

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

COMBINED SCIENCE

5129/01

Paper 1 Multiple Choice

October/November 2005

1 hour

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has been done for you.

There are **forty** questions on this paper. Answer **all** questions.

For each question there are four possible answers **A, B, C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate answer sheet.

Read the instructions on the answer sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

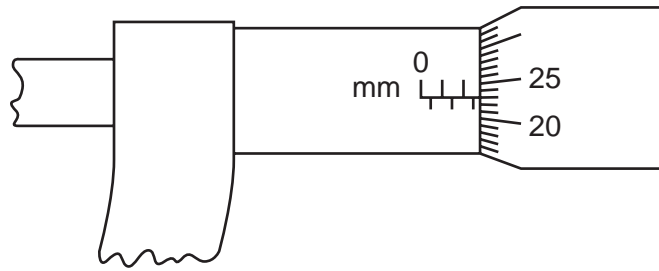
Any rough working should be done in this booklet.

A copy of the Periodic Table is printed on page 20.

This document consists of **17** printed pages and **3** blank pages.

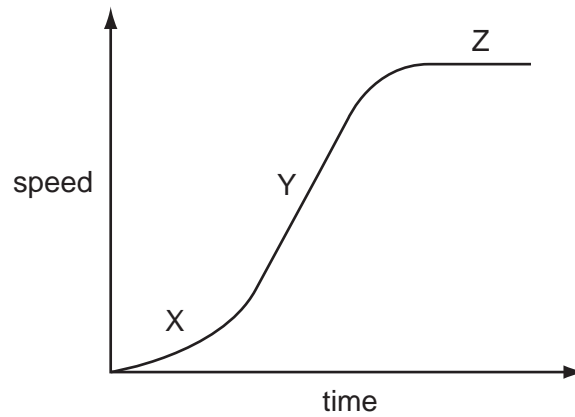


- 1 The diagram shows a micrometer.



Which reading is shown?

- A** 2.23 mm **B** 2.73 mm **C** 3.23 mm **D** 5.23 mm
- 2 The graph shows how the speed of a car changes with time.

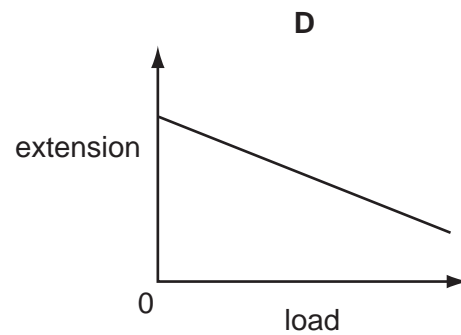
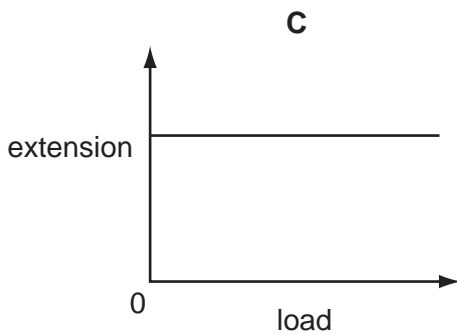
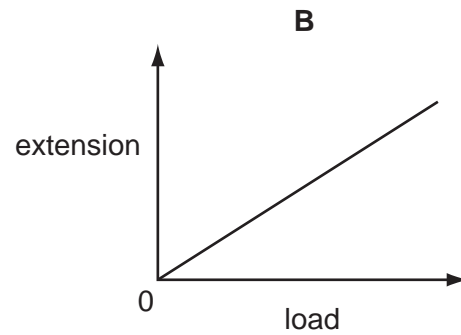
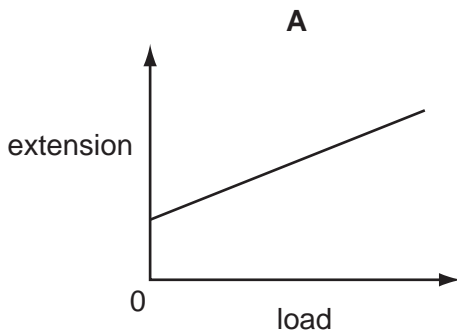


Which statement is correct?

- A** at X the car has constant acceleration
B at Y the car has acceleration which is not constant
C at Z the car has constant speed
D at Z the car is at rest

- 3 A student adds different loads to the end of a spring. She finds the extension in each case and plots a graph of extension against load.

What is the correct graph?

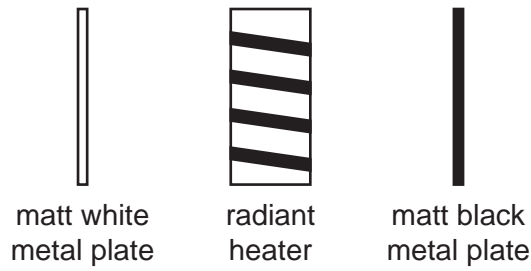


- 4 A man weighs 600 N. He runs up stairs of total height 4 metres in 3 seconds.

How much power is exerted by the man?

- A** 450 W **B** 800 W **C** 2400 W **D** 7200 W

- 5 Two identical metal plates are painted, one matt white and the other matt black. These are placed at equal distances from a radiant heater as shown. The heater is turned on for five minutes.



Which metal plate absorbs more energy and which plate emits more energy in this time?

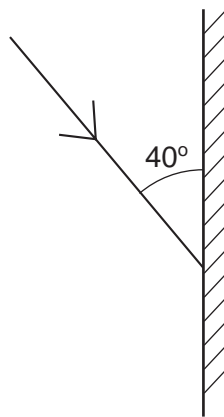
| | absorbs more | emits more |
|----------|--------------|------------|
| A | black | black |
| B | black | white |
| C | white | black |
| D | white | white |

- 6 A surf-board moves at a speed of 5 m / s on the crest of a wave. The distance between successive wave crests is 10 m.

What is the frequency of the wave motion?

- A** 0.5 Hz **B** 2 Hz **C** 5 Hz **D** 10 Hz

- 7 The diagram shows a single ray of light being directed at a plane mirror.



What are the angles of incidence and reflection?

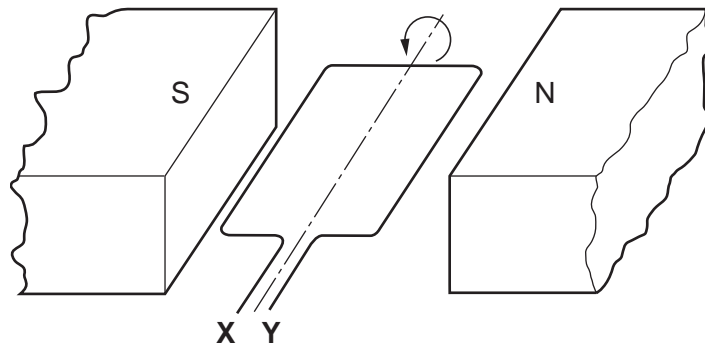
| | angle of incidence | angle of reflection |
|----------|--------------------|---------------------|
| A | 40° | 40° |
| B | 40° | 50° |
| C | 50° | 40° |
| D | 50° | 50° |

- 8 A battery moves a charge of 60 C around a circuit in a time of 20 s.

What is the average current in the circuit?

- A** 0.3 A **B** 3.0 A **C** 40 A **D** 1200 A
- 9 Which is the **highest** rated appliance that can be connected to the 240 V mains supply using a plug with a 3 A fuse?
- A** a 60W light bulb
B a 100W light bulb
C a 200W television
D a 500W heater
- 10 Which of the following would be repelled by the S pole of a bar magnet?
- A** a copper bar
B a soft iron bar
C the N pole of a second bar magnet
D the S pole of a second bar magnet

11 The diagram shows a coil in a magnetic field.



When the coil is part of an a.c. generator, what must be connected directly to **X** and **Y**?

- A a.c. supply
- B carbon brushes
- C slip rings
- D soft-iron core

12 Which table correctly identifies the locations of protons, neutrons and electrons in an atom?

A

| | nucleus | |
|-----------|---------|---------|
| | inside | outside |
| electrons | ✓ | |
| neutrons | ✓ | |
| protons | | ✓ |

B

| | nucleus | |
|-----------|---------|---------|
| | inside | outside |
| electrons | | ✓ |
| neutrons | ✓ | |
| protons | ✓ | |

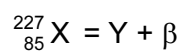
C

| | nucleus | |
|-----------|---------|---------|
| | inside | outside |
| electrons | ✓ | |
| neutrons | | ✓ |
| protons | | ✓ |

D

| | nucleus | |
|-----------|---------|---------|
| | inside | outside |
| electrons | | ✓ |
| neutrons | | ✓ |
| protons | ✓ | |

13 A radioactive nucleus X, decays by emitting a beta-particle to form a nucleus, Y.

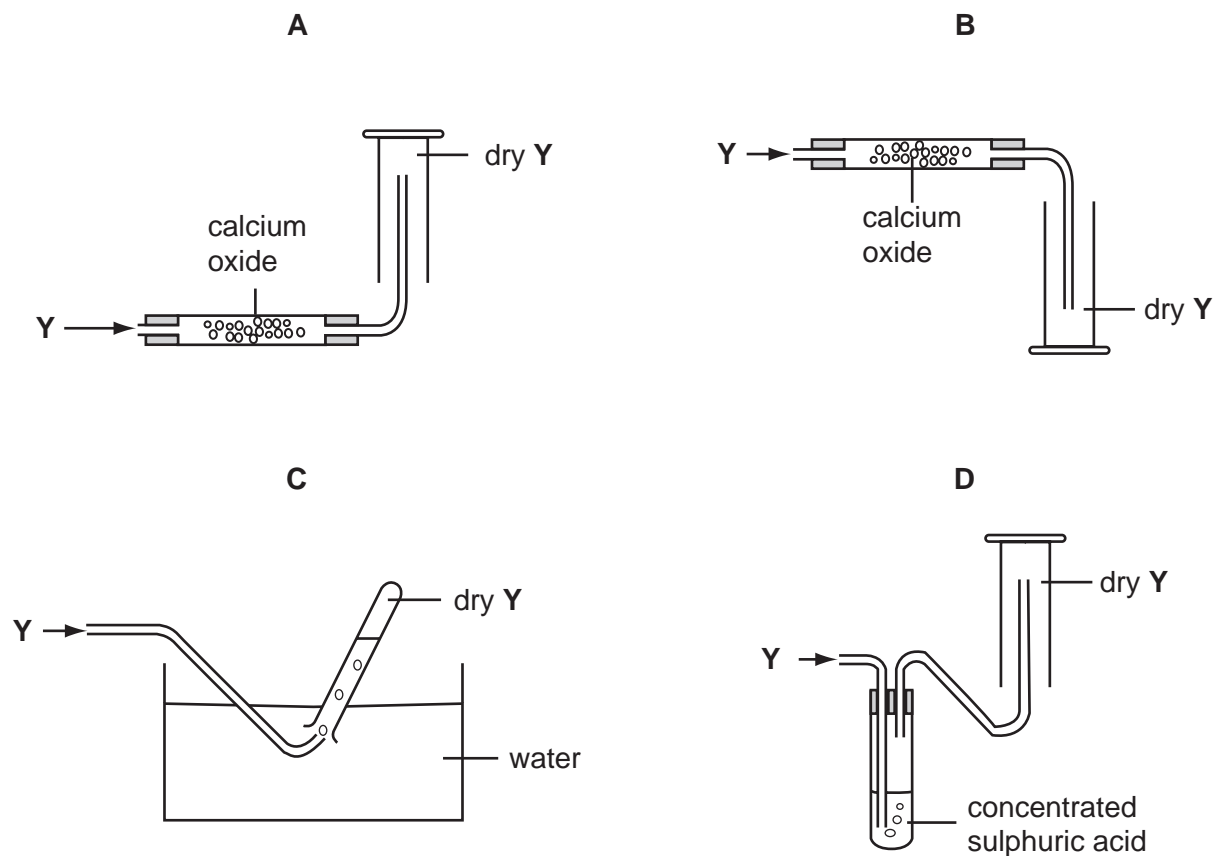


What represents nucleus Y?

- A ${}_{83}^{223}\text{Y}$
- B ${}_{84}^{225}\text{Y}$
- C ${}_{85}^{228}\text{Y}$
- D ${}_{86}^{227}\text{Y}$

14 A gas Y, is less dense than air, very soluble in water and is an alkali.

Which method is used to collect a dry sample of the gas?



15 Which changes occur when a liquid at 50°C becomes a gas at 120°C?

| | separation of particles | energy of particles | attractive force between particles |
|----------|-------------------------|---------------------|------------------------------------|
| A | decreases | increases | decreases |
| B | decreases | decreases | increases |
| C | increases | increases | decreases |
| D | increases | decreases | increases |

16 A nucleus is represented by the symbol ${}_{37}^{81}\text{X}$.

What does this nucleus contain?

- A** 37 electrons and 44 neutrons
- B** 37 neutrons and 81 protons
- C** 37 protons and 44 neutrons
- D** 37 protons and 81 neutrons

17 Element X has an electronic structure 2.8.8.1.

Element Y has an electronic structure 2.8.6.

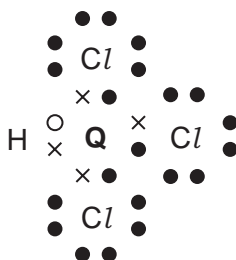
What is made when X and Y react?

| | type of compound | formula |
|----------|-------------------|---------|
| A | covalent compound | X_2Y |
| B | covalent compound | XY_2 |
| C | ionic compound | X_2Y |
| D | ionic compound | XY_2 |

18 Element Q has four electrons in its outermost shell.

Element Q can combine with hydrogen and chlorine to form a compound $QHCl_3$.

The diagram shows the electronic structure of $QHCl_3$ (outer shell electrons only).



Which of these properties will this compound have?

- A** It will be a solid at room temperature.
- B** It will be readily soluble in water.
- C** It will be a good conductor of electricity.
- D** It will have a low boiling point.

19 Aqueous potassium sulphate can be prepared by titrating dilute sulphuric acid against aqueous potassium carbonate.

Which conclusion can be drawn from this information?

- A** Potassium carbonate is insoluble in water.
- B** Potassium carbonate neutralises sulphuric acid.
- C** Potassium sulphate is a base.
- D** Potassium sulphate is insoluble in water.

20 The table shows the results of halogen displacement experiments.

| halogen added | halide solution | | |
|----------------|-----------------|--------------------------|--------------------------|
| | X ⁻ | Y ⁻ | Z ⁻ |
| X ₂ | – | Y ₂ displaced | Z ₂ displaced |
| Y ₂ | no reaction | – | no reaction |
| Z ₂ | no reaction | Y ₂ displaced | – |

What are halogens X, Y and Z?

| | X | Y | Z |
|----------|----|----|----|
| A | Br | Cl | I |
| B | Br | I | Cl |
| C | Cl | Br | I |
| D | Cl | I | Br |

21 The results of adding some metals to salt solutions are shown below.

copper + zinc sulphate → no reaction

magnesium + zinc sulphate → magnesium sulphate + zinc

copper + silver sulphate → copper(II) sulphate + silver

What is the order of reactivity of the metals?

| | most reactive \longrightarrow least reactive | | | |
|----------|--|-----------|--------|-----------|
| A | magnesium | copper | zinc | silver |
| B | magnesium | zinc | copper | silver |
| C | silver | copper | zinc | magnesium |
| D | zinc | magnesium | silver | copper |

22 Which statement about the production of iron from haematite is correct?

- A** Coke is used to oxidise the slag.
- B** Limestone is used to produce oxygen for the coke to burn.
- C** Molten iron floats on slag at the furnace base.
- D** The haematite is reduced by carbon monoxide.

23 Why is aluminium used to make food containers that are resistant to corrosion?

- A It does not react with acids.
- B It forms a covalent oxide.
- C It forms an alloy with zinc.
- D It has a protective oxide layer on its surface.

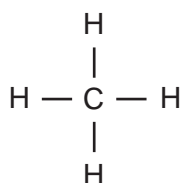
24 All the members of a homologous series have the same

- A empirical formula.
- B general formula.
- C molecular formula.
- D physical properties.

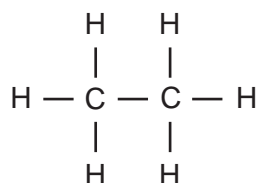
25 What does **not** happen in the complete combustion of propane, C_3H_8 ?

- A a deposit of soot is formed
- B carbon-carbon bonds break
- C carbon-oxygen bonds form
- D energy is released

26 The names and molecular structure of two alkanes are shown.



methane



ethane

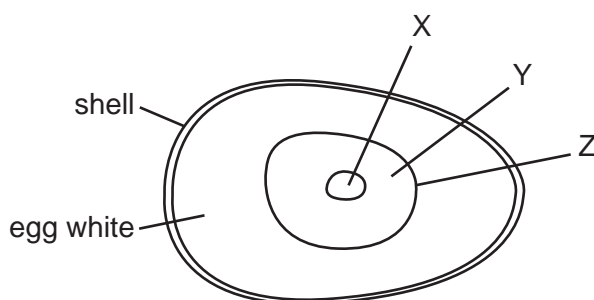
What is the next alkane in the homologous series?

| | name | formula |
|----------|---------|----------|
| A | butane | C_3H_6 |
| B | butane | C_3H_8 |
| C | propane | C_3H_6 |
| D | propane | C_3H_8 |

27 Which compound will decolourise aqueous bromine?

- A ethane
- B ethanoic acid
- C ethene
- D poly(ethene)

28 The yellow part of a hen's egg is a large cell containing a lot of yolk. The diagram shows an unfertilised hen's egg.



What do the labels represent?

| | cell membrane | cytoplasm | nucleus |
|----------|---------------|-----------|---------|
| A | X | Y | Z |
| B | X | Z | Y |
| C | Z | X | Y |
| D | Z | Y | X |

29 A piece of plant tissue is transferred from a beaker of water into a 10% sucrose solution.

What happens?

| | movement of water | volume of tissue cells |
|----------|-------------------|------------------------|
| A | enters the cells | decreases |
| B | enters the cells | increases |
| C | leaves the cells | decreases |
| D | leaves the cells | increases |

30 Under which conditions does amylase act on starch most quickly?

| | pH | temperature |
|----------|---------|-------------|
| A | acidic | 30 °C |
| B | acidic | 60 °C |
| C | neutral | 30 °C |
| D | neutral | 60 °C |

31 What is the function of chlorophyll in plants?

- A** to absorb carbon dioxide
- B** to absorb light
- C** to absorb oxygen
- D** to absorb water

32 Where in the alimentary canal is most water absorbed?

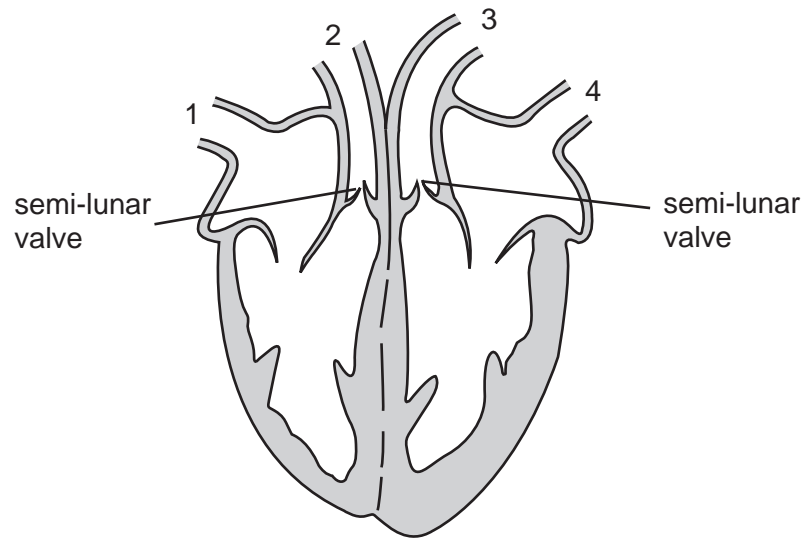
- A** colon
- B** ileum
- C** oesophagus
- D** stomach

33 A green plant starts to wilt. It is then given water, and after a short time it recovers.

Which process causes this recovery?

- A** assimilation
- B** osmosis
- C** respiration
- D** transpiration

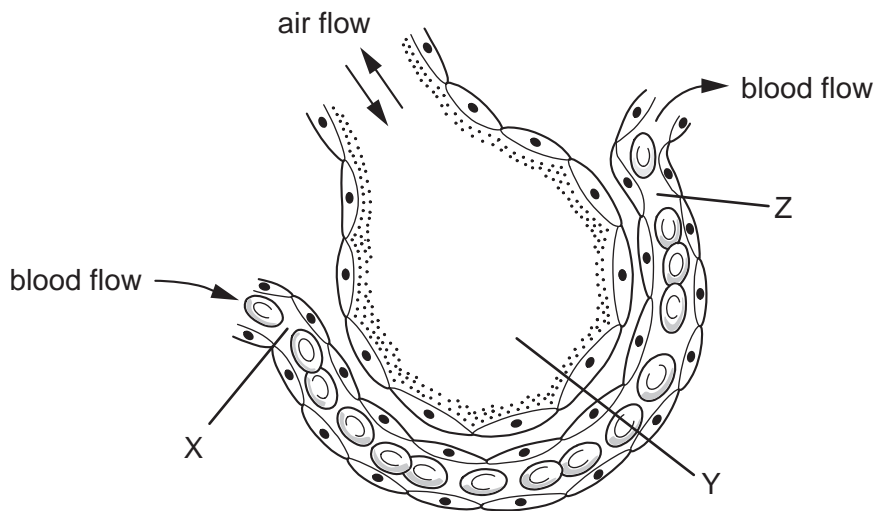
34 The diagram shows a section through the human heart.



What happens as blood is being pumped to the lungs?

| | semi-lunar valves | vessel through which blood passes to the lungs |
|----------|-------------------|--|
| A | closed | 4 |
| B | closed | 3 |
| C | open | 2 |
| D | open | 1 |

35 The diagram shows a section of an alveolus and a capillary in a lung.



What are the relative concentrations of **carbon dioxide** at X, Y and Z?

| | X | Y | Z |
|----------|------|------|------|
| A | high | high | high |
| B | high | low | low |
| C | low | high | high |
| D | low | high | low |

36 A person is sitting in a dark room.

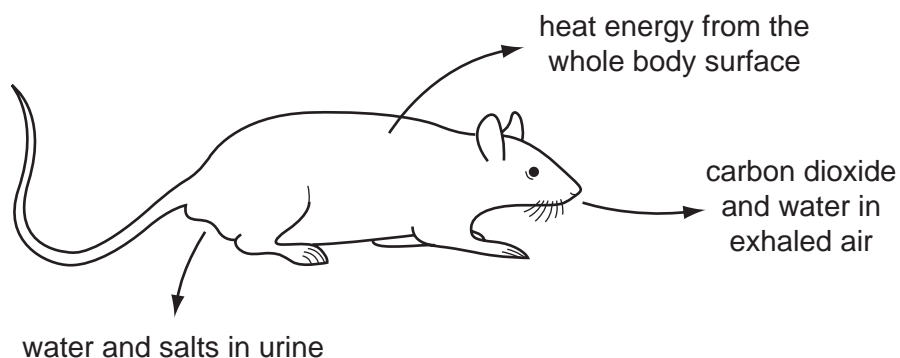
What happens in the eye when a light is switched on?

| | circular muscle of iris | size of pupil |
|----------|-------------------------|---------------|
| A | contracts | decreases |
| B | contracts | increases |
| C | relaxes | decreases |
| D | relaxes | increases |

37 Which statement is true of heroin and also true of excessive use of alcohol?

- A** Their use can lead to habitual criminal behaviour.
- B** They are stimulants.
- C** They are usually taken by injection.
- D** They produce only mild withdrawal symptoms.

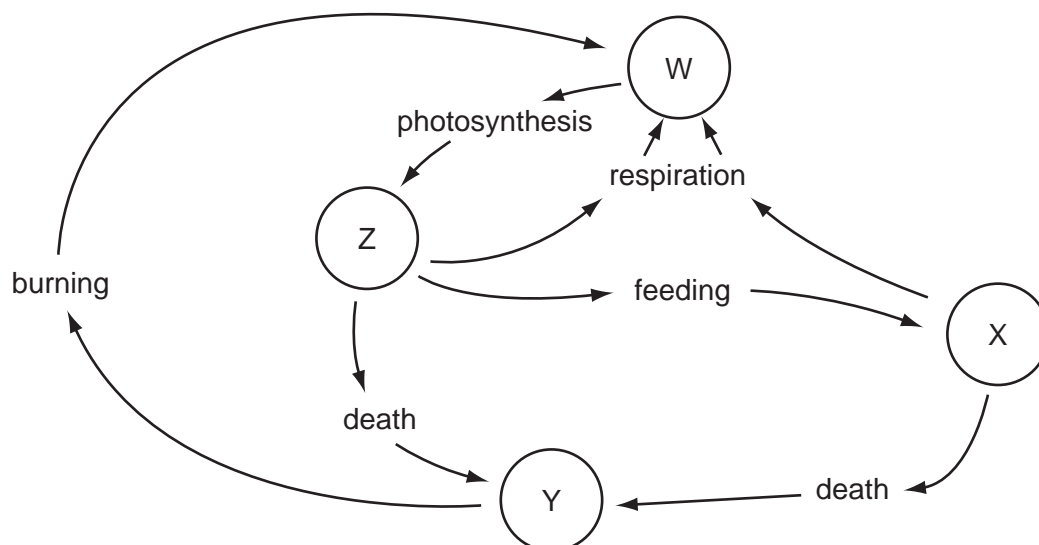
38 The diagram shows losses from a rat to the environment.



What will **not** be returned to the ecosystem and recycled?

- A carbon dioxide
- B heat energy
- C salts
- D water

39 The diagram shows some stages in the carbon cycle. W, X, Y and Z are carbon compounds.



What is W?

- A carbon compounds in animals
- B carbon compounds in plants
- C carbon dioxide
- D coal and oil

40 Which line indicates hormonal and mechanical birth control methods?

| | hormonal | mechanical |
|----------|----------|----------------------------|
| A | pill | spermicide |
| B | pill | intra-uterine device (IUD) |
| C | condom | spermicide |
| D | condom | intra-uterine device (IUD) |

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DATA SHEET
The Periodic Table of the Elements

| Group | | Group | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | I | II | III | IV | V | VI | VII | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 H Hydrogen 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 9 | 3 Li Lithium 3 | 4 Be Beryllium 4 | 5 B Boron 5 | 6 C Carbon 6 | 7 N Nitrogen 7 | 8 O Oxygen 8 | 9 F Fluorine 9 | 10 Ne Neon 10 | 11 B Boron 11 | 12 C Carbon 12 | 13 Al Aluminium 13 | 14 Si Silicon 14 | 15 P Phosphorus 15 | 16 S Sulphur 16 | 17 Cl Chlorine 17 | 18 Ar Argon 18 | 19 F Fluorine 19 | 20 Ne Neon 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | 24 | 11 Na Sodium 11 | 12 Mg Magnesium 12 | 27 Co Cobalt 27 | 28 Ni Nickel 28 | 29 Cu Copper 29 | 30 Zn Zinc 30 | 31 Ga Gallium 31 | 32 Ge Germanium 32 | 33 As Arsenic 33 | 34 Se Selenium 34 | 35 Br Bromine 35 | 36 Kr Krypton 36 | 49 In Indium 49 | 50 Tl Thallium 81 | 51 Pb Lead 82 | 52 Te Tellurium 52 | 53 I Iodine 53 | 54 Xe Xenon 54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39 | 40 | 19 K Potassium 19 | 20 Ca Calcium 20 | 45 Sc Scandium 21 | 46 Ti Titanium 22 | 47 V Vanadium 23 | 48 Cr Chromium 24 | 49 Mn Manganese 25 | 50 Fe Iron 26 | 51 Cu Copper 29 | 52 Ni Nickel 28 | 53 Co Cobalt 27 | 54 Zn Zinc 30 | 55 Ga Gallium 31 | 56 Ge Germanium 32 | 57 As Arsenic 33 | 58 Se Selenium 34 | 59 Br Bromine 35 | 60 Kr Krypton 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85 | 88 | 37 Rb Rubidium 37 | 38 Sr Strontium 38 | 89 Y Yttrium 39 | 90 Zr Zirconium 40 | 91 Nb Niobium 41 | 92 Mo Molybdenum 42 | 93 Tc Technetium 43 | 94 Ru Ruthenium 44 | 95 Rh Rhodium 45 | 96 Pd Palladium 46 | 97 Ag Silver 47 | 98 Cd Cadmium 48 | 101 In Indium 49 | 102 Sn Tin 50 | 103 Sb Antimony 51 | 104 Te Tellurium 52 | 105 I Iodine 53 | 106 Xe Xenon 54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 133 | 137 | 55 Cs Caesium 55 | 56 Ba Barium 56 | 139 La Lanthanum 57 | 140 Hf Hafnium 72 | 141 Ta Tantalum 73 | 142 W Tungsten 74 | 143 Re Rhenium 75 | 144 Os Osmium 76 | 145 Ir Iridium 77 | 146 Pt Platinum 78 | 147 Au Gold 79 | 148 Hg Mercury 80 | 204 Pb Lead 82 | 205 Bi Bismuth 83 | 206 Po Polonium 84 | 207 At Astatine 85 | 208 Rn Radon 86 | 209 Ra Radium 88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 87 | 88 | 87 Fr Francium 87 | 88 Ra Radium 88 | 227 Ac Actinium 89 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | *58-71 Lanthanoid series 90-103 Actinoid series | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">a</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">b</td> </tr> </table> a = relative atomic mass X = atomic symbol b = proton (atomic) number | | | | | | | | | | | | | | | | | | a | X | b | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a | X | b | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">140</td> <td style="padding: 2px;">Ce</td> <td style="padding: 2px;">141</td> <td style="padding: 2px;">Pr</td> <td style="padding: 2px;">142</td> <td style="padding: 2px;">Nd</td> <td style="padding: 2px;">143</td> <td style="padding: 2px;">Pm</td> <td style="padding: 2px;">144</td> <td style="padding: 2px;">Sm</td> <td style="padding: 2px;">145</td> <td style="padding: 2px;">Eu</td> <td style="padding: 2px;">146</td> <td style="padding: 2px;">Gd</td> <td style="padding: 2px;">147</td> <td style="padding: 2px;">Tb</td> <td style="padding: 2px;">148</td> <td style="padding: 2px;">Dy</td> <td style="padding: 2px;">149</td> <td style="padding: 2px;">Ho</td> <td style="padding: 2px;">150</td> <td style="padding: 2px;">Er</td> <td style="padding: 2px;">151</td> <td style="padding: 2px;">Tm</td> <td style="padding: 2px;">152</td> <td style="padding: 2px;">Yb</td> <td style="padding: 2px;">153</td> <td style="padding: 2px;">Lu</td> </tr> <tr> <td style="padding: 2px;">58</td> <td style="padding: 2px;">Cerium</td> <td style="padding: 2px;">59</td> <td style="padding: 2px;">Praseodymium</td> <td style="padding: 2px;">60</td> <td style="padding: 2px;">Neodymium</td> <td style="padding: 2px;">61</td> <td style="padding: 2px;">Promethium</td> <td style="padding: 2px;">62</td> <td style="padding: 2px;">Samarium</td> <td style="padding: 2px;">63</td> <td style="padding: 2px;">Europium</td> <td style="padding: 2px;">64</td> <td style="padding: 2px;">Gadolinium</td> <td style="padding: 2px;">65</td> <td style="padding: 2px;">Terbium</td> <td style="padding: 2px;">66</td> <td style="padding: 2px;">Dysprosium</td> <td style="padding: 2px;">67</td> <td style="padding: 2px;">Holmium</td> <td style="padding: 2px;">68</td> <td style="padding: 2px;">Erbium</td> <td style="padding: 2px;">69</td> <td style="padding: 2px;">Thulium</td> <td style="padding: 2px;">70</td> <td style="padding: 2px;">Ytterbium</td> <td style="padding: 2px;">71</td> <td style="padding: 2px;">Lutetium</td> </tr> <tr> <td style="padding: 2px;">90</td> <td style="padding: 2px;">Thorium</td> <td style="padding: 2px;">91</td> <td style="padding: 2px;">Protactinium</td> <td style="padding: 2px;">92</td> <td style="padding: 2px;">Uranium</td> <td style="padding: 2px;">93</td> <td style="padding: 2px;">Neptunium</td> <td style="padding: 2px;">94</td> <td style="padding: 2px;">Plutonium</td> <td style="padding: 2px;">95</td> <td style="padding: 2px;">Americium</td> <td style="padding: 2px;">96</td> <td style="padding: 2px;">Curium</td> <td style="padding: 2px;">97</td> <td style="padding: 2px;">Berkelium</td> <td style="padding: 2px;">98</td> <td style="padding: 2px;">Californium</td> <td style="padding: 2px;">99</td> <td style="padding: 2px;">Einsteinium</td> <td style="padding: 2px;">100</td> <td style="padding: 2px;">Fermium</td> <td style="padding: 2px;">101</td> <td style="padding: 2px;">Mendelevium</td> <td style="padding: 2px;">102</td> <td style="padding: 2px;">Nobelium</td> <td style="padding: 2px;">103</td> <td style="padding: 2px;">Lawrencium</td> </tr> </table> | | | | | | | | | | | | | | | | | | 140 | Ce | 141 | Pr | 142 | Nd | 143 | Pm | 144 | Sm | 145 | Eu | 146 | Gd | 147 | Tb | 148 | Dy | 149 | Ho | 150 | Er | 151 | Tm | 152 | Yb | 153 | Lu | 58 | Cerium | 59 | Praseodymium | 60 | Neodymium | 61 | Promethium | 62 | Samarium | 63 | Europium | 64 | Gadolinium | 65 | Terbium | 66 | Dysprosium | 67 | Holmium | 68 | Erbium | 69 | Thulium | 70 | Ytterbium | 71 | Lutetium | 90 | Thorium | 91 | Protactinium | 92 | Uranium | 93 | Neptunium | 94 | Plutonium | 95 | Americium | 96 | Curium | 97 | Berkelium | 98 | Californium | 99 | Einsteinium | 100 | Fermium | 101 | Mendelevium | 102 | Nobelium | 103 | Lawrencium |
| 140 | Ce | 141 | Pr | 142 | Nd | 143 | Pm | 144 | Sm | 145 | Eu | 146 | Gd | 147 | Tb | 148 | Dy | 149 | Ho | 150 | Er | 151 | Tm | 152 | Yb | 153 | Lu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 58 | Cerium | 59 | Praseodymium | 60 | Neodymium | 61 | Promethium | 62 | Samarium | 63 | Europium | 64 | Gadolinium | 65 | Terbium | 66 | Dysprosium | 67 | Holmium | 68 | Erbium | 69 | Thulium | 70 | Ytterbium | 71 | Lutetium | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | Thorium | 91 | Protactinium | 92 | Uranium | 93 | Neptunium | 94 | Plutonium | 95 | Americium | 96 | Curium | 97 | Berkelium | 98 | Californium | 99 | Einsteinium | 100 | Fermium | 101 | Mendelevium | 102 | Nobelium | 103 | Lawrencium | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

The volume of one mole of any gas is 24 dm³ at room temperature and pressure (r.t.p.).