

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**GATEWAY SCIENCE**  
**SCIENCE B**

**B622/01**

Unit 2 Modules B2 C2 P2 (Foundation Tier)

Candidates answer on the question paper.  
A calculator may be used for this paper.

**OCR supplied materials:**  
None

**Other materials required:**

- Pencil
- Ruler (cm/mm)

**Monday 17 January 2011**  
**Morning**

**Duration: 1 hour**



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- A list of physics equations is printed on page two.
- The Periodic Table is printed on the back page.
- The total number of marks for this paper is **60**.
- This document consists of **24** pages. Any blank pages are indicated.

**EQUATIONS**

$$\text{efficiency} = \frac{\text{useful energy output}}{\text{total energy input}}$$

$$\text{wave speed} = \text{frequency} \times \text{wavelength}$$

$$\text{power} = \text{voltage} \times \text{current}$$

$$\text{energy (kilowatt hours)} = \text{power (kW)} \times \text{time (h)}$$

Answer **all** the questions.

**Section A – Module B2**

1 Look at the pictures of different organisms.



**A**



**B**



**C**



**D**



**E**



**F**

(a) Which **three** organisms are plants?

Choose from **A, B, C, D, E** and **F**.

.....

[1]

(b) Plants and animals are different.

Look at the statements.

Which **one** is a correct statement about the difference between plants and animals?

Put a tick (✓) in the box next to the correct statement.

Most animals are more compact than plants so they can move.

Only animals carry out respiration.

Parasites are only found in the plant kingdom.

Plants are invertebrates and animals are vertebrates.

[1]

(c) Plants make their own food by a process called photosynthesis.

The food they make is a type of sugar.

(i) Write down the name of this sugar.

..... [1]

(ii) The sugar is changed into starch.

Explain why.

..... [1]

[Total: 4]

2 Read the report about ospreys.

**Osprey nest protected**



Ospreys have laid the first eggs of the season. The Royal Society for the Protection of Birds (RSPB) will protect the nest from illegal egg collectors. Last year the ospreys raised two chicks. A spokesman from the RSPB said this would help to increase the small numbers of these special birds in Britain.

(a) Finish the sentences about ospreys.

Choose from the list.

**community      ecosystem      endangered      extinct      population**

Ospreys need protection because in Britain they are .....

The lake where they live is a natural .....

[2]

(b) Ospreys hunt fish for food.

(i) The fish are prey.

What name is given to animals, like ospreys, which hunt prey?

..... [1]

(ii) Ospreys are adapted to hunt because they can fly fast.

Describe **two other** ways ospreys are adapted to hunt.

1 .....

2 ..... [2]

(c) There is a large lake near the ospreys' nest.

Some fishermen who use the lake do **not** want the ospreys to be protected.

Suggest why.

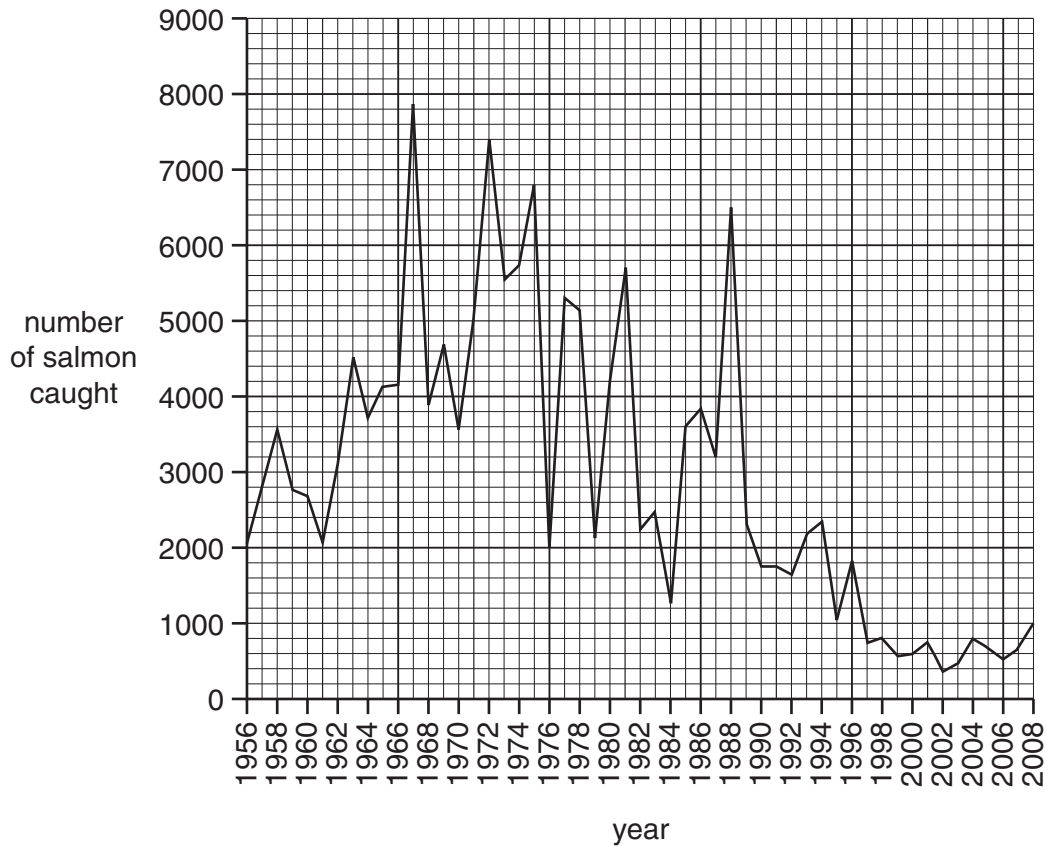
.....

..... [1]

[Total: 6]

3 Look at the graph.

It shows the number of salmon caught in the river Wye between 1956 and 2008.



(a) Which year had the highest salmon catch?

answer ..... [1]

(b) In 1988 there were 6500 salmon caught in the river Wye.

Calculate the difference between the number caught in 1988 and the number caught in 2008.

.....  
 .....

answer ..... [1]

(c) The decrease in numbers is thought to be due to acid rain.

Acid rain is caused by sulfur dioxide in the air.

(i) How does sulfur dioxide get into the air?

..... [1]

(ii) Sulfur dioxide levels have increased.

Suggest **one** reason why.

..... [1]

(iii) Since 2002 lime has been added to the river to remove the acid.

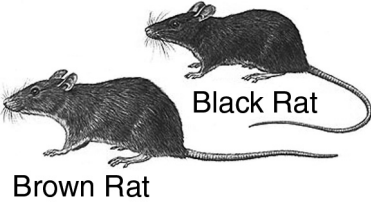
What evidence is there on the graph to show the effect of this?

..... [1]

[Total: 5]

4 Read the information about rats.

Two species of rat living in Britain are the brown rat (*Rattus norvegicus*) and the black rat (*Rattus rattus*).  
 Fleas living on black rats caused the plague of 1665.  
 There were no brown rats in Britain until the 1720s.  
 Black rats are now one of the rarest mammals in Britain.  
 Brown rats have increased in number to around 80 million.  
 In the past, warfarin was used successfully to reduce the rat population.  
 Now warfarin is no longer as effective so other methods of control are used.



(a) *Rattus rattus* is the scientific name for the black rat.

How do scientists describe this way of using two words to name a species?

..... [1]

(b) Since the 1720s the number of black rats in Britain has steadily decreased.

At the same time the number of brown rats has increased.

Suggest why the number of black rats has decreased.

.....  
 .....  
 ..... [2]

(c) Natural selection has led to a change in the way we control the rat population.

Explain why

- warfarin was used to control the rat population in the past
- warfarin is no longer effective.

.....  
 .....  
 ..... [2]

[Total: 5]

Turn over

## Section B – Module C2

5 This question is about building materials.

(a) Concrete is a building material.

Concrete is made by mixing cement, sand, gravel and **substance A**.

Write down the name of **substance A**.

Choose from the list.

**brick**

**glass**

**water**

answer ..... [1]

(b) Cement is made using limestone.

The chemical name for limestone is calcium carbonate.

When calcium carbonate is heated, carbon dioxide and calcium oxide are made.

(i) Write down the **word** equation for this reaction.

..... [1]

(ii) This reaction is an example of **thermal decomposition**.

What is meant by thermal decomposition?

.....  
..... [1]



(c) Limestone is a rock.

It is used as a building material.

Look at the picture of a limestone quarry.



Limestone is removed from the ground in this quarry.

Removing rocks from a quarry causes environmental problems.

One problem is that a quarry takes up a lot of land space.

Write about **two** other environmental problems.

.....

.....

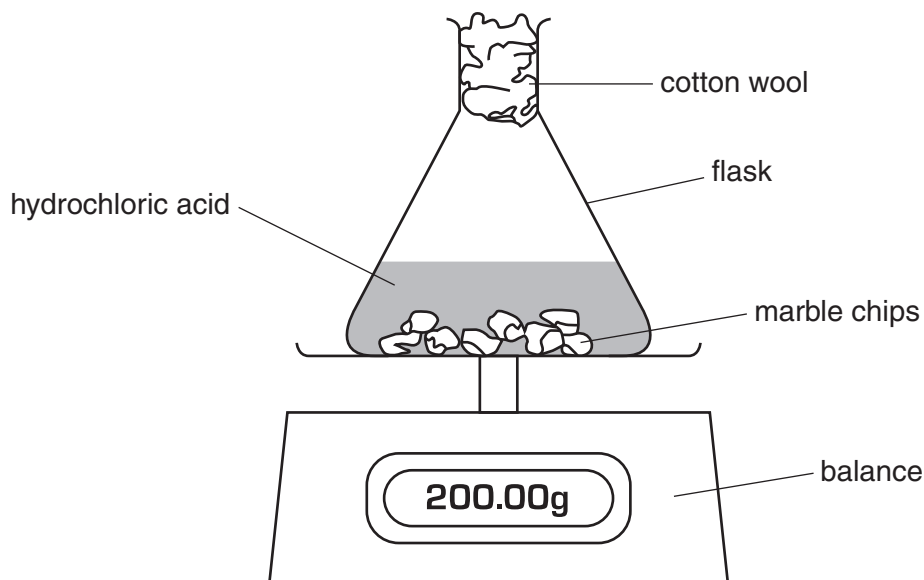
..... [2]

[Total: 5]

6 Hilary and Jeff investigate the reaction between marble chips and hydrochloric acid.

Carbon dioxide is given off during the reaction.

Look at the apparatus they use.



Hilary and Jeff measure the total mass of the flask and reaction mixture every minute.

Look at their results.

time in minutes	total mass of flask and reaction mixture in g
0	200.00
1	199.50
2	199.20
3	199.00
4	198.86
5	198.80
6	198.80

(a) The total mass of the flask and reaction mixture at the start of the experiment is 200.00g.

Write down the total mass of the flask and reaction mixture after 3 minutes. .... g

Use this answer to work out the total mass of carbon dioxide given off after 3 minutes.

..... g

[1]

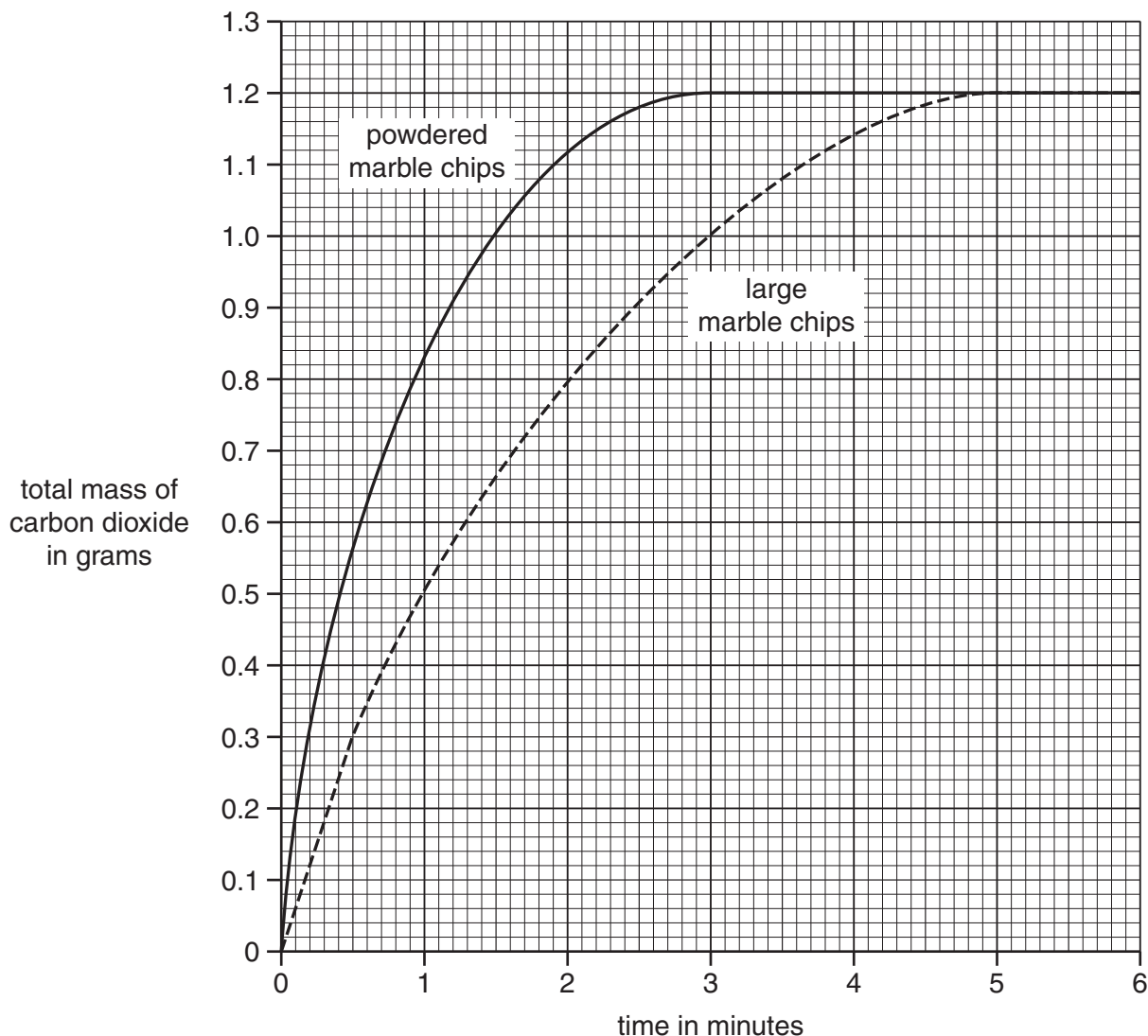
(b) Hilary and Jeff do the experiment again.

They use the same volume of acid and the same amount of marble chips.

This time they use **powdered** marble chips.

After each measurement they work out the total mass of carbon dioxide given off.

Look at the graph. It shows their results from both experiments.



(i) Look at the line for the **powdered** marble chips.

How long does it take for the reaction to finish?

..... minutes [1]

(ii) The reaction using powdered marble chips is faster than the reaction using large chips.

How can you tell from the **two lines**?

.....  
 ..... [1]

(iii) Explain why the reaction is faster using **powdered marble** chips.

Use ideas about particles.

.....

.....

..... [2]

[Total: 5]

7 This question is about paints.

Paint is made up of three ingredients.

The ingredients are a solvent, a binding medium and a pigment.

(a) Join each **ingredient** to its **job in the paint**.

Draw only three straight lines.

<b>ingredient</b>	<b>job in the paint</b>
solvent	helps to stick the paint to a surface
binding medium	colours the paint
pigment	thins the paint

[2]

(b) Louise paints the wooden window frames in her house.

Write down **one** reason why.

..... [1]

[Total: 3]

8 This question is about metals.

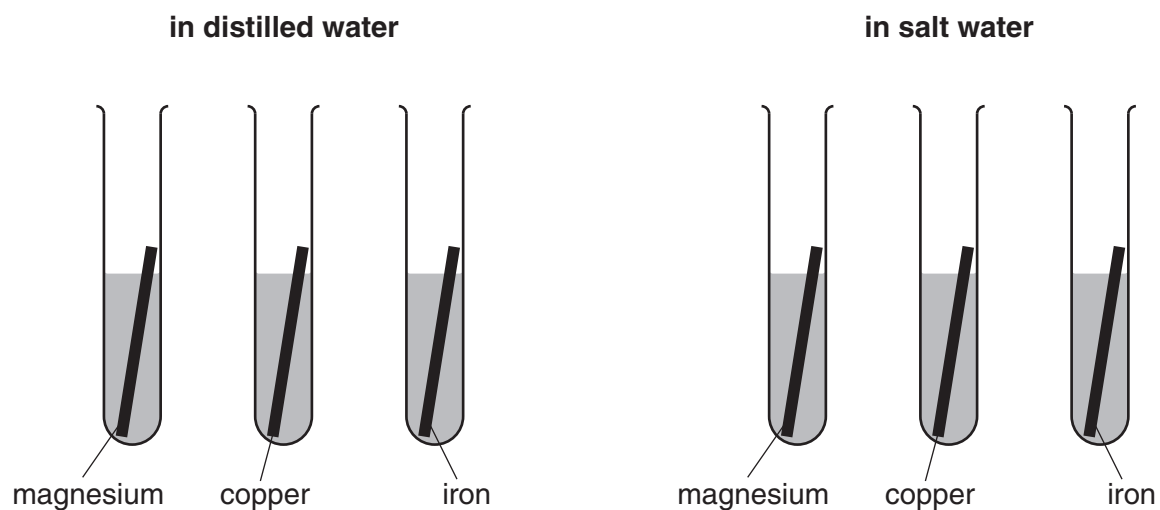
Jess and Dawn investigate the corrosion of magnesium, copper and iron.

They find the mass of each metal.

Jess places each metal into a test tube of **distilled** water.

Dawn places each metal into a test tube of **salt** water.

They leave the tubes for two weeks.



Jess and Dawn remove the metals from the water.

They dry them and find the mass of each metal again.

(a) Look at the table of their results.

metal	distilled water		salt water	
	mass of metal before in g	mass of metal after 2 weeks in g	mass of metal before in g	mass of metal after 2 weeks in g
magnesium	0.60	0.25	0.60	0.15
copper	0.80	0.80	0.80	0.80
iron	1.00	0.80	1.00	0.50

(i) One metal did not corrode in distilled water or in salt water.

Which metal?

..... [1]

(ii) Iron rusts faster in salt water.

How can you tell? Use the table to help you.

..... [1]

(b) Iron, copper and magnesium are used in making cars.

European Law says that 85% of a car should be recycled.

Write down **two** advantages of recycling these metals.

1 .....

.....

2 .....

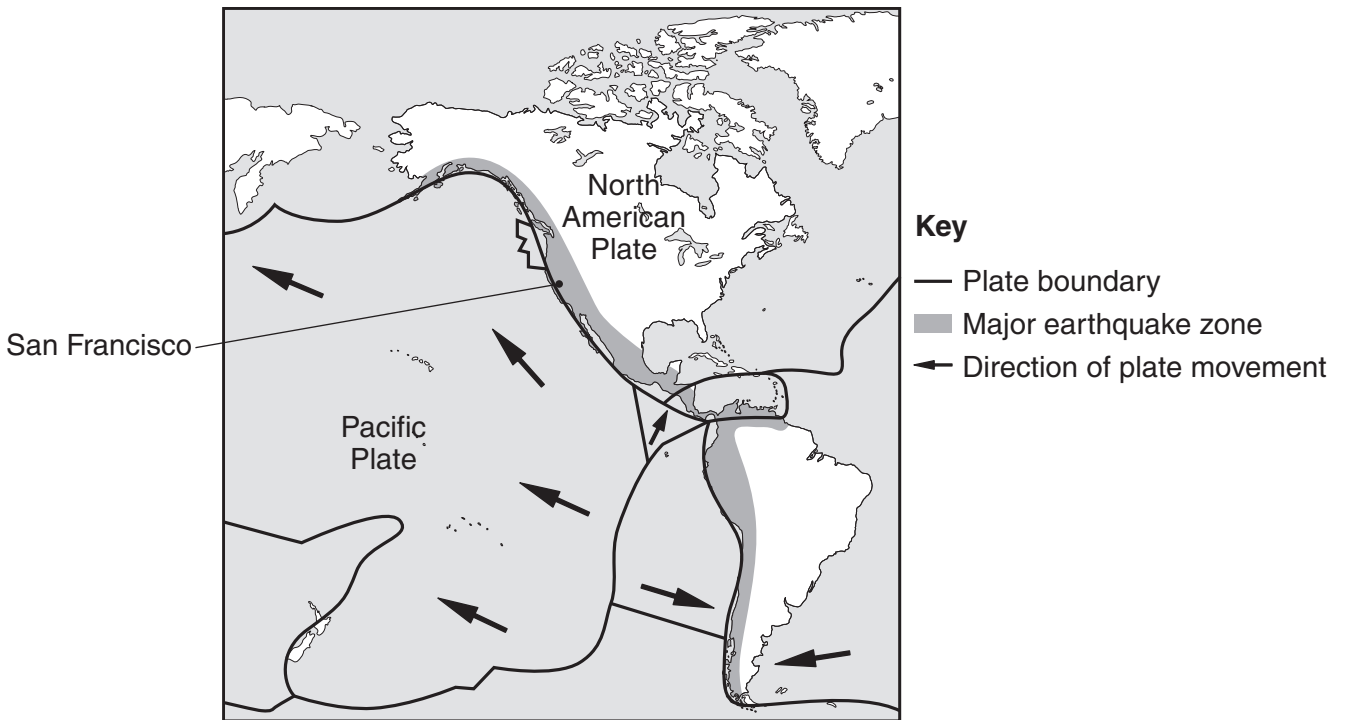
..... [2]

[Total: 4]

9 This question is about the structure of the Earth.

The outer surface of the Earth is made up of tectonic plates.

The map shows the positions of some of these plates.



(a) Find San Francisco on the map.

In 1906 there was a major earthquake in San Francisco.

What causes an earthquake? Use the map to help you.

.....  
..... [1]

(b) Underneath the surface of the Earth is a layer of molten rock.

Sometimes the molten rock erupts violently from a volcano.

Complete the sentences.

Choose words from the list.

- core                  crust                  iron                  lava                  magma**

Molten rock under the surface of the Earth is called .....

Molten rock that erupts from a volcano is called ..... [2]

[Total: 3]



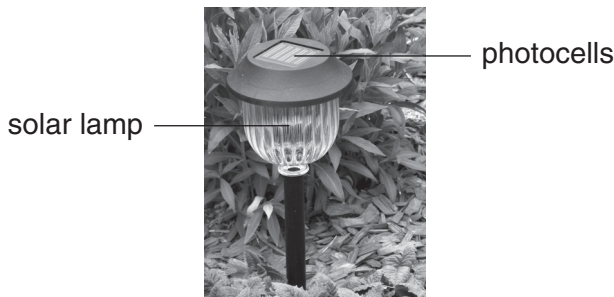
Section C – Module P2

10 This question is about ways of producing electricity.

(a) Carlos has solar powered lamps in his garden.

Energy from the Sun is absorbed by photocells and stored in a battery.

The battery then supplies the solar lamps with energy when it is dark.



Complete the sentences about photocells.

Photocells transfer ..... energy into electricity.

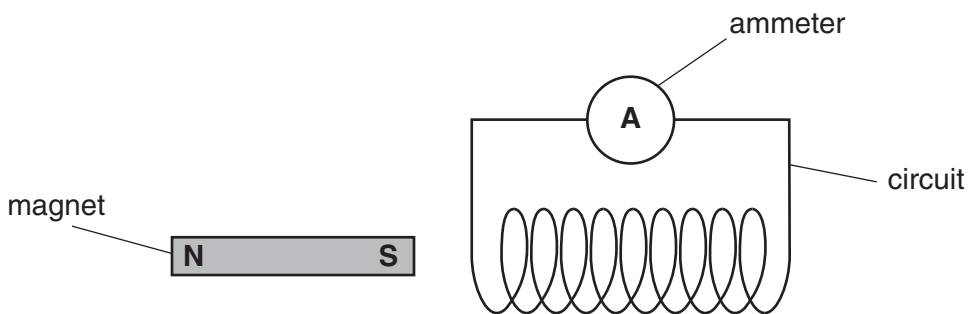
Photocells and batteries produce the same **type** of electricity.

The type of electricity produced is ..... current.

More power is produced if the photocell has a larger ..... [3]

(b) Carlos sets up this circuit. It is a type of **generator**.

It is a different way of producing electricity.



(i) What must Carlos do to produce electricity in this circuit?

..... [1]

(ii) Generators in power stations do **not** produce the same type of electricity as photocells or batteries.

What **type** of electricity do generators in power stations produce?

..... [1]

[Total: 5]

Turn over

11 Jake investigates the **power** of a light bulb.

He measures the current and voltage for a light bulb.

Look at his results.

current = 1.5 amps (A)

voltage = 12 volts (V)

Calculate the power of the light bulb.

The equations on page 2 may help you.

.....  
.....  
.....

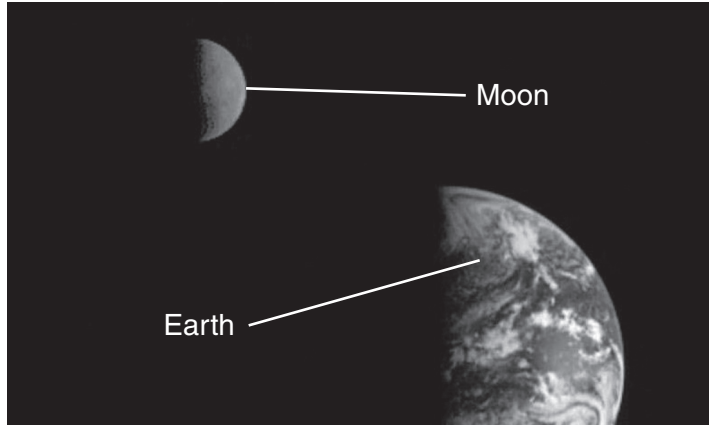
answer ..... watts (W)

[2]

[Total: 2]

12 The Moon is close to our planet, the Earth.

Together they are called the Earth-Moon system.



not to scale

There are many theories about how the Earth-Moon system was made.

Some scientists think that the Earth-Moon system was made when another planet came towards the 'old' planet Earth.

Describe how the Earth-Moon system could have been made in this way.

.....

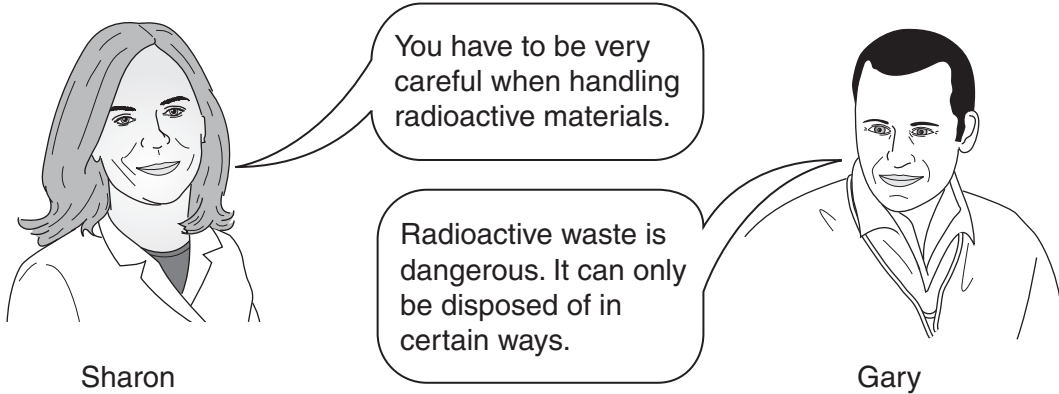
.....

..... [2]

[Total: 2]

13 This question is about nuclear power and nuclear radiation.

Two scientists are talking.



Both scientists are correct.

(a) Sharon handles radioactive materials safely.

Write down **two** ways in which she can do this.

1 .....

.....

2 .....

..... [2]

(b) Gary disposes of radioactive waste safely.

Write down **two** ways in which he can do this.

1 .....

.....

2 .....

..... [2]

[Total: 4]

14 This question is about the Universe.

(a) Complete the crossword puzzle using the clues given.

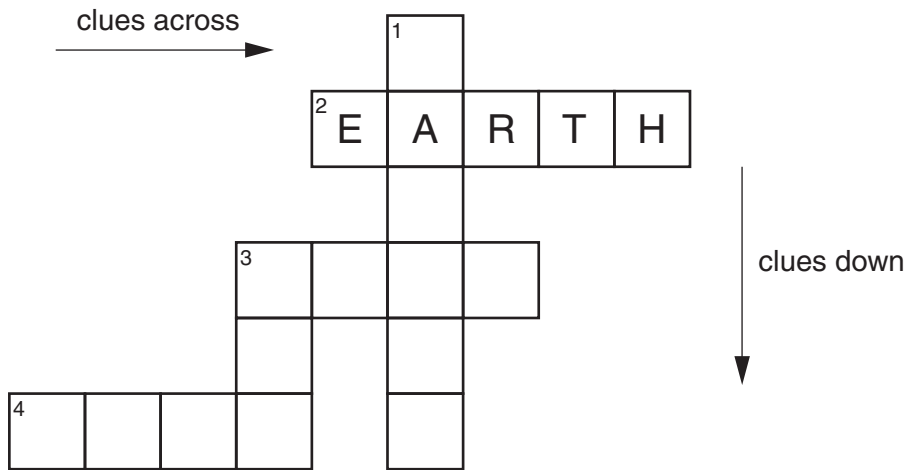
One has been done for you (2 across).

**clues down**

- 1 Large group of stars  
.....
- 3 Earth orbits this  
.....

**clues across**

- 2 Planet we live on  
.....
- 3 Very hot and gives off light  
.....
- 4 Object orbiting Earth  
.....



[3]

(b) Asteroids and comets are objects in our Solar System.

Look at the statements about asteroids and comets.

Put a tick (✓) in a box beside each statement to show if it is true or false.

Two have been done for you.

	<b>True</b>	<b>False</b>
<b>Asteroids</b> are made of ice.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Asteroids</b> have caused species to become extinct.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Asteroids</b> have hit the Earth in the past.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
The tail of a <b>comet</b> is a trail of debris.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comets</b> cannot be seen with a telescope.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

[2]

(c) Finish the sentences about stars and the Universe.



Choose words from this list.

**expanding**

**explosion**

**galaxy**

**gas**

**light**

**planets**

**shrinking**

The Big Bang theory states that the Universe started with a huge .....

Since then the Universe has been .....

A star starts its life as a huge cloud of .....

[2]

[Total: 7]

**END OF QUESTION PAPER**

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# The Periodic Table of the Elements

1	2	3	4	5	6	7	0	
7 <b>Li</b> lithium 3	9 <b>Be</b> beryllium 4	11 <b>Na</b> sodium 11	12 <b>C</b> carbon 6	13 <b>Al</b> aluminium 13	14 <b>N</b> nitrogen 7	15 <b>O</b> oxygen 8	16 <b>F</b> fluorine 9	17 <b>Ne</b> neon 10
19 <b>K</b> potassium 19	20 <b>Ca</b> calcium 20	23 <b>Sc</b> scandium 21	24 <b>Ti</b> titanium 22	25 <b>V</b> vanadium 23	26 <b>Cr</b> chromium 24	27 <b>Mn</b> manganese 25	28 <b>Fe</b> iron 26	29 <b>Co</b> cobalt 27
37 <b>Rb</b> rubidium 37	38 <b>Sr</b> strontium 38	39 <b>Y</b> yttrium 39	40 <b>Zr</b> zirconium 40	41 <b>Nb</b> niobium 41	42 <b>Mo</b> molybdenum 42	43 <b>Tc</b> technetium 43	44 <b>Ru</b> ruthenium 44	45 <b>Rh</b> rhodium 45
55 <b>Cs</b> caesium 55	56 <b>Ba</b> barium 56	57 <b>La*</b> lanthanum 57	72 <b>Hf</b> hafnium 72	73 <b>Ta</b> tantalum 73	74 <b>W</b> tungsten 74	75 <b>Re</b> rhenium 75	76 <b>Os</b> osmium 76	77 <b>Ir</b> iridium 77
87 <b>Fr</b> francium 87	88 <b>Ra</b> radium 88	89 <b>Ac*</b> actinium 89	104 <b>Rf</b> rutherfordium 104	105 <b>Db</b> dubnium 105	106 <b>Sg</b> seaborgium 106	107 <b>Bh</b> bohrium 107	108 <b>Hs</b> hassium 108	109 <b>Mt</b> meitnerium 109
133 <b>Cs</b> caesium 133	137 <b>Ba</b> barium 137	139 <b>La*</b> lanthanum 139	178 <b>Hf</b> hafnium 178	181 <b>Ta</b> tantalum 181	184 <b>W</b> tungsten 184	186 <b>Re</b> rhenium 186	190 <b>Os</b> osmium 190	192 <b>Ir</b> iridium 192
223 <b>Fr</b> francium 223	226 <b>Ra</b> radium 226	227 <b>Ac*</b> actinium 227	261 <b>Rf</b> rutherfordium 261	262 <b>Db</b> dubnium 262	266 <b>Sg</b> seaborgium 266	268 <b>Bh</b> bohrium 268	277 <b>Hs</b> hassium 277	288 <b>Mt</b> meitnerium 288
51 <b>Sb</b> antimony 51	52 <b>Te</b> tellurium 52	53 <b>I</b> iodine 53	54 <b>Xe</b> xenon 54	55 <b>Cs</b> caesium 55	56 <b>Ba</b> barium 56	57 <b>La*</b> lanthanum 57	58 <b>Ce</b> cerium 58	59 <b>Pr</b> praseodymium 59
61 <b>Pm</b> promethium 61	62 <b>Sm</b> samarium 62	63 <b>Eu</b> europium 63	64 <b>Gd</b> gadolinium 64	65 <b>Tb</b> terbium 65	66 <b>Dy</b> dysprosium 66	67 <b>Ho</b> holmium 67	68 <b>Er</b> erbium 68	69 <b>Tm</b> thulium 69
71 <b>Lu</b> lutetium 71	72 <b>Hf</b> hafnium 72	73 <b>Ta</b> tantalum 73	74 <b>W</b> tungsten 74	75 <b>Re</b> rhenium 75	76 <b>Os</b> osmium 76	77 <b>Ir</b> iridium 77	78 <b>Pt</b> platinum 78	79 <b>Au</b> gold 79
81 <b>Tl</b> thallium 81	82 <b>Pb</b> lead 82	83 <b>Bi</b> bismuth 83	84 <b>Po</b> polonium 84	85 <b>At</b> astatine 85	86 <b>Rn</b> radon 86	87 <b>Fr</b> francium 87	88 <b>Ra</b> radium 88	89 <b>Ac*</b> actinium 89
91 <b>Pa</b> protactinium 91	92 <b>Th</b> thorium 92	93 <b>U</b> uranium 93	94 <b>Np</b> neptunium 94	95 <b>Pu</b> plutonium 95	96 <b>Am</b> americium 96	97 <b>Cm</b> curium 97	98 <b>Bk</b> berkelium 98	99 <b>Cf</b> californium 99
101 <b>Db</b> dubnium 101	102 <b>Sg</b> seaborgium 102	103 <b>Bh</b> bohrium 103	104 <b>Hs</b> hassium 104	105 <b>Mt</b> meitnerium 105	106 <b>Ds</b> darmstadtium 106	107 <b>Rg</b> roentgenium 107	108 <b>Cn</b> copernicium 108	109 <b>Uu</b> ununium 109
111 <b>Cn</b> copernicium 111	112 <b>Cd</b> cadmium 112	113 <b>In</b> indium 113	114 <b>Sn</b> tin 114	115 <b>Pb</b> lead 115	116 <b>Bi</b> bismuth 116	117 <b>Po</b> polonium 117	118 <b>At</b> astatine 118	119 <b>Rn</b> radon 119
121 <b>Uu</b> ununium 121	122 <b>Cd</b> cadmium 122	123 <b>In</b> indium 123	124 <b>Sn</b> tin 124	125 <b>Pb</b> lead 125	126 <b>Bi</b> bismuth 126	127 <b>Po</b> polonium 127	128 <b>At</b> astatine 128	129 <b>Rn</b> radon 129
131 <b>Xe</b> xenon 131	132 <b>Kr</b> krypton 132	133 <b>Cs</b> caesium 133	134 <b>Ba</b> barium 134	135 <b>La*</b> lanthanum 135	136 <b>Ce</b> cerium 136	137 <b>Pr</b> praseodymium 137	138 <b>Nd</b> neodymium 138	139 <b>Pm</b> promethium 139
141 <b>Fr</b> francium 141	142 <b>Ra</b> radium 142	143 <b>Ac*</b> actinium 143	144 <b>Th</b> thorium 144	145 <b>Pa</b> protactinium 145	146 <b>U</b> uranium 146	147 <b>Np</b> neptunium 147	148 <b>Pu</b> plutonium 148	149 <b>Am</b> americium 149
151 <b>Uu</b> ununium 151	152 <b>Cn</b> copernicium 152	153 <b>Uu</b> ununium 153	154 <b>Uu</b> ununium 154	155 <b>Uu</b> ununium 155	156 <b>Uu</b> ununium 156	157 <b>Uu</b> ununium 157	158 <b>Uu</b> ununium 158	159 <b>Uu</b> ununium 159
161 <b>Uu</b> ununium 161	162 <b>Cn</b> copernicium 162	163 <b>Uu</b> ununium 163	164 <b>Uu</b> ununium 164	165 <b>Uu</b> ununium 165	166 <b>Uu</b> ununium 166	167 <b>Uu</b> ununium 167	168 <b>Uu</b> ununium 168	169 <b>Uu</b> ununium 169
171 <b>Uu</b> ununium 171	172 <b>Cn</b> copernicium 172	173 <b>Uu</b> ununium 173	174 <b>Uu</b> ununium 174	175 <b>Uu</b> ununium 175	176 <b>Uu</b> ununium 176	177 <b>Uu</b> ununium 177	178 <b>Uu</b> ununium 178	179 <b>Uu</b> ununium 179
181 <b>Uu</b> ununium 181	182 <b>Cn</b> copernicium 182	183 <b>Uu</b> ununium 183	184 <b>Uu</b> ununium 184	185 <b>Uu</b> ununium 185	186 <b>Uu</b> ununium 186	187 <b>Uu</b> ununium 187	188 <b>Uu</b> ununium 188	189 <b>Uu</b> ununium 189
191 <b>Uu</b> ununium 191	192 <b>Cn</b> copernicium 192	193 <b>Uu</b> ununium 193	194 <b>Uu</b> ununium 194	195 <b>Uu</b> ununium 195	196 <b>Uu</b> ununium 196	197 <b>Uu</b> ununium 197	198 <b>Uu</b> ununium 198	199 <b>Uu</b> ununium 199
201 <b>Hg</b> mercury 201	202 <b>Tl</b> thallium 202	203 <b>Pb</b> lead 203	204 <b>Bi</b> bismuth 204	205 <b>Po</b> polonium 205	206 <b>At</b> astatine 206	207 <b>Rn</b> radon 207	208 <b>Fr</b> francium 208	209 <b>Ac*</b> actinium 209
211 <b>Cn</b> copernicium 211	212 <b>Cn</b> copernicium 212	213 <b>Uu</b> ununium 213	214 <b>Uu</b> ununium 214	215 <b>Uu</b> ununium 215	216 <b>Uu</b> ununium 216	217 <b>Uu</b> ununium 217	218 <b>Uu</b> ununium 218	219 <b>Uu</b> ununium 219
221 <b>Uu</b> ununium 221	222 <b>Cn</b> copernicium 222	223 <b>Uu</b> ununium 223	224 <b>Uu</b> ununium 224	225 <b>Uu</b> ununium 225	226 <b>Uu</b> ununium 226	227 <b>Uu</b> ununium 227	228 <b>Uu</b> ununium 228	229 <b>Uu</b> ununium 229
231 <b>Uu</b> ununium 231	232 <b>Cn</b> copernicium 232	233 <b>Uu</b> ununium 233	234 <b>Uu</b> ununium 234	235 <b>Uu</b> ununium 235	236 <b>Uu</b> ununium 236	237 <b>Uu</b> ununium 237	238 <b>Uu</b> ununium 238	239 <b>Uu</b> ununium 239
241 <b>Uu</b> ununium 241	242 <b>Cn</b> copernicium 242	243 <b>Uu</b> ununium 243	244 <b>Uu</b> ununium 244	245 <b>Uu</b> ununium 245	246 <b>Uu</b> ununium 246	247 <b>Uu</b> ununium 247	248 <b>Uu</b> ununium 248	249 <b>Uu</b> ununium 249
251 <b>Uu</b> ununium 251	252 <b>Cn</b> copernicium 252	253 <b>Uu</b> ununium 253	254 <b>Uu</b> ununium 254	255 <b>Uu</b> ununium 255	256 <b>Uu</b> ununium 256	257 <b>Uu</b> ununium 257	258 <b>Uu</b> ununium 258	259 <b>Uu</b> ununium 259
261 <b>Uu</b> ununium 261	262 <b>Cn</b> copernicium 262	263 <b>Uu</b> ununium 263	264 <b>Uu</b> ununium 264	265 <b>Uu</b> ununium 265	266 <b>Uu</b> ununium 266	267 <b>Uu</b> ununium 267	268 <b>Uu</b> ununium 268	269 <b>Uu</b> ununium 269
271 <b>Uu</b> ununium 271	272 <b>Cn</b> copernicium 272	273 <b>Uu</b> ununium 273	274 <b>Uu</b> ununium 274	275 <b>Uu</b> ununium 275	276 <b>Uu</b> ununium 276	277 <b>Uu</b> ununium 277	278 <b>Uu</b> ununium 278	279 <b>Uu</b> ununium 279
281 <b>Uu</b> ununium 281	282 <b>Cn</b> copernicium 282	283 <b>Uu</b> ununium 283	284 <b>Uu</b> ununium 284	285 <b>Uu</b> ununium 285	286 <b>Uu</b> ununium 286	287 <b>Uu</b> ununium 287	288 <b>Uu</b> ununium 288	289 <b>Uu</b> ununium 289
291 <b>Uu</b> ununium 291	292 <b>Cn</b> copernicium 292	293 <b>Uu</b> ununium 293	294 <b>Uu</b> ununium 294	295 <b>Uu</b> ununium 295	296 <b>Uu</b> ununium 296	297 <b>Uu</b> ununium 297	298 <b>Uu</b> ununium 298	299 <b>Uu</b> ununium 299
301 <b>Uu</b> ununium 301	302 <b>Cn</b> copernicium 302	303 <b>Uu</b> ununium 303	304 <b>Uu</b> ununium 304	305 <b>Uu</b> ununium 305	306 <b>Uu</b> ununium 306	307 <b>Uu</b> ununium 307	308 <b>Uu</b> ununium 308	309 <b>Uu</b> ununium 309
311 <b>Uu</b> ununium 311	312 <b>Cn</b> copernicium 312	313 <b>Uu</b> ununium 313	314 <b>Uu</b> ununium 314	315 <b>Uu</b> ununium 315	316 <b>Uu</b> ununium 316	317 <b>Uu</b> ununium 317	318 <b>Uu</b> ununium 318	319 <b>Uu</b> ununium 319
321 <b>Uu</b> ununium 321	322 <b>Cn</b> copernicium 322	323 <b>Uu</b> ununium 323	324 <b>Uu</b> ununium 324	325 <b>Uu</b> ununium 325	326 <b>Uu</b> ununium 326	327 <b>Uu</b> ununium 327	328 <b>Uu</b> ununium 328	329 <b>Uu</b> ununium 329
331 <b>Uu</b> ununium 331	332 <b>Cn</b> copernicium 332	333 <b>Uu</b> ununium 333	334 <b>Uu</b> ununium 334	335 <b>Uu</b> ununium 335	336 <b>Uu</b> ununium 336	337 <b>Uu</b> ununium 337	338 <b>Uu</b> ununium 338	339 <b>Uu</b> ununium 339
341 <b>Uu</b> ununium 341	342 <b>Cn</b> copernicium 342	343 <b>Uu</b> ununium 343	344 <b>Uu</b> ununium 344	345 <b>Uu</b> ununium 345	346 <b>Uu</b> ununium 346	347 <b>Uu</b> ununium 347	348 <b>Uu</b> ununium 348	349 <b>Uu</b> ununium 349
351 <b>Uu</b> ununium 351	352 <b>Cn</b> copernicium 352	353 <b>Uu</b> ununium 353	354 <b>Uu</b> ununium 354	355 <b>Uu</b> ununium 355	356 <b>Uu</b> ununium 356	357 <b>Uu</b> ununium 357	358 <b>Uu</b> ununium 358	359 <b>Uu</b> ununium 359
361 <b>Uu</b> ununium 361	362 <b>Cn</b> copernicium 362	363 <b>Uu</b> ununium 363	364 <b>Uu</b> ununium 364	365 <b>Uu</b> ununium 365	366 <b>Uu</b> ununium 366	367 <b>Uu</b> ununium 367	368 <b>Uu</b> ununium 368	369 <b>Uu</b> ununium 369
371 <b>Uu</b> ununium 371	372 <b>Cn</b> copernicium 372	373 <b>Uu</b> ununium 373	374 <b>Uu</b> ununium 374	375 <b>Uu</b> ununium 375	376 <b>Uu</b> ununium 376	377 <b>Uu</b> ununium 377	378 <b>Uu</b> ununium 378	379 <b>Uu</b> ununium 379
381 <b>Uu</b> ununium 381	382 <b>Cn</b> copernicium 382	383 <b>Uu</b> ununium 383	384 <b>Uu</b> ununium 384	385 <b>Uu</b> ununium 385	386 <b>Uu</b> ununium 386	387 <b>Uu</b> ununium 387	388 <b>Uu</b> ununium 388	389 <b>Uu</b> ununium 389
391 <b>Uu</b> ununium 391	392 <b>Cn</b> copernicium 392	393 <b>Uu</b> ununium 393	394 <b>Uu</b> ununium 394	395 <b>Uu</b> ununium 395	396 <b>Uu</b> ununium 396	397 <b>Uu</b> ununium 397	398 <b>Uu</b> ununium 398	399 <b>Uu</b> ununium 399
401 <b>Uu</b> ununium 401	402 <b>Cn</b> copernicium 402	403 <b>Uu</b> ununium 403	404 <b>Uu</b> ununium 404	405 <b>Uu</b> ununium 405	406 <b>Uu</b> ununium 406	407 <b>Uu</b> ununium 407	408 <b>Uu</b> ununium 408	409 <b>Uu</b> ununium 409
411 <b>Uu</b> ununium 411	412 <b>Cn</b> copernicium 412	413 <b>Uu</b> ununium 413	414 <b>Uu</b> ununium 414	415 <b>Uu</b> ununium 415	416 <b>Uu</b> ununium 416	417 <b>Uu</b> ununium 417	418 <b>Uu</b> ununium 418	419 <b>Uu</b> ununium 419
421 <b>Uu</b> ununium 421	422 <b>Cn</b> copernicium 422	423 <b>Uu</b> ununium 423	424 <b>Uu</b> ununium 424	425 <b>Uu</b> ununium 425	426 <b>Uu</b> ununium 426	427 <b>Uu</b> ununium 427	428 <b>Uu</b> ununium 428	429 <b>Uu</b> ununium 429
431 <b>Uu</b> ununium 431	432 <b>Cn</b> copernicium 432	433 <b>Uu</b> ununium 433	434 <b>Uu</b> ununium 434	435 <b>Uu</b> ununium 435	436 <b>Uu</b> ununium 436	437 <b>Uu</b> ununium 437	438 <b>Uu</b> ununium 438	439 <b>Uu</b> ununium 439
441 <b>Uu</b> ununium 441	442 <b>Cn</b> copernicium 442	443 <b>Uu</b> ununium 443	444 <b>Uu</b> ununium 444	445 <b>Uu</b> ununium 445	446 <b>Uu</b> ununium 446	447 <b>Uu</b> ununium 447	448 <b>Uu</b> ununium 448	449 <b>Uu</b> ununium 449
451 <b>Uu</b> ununium 451	452 <b>Cn</b> copernicium 452	453 <b>Uu</b> ununium 453	454 <b>Uu</b> ununium 454	455 <b>Uu</b> ununium 455	456 <b>Uu</b> ununium 456	457 <b>Uu</b> ununium 457	458 <b>Uu</b> ununium 458	459 <b>Uu</b> ununium 459
461 <b>Uu</b> ununium 461	462 <b>Cn</b> copernicium 462	463 <b>Uu</b> ununium 463	464 <b>Uu</b> ununium 464	465 <b>Uu</b> ununium 465	466 <b>Uu</b> ununium 466	467 <b>Uu</b> ununium 467	468 <b>Uu</b> ununium 468	469 <b>Uu</b> ununium 469
471 <b>Uu</b> ununium 471	472 <b>Cn</b> copernicium 472	473 <b>Uu</b> ununium 473	474 <b>Uu</b> ununium 474	475 <b>Uu</b> ununium 475	476 <b>Uu</b> ununium 476	477 <b>Uu</b>		