(1)

(ii) Scientists are not sure if the Universe will go on expanding because they cannot agree on an important measurement.

Underline the correct word to complete this sentence.

Whether the Universe will continue to expand or will contract

depends on its 　**mass.**
　　　　　　　power.
　　　　　　　weight.

(1)

Q2

(Total 5 marks)

3. (a) Shaun uses an electric mower to cut his grass.
He takes 3 hours to cut the grass.
The power used by the mower is 0.5 kW.

Each kW h of electrical energy costs 8p.

> cost = power (kW) × time (h) × cost of 1 kW h

What is the cost of the energy used?

....

....

....

(2)

(b) When people receive an electric shock, a current goes through them.
The table shows how different currents are likely to affect people.

current in A	likely effect on people
0.001	none
0.005	tingling effect
0.01	could become harmful
0.1	probably fatal

Use both columns of the table to explain why a 5 A fuse in the mains plug of the
mower cannot protect Shaun from receiving an electric shock.

....

....

....

(2)

(c) (i) Although the fuse does not protect Shaun from an electric shock, it would still be safer for him to use a fuse.

Explain why a 5 A fuse is fitted in the mains plug of the mower.

....

....

....

....

(2)

(ii) State **one** other way in which Shaun's mower could be made electrically safe.

....

....

**(1)**

(Total 7 marks)

Q3

4. (a) Radioactive sources emit three different types of radiation.
Draw a line to join each type of radiation to its penetrating power.

type of radiation **penetrating power**

| alpha particles very strongly ionising | | penetrate air or paper but are absorbed by 3 mm of aluminium |

| beta particles quite strongly ionising | | penetrate air up to 5 cm but are absorbed by paper |

| gamma rays very weakly ionising | | penetrate materials but are mostly absorbed by thick lead or concrete |

(2)

(b) Fire-fighters suggest people fit smoke alarms in their homes.

Most smoke alarms use a radioactive source.
The radiation given out by the source ionises air so that there is an electric current between the electrodes.
When there is a fire, smoke reduces the current between the electrodes.
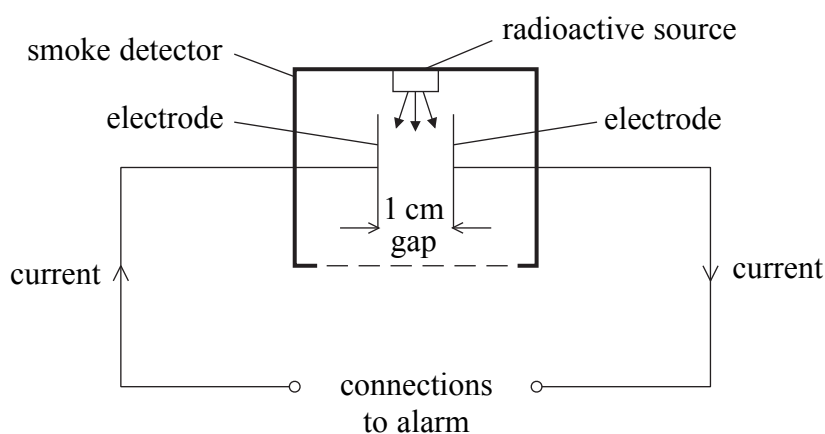
Which of the three types of radiation is used in the alarm?
Give a reason for your choice.

Type of radiation ....

Reason ....

....

(2)

(Total 4 marks)

5. (a) Building surveyors can use an echo sounding device to measure length.
The device sends out pulses of ultrasound.
The diagram shows Alan measuring the length of a room with such a device.

echo sounding
device

(i) Explain why Alan does not hear the ultrasound.

....

(1)

(ii) Explain what happens to a pulse of ultrasound when the device is used to measure the length of a room.

....

....

....

(2)

(b) Ultrasound is often used in hospitals instead of X-rays.
Give one example of this and explain why ultrasound is preferable.

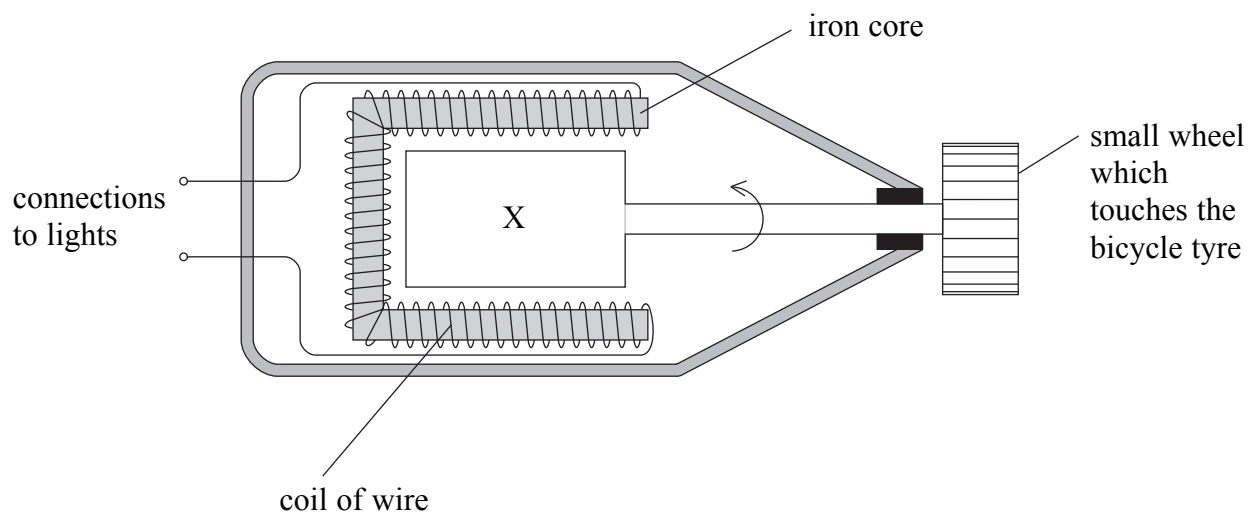..

....

....

....

(3)

Q5

(Total 6 marks)

6. Rachel's bicycle has a dynamo to supply electricity for its lights. The diagram shows the dynamo.

Part X rotates when the bicycle moves.

iron core

connections to lights

X

coil of wire

small wheel which touches the bicycle tyre

(a) Name part X.

....

(1)

(b) Suggest one way that Rachel could increase the amount of electrical energy given out by the dynamo to make the lights brighter.

....

....

(1)

(c) Suggest an advantage and a disadvantage of using a dynamo instead of a battery for her bicycle lights.

Advantage ....

....

Disadvantage ....

....

(2)

Q6

(Total 4 marks)

TOTAL FOR PAPER: 30 MARKS

END