2010 Geology

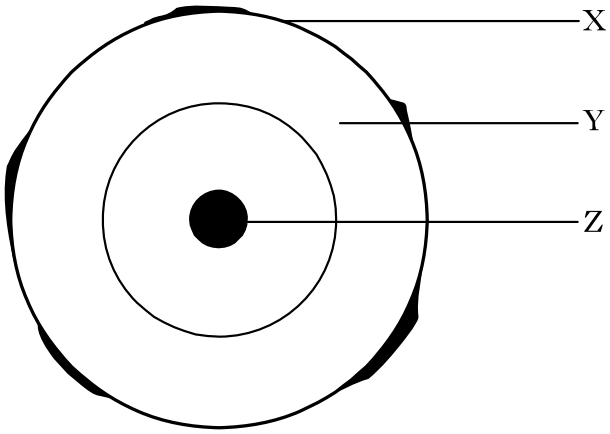
Intermediate 1

Finalised Marking Instructions

		Marks
1.	Which **three** of the statements below are correct?	
	A The Earth is a star.	
	B The Earth receives heat and light from the sun.	
	C The Earth is a planet.	
	D Planets burn brightly.	
	E The Sun is bigger than each of the planets.	
	Give only the letters: **B** **C** and **E**	
	3 correct – 2 marks 2 correct – 1 mark	**2**

	Marks

2. Look at the diagram below showing the layers of the Earth.



(a) Use the word box to describe the layers.

Word Box

Liquid metal
Igneous, sedimentary and metamorphic rocks
Solid metal
Molten rock

X **Igneous, sedimentary and metamorphic rocks**

Y **Molten rock**

Z **Solid metal** **3**

A bore hole can be used to find out what the crust is made of.

(b) Explain **one** way by which we know what is beneath the crust.

Volcanoes (1) Explanation (1)

Earthquakes (1) Explanation (1)

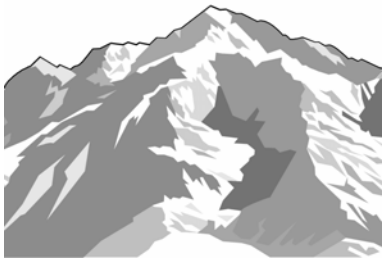
Meteorites (1) Explanation (1)

Do not accept boreholes **2**

	Marks

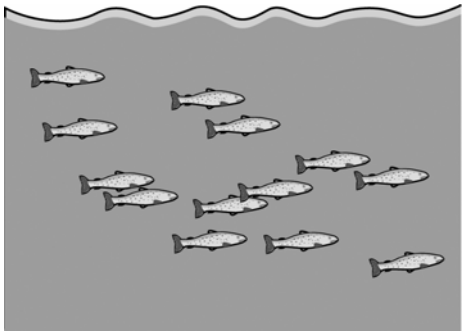
3. The diagrams show stages in the history of the Earth.

A Oldest rocks in Scotland formed



B Flowering plants appear

C Fish appear in the seas



D Dinosaurs roamed the land

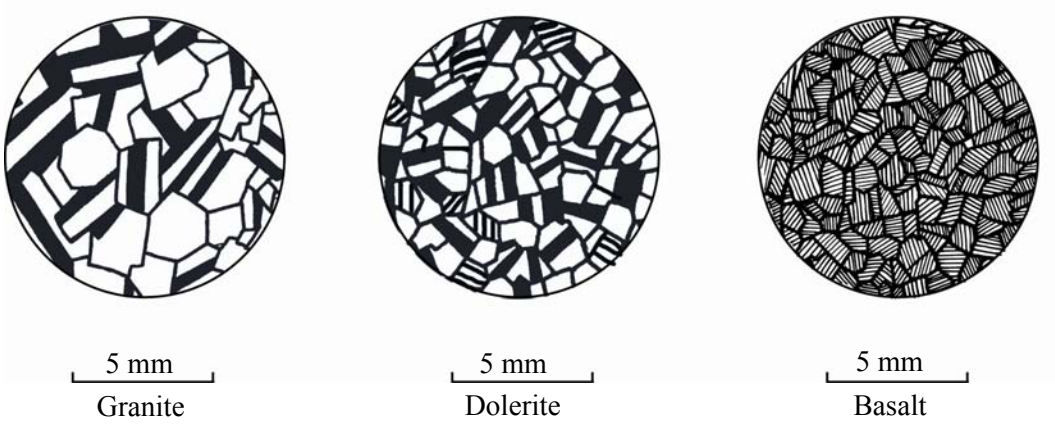
Place the stages in the history of the Earth in order from oldest to youngest.

Give only the letters: **A** → **C** → **D** → **B** **2**
oldest youngest

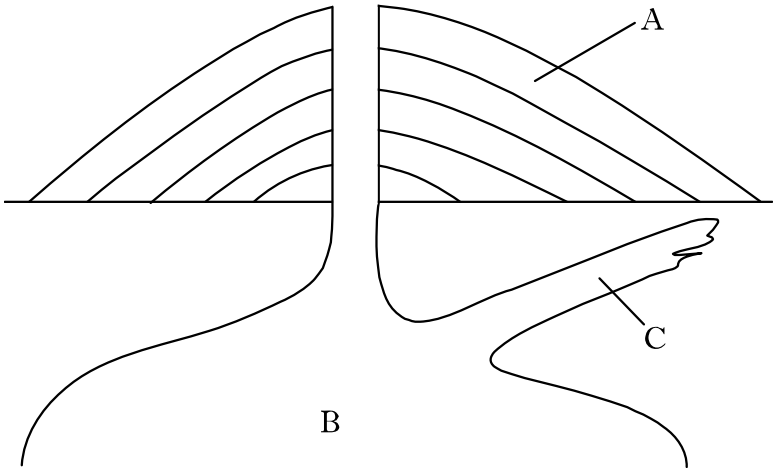
All four correct – 2 marks
Three in order (one out of place) – 1 mark

Marks

4. The diagram below shows views of three igneous rocks seen under a microscope.



The diagram below shows where these rocks were formed.



(a) Complete the table below.

	Name of rock
A	**Basalt**
B	**Granite**
C	**Dolerite**

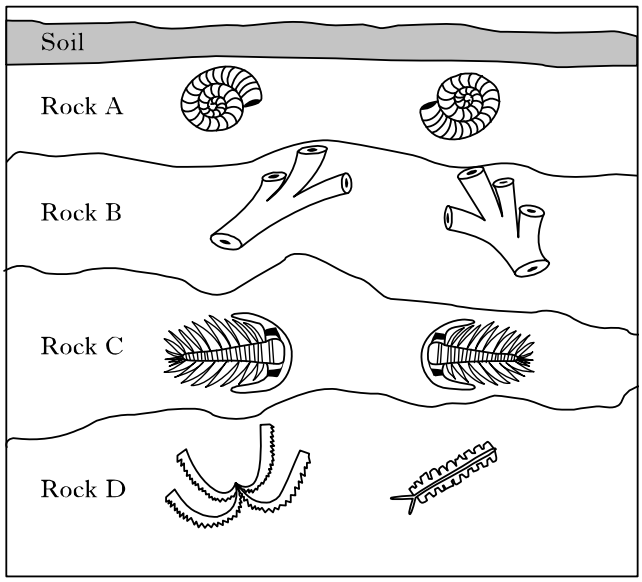
3 correct – 2 marks
1 correct – 1 mark **2**

(b) Explain your choices.

Rate of cooling: **fast – small crystals**
slow – large crystals
and/or credit area of cooling **2**

Marks

5. Look at the diagram below showing layers of rocks containing fossils.



(not to scale)

(a) Name the fossils found in rocks A, B, C and D.

Rock A **Ammonite**

Rock B **Coral**

Rock C **Trilobite**

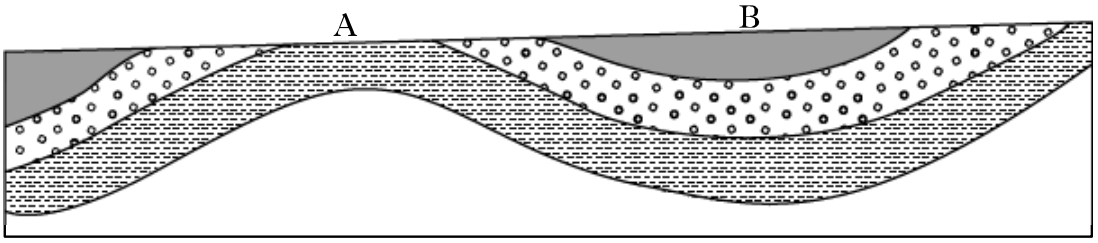
Rock D **Graptolites** **4**

(b) What do fossils tell us about the rocks they are found in?

- **The environment the rocks were deposited in**
- **Conditions at the time**
- **The time the rocks were deposited in**
- **Age of the rocks** **2**

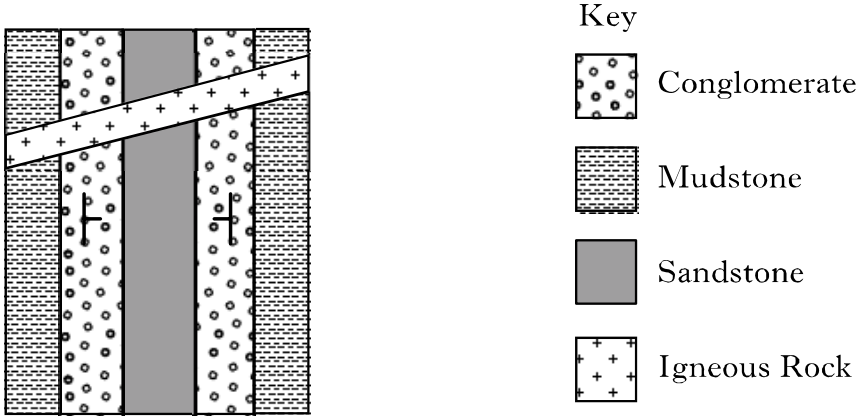
	Marks

6. Look at the cross-section below.



(not to scale)

The diagram below shows a geological map from the same area.



(a) Does the map show area A or B?

- **Area B** **1**

(b) Explain your answer.

- **Rocks dipping towards each other**
- **Youngest rock is in the middle**
- **Oldest rocks on the edge**
- **Syncline**
- **Symbols pointing towards one another**

Accept correct explanations if incorrect answer for (a) **2**

(c) Using both diagrams, place the events in the correct order.

A Intrusion of igneous rock

B Folding of rock

C Deposition of mudstone

D` Deposition of sandstone

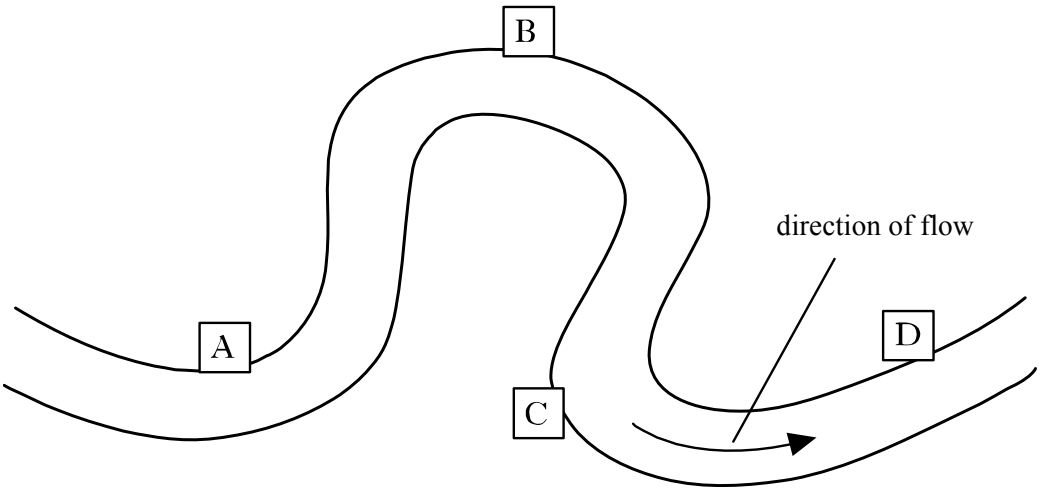
Give only the letters: **C** → **D** → **B** → **A** **4**
oldest youngest

All 4 correct – 4 marks
Three in uninterrupted correct order – 3 marks
Two in uninterrupted correct order – 2 marks

	Marks

7. The "Gleaming Glen" Mining Company in the North of Scotland has found small amounts of gold in the sand and gravel deposits of a river.

(a) Look at the diagram below.



Which site would give the greatest chance of finding gold deposits?

Give only the letter **A** **1**

(b) Explain your answer.

- **Slowest flow (1)/inside bend (1)** **2**

(c) Look at the information boxes below.

P	Q
Ore minerals transported by the river	Ore minerals deposited by the river
R	**S**
Ore minerals separated by weathering and erosion from their original deposits	Panning for minerals

Place the above events in the correct order.

Give only the letters: **R** → **P** → **Q** → **S** **4**
first last

Four in correct order – 4 marks
Three in correct order – 3 marks
Two in correct order – 2 marks

	Marks

7. (continued)

(d) The company has been asked to make gold medals for the 2012 London Olympic Games. Fifteen grammes of gold are needed to make one gold medal. One tonne of sand and gravel deposit gives 0.2 grams of gold.

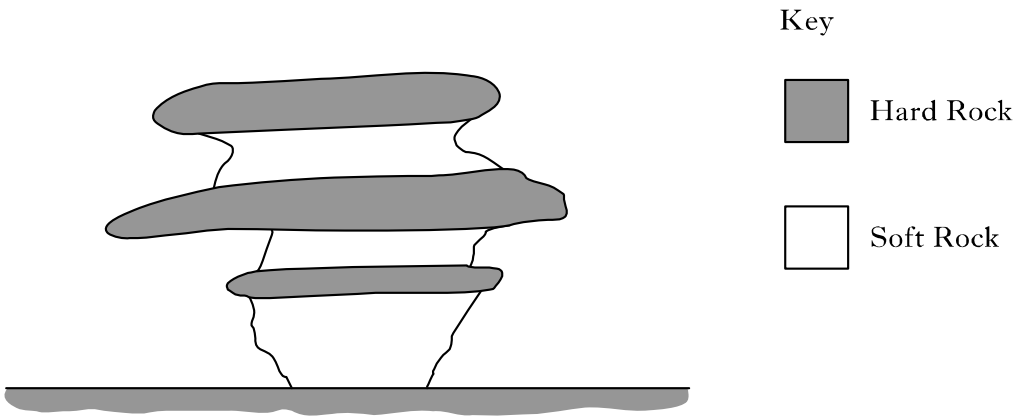
Calculate how many tonnes of sand and gravel will have to be panned to make one gold medal.

Show your working.

- **15/0.2 = 75 tonnes** **2**

	Marks

8. Look at the diagram below showing a desert feature.



(a) Name the feature **Rock pedestal/mushroom rock** **1**

(b) Explain how this feature was formed.

- **Eroded by wind**
- **Differential erosion**
- **More erosion at base**

Any other relevant point **2**

(c) Which type of material, from the word box below, would be carried furthest by the wind?

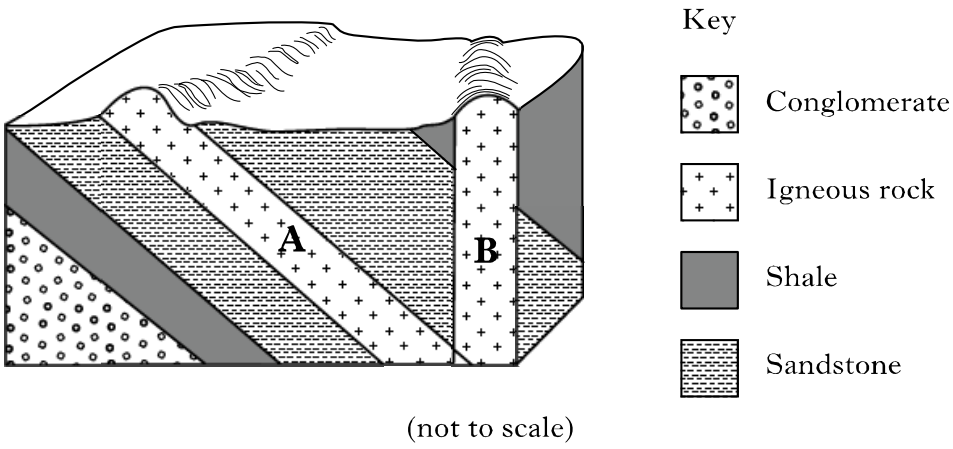
Word Box

Pebbles	Gravel	Sand

- **Sand** **1**

Marks

9. Look at the diagram below.



(not to scale)

(a) Name features A and B

A **Sill**

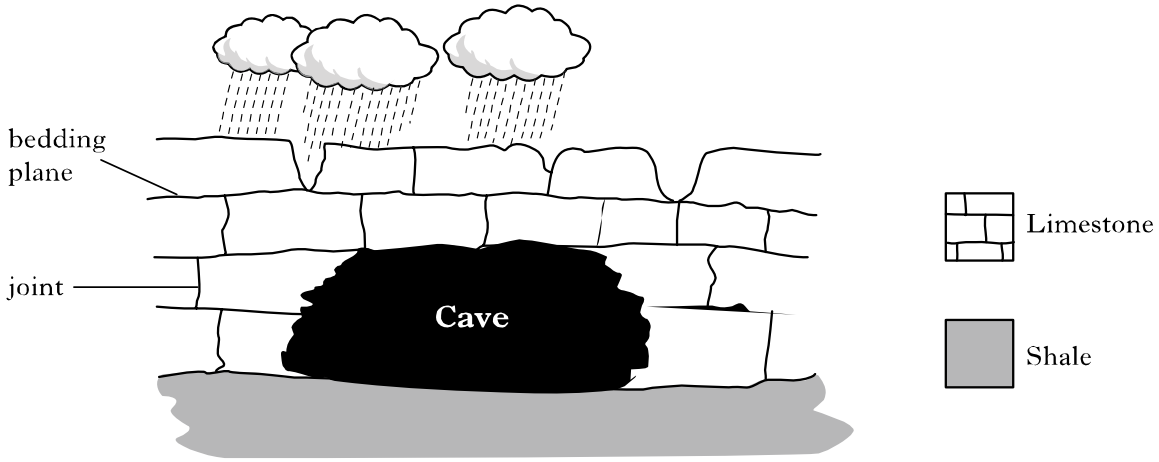
B **Dyke** **2**

(b) Explain how features A and B have affected the landscape.

- **Form higher ground (1)**
- **Harder rock (1)** **2**

	Marks

10. Look at the diagram below showing an area of limestone.



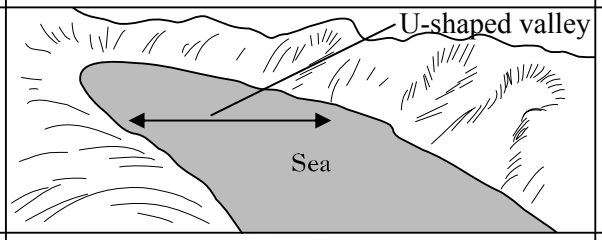
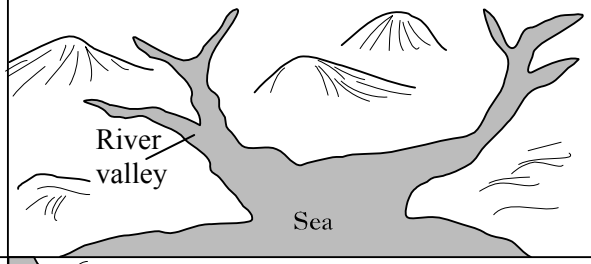
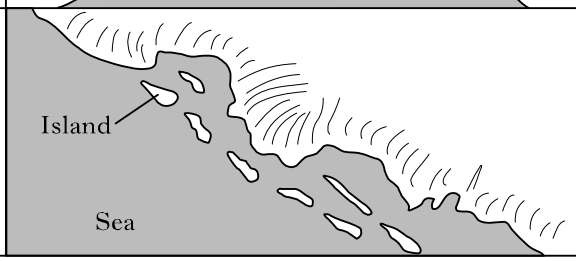
Describe the **processes** which have formed the features of the landscape.

- **Rainwater is acidic**
- **Dissolves limestone**
- **Widening of joints/bedding planes**
- **Processes must be mentioned**

3

	Marks

11. **(a)** Complete the table below by naming the types of submerged coastline.

	Coastline Type	Name
J		**Fjord**
K		**Ria**
L		**Dalmation**

3

(b) Explain how coastline K has been formed.

- **River valley**
- **Sea level rises**
- **Flooding/drowning**
- **Reason (1)**

3

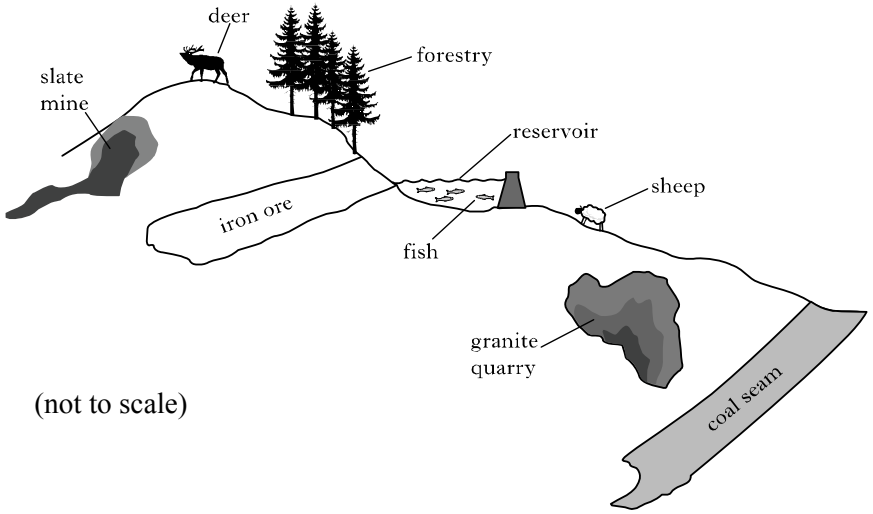
(c) The climate is predicted to change. What effect will this have on coastline L?

- **Islands will disappear**
- **Coastline will retreat with global warming or with global cooling islands larger etc**

1

Marks

12. Look at the diagram below, showing resources.



(not to scale)

(a) Name **four physical** resources in the diagram.

1 **Iron ore**

2 **Granite**

3 **Slate**

4 **Coal**
Water (reservoir not accepted)
(Any 4) **4**

Study the table below showing the volume of water in a reservoir, and the volumes removed for agricultural, domestic and industrial uses.

Year	*Volume of Reservoir (millions of litres)*	*Volume for Agricultural Use (millions of litres)*	*Volume for Domestic Use (millions of litres)*	*Volume for Industrial Use (millions of litres)*	*Total Use of water (millions of litres)*
1960	45 000	1000	1000	2000	4000
1970	43 000	1000	1000	2500	**4500**
1980	42 000	800	1000	2800	4600
1990	36 000	900	1000	2300	**4200**
2000	32 000	1200	1100	2500	**4800**
2010	35 000	1200	1100	2200	**4500**

(b) Complete the table showing the total amount of water used. **4**

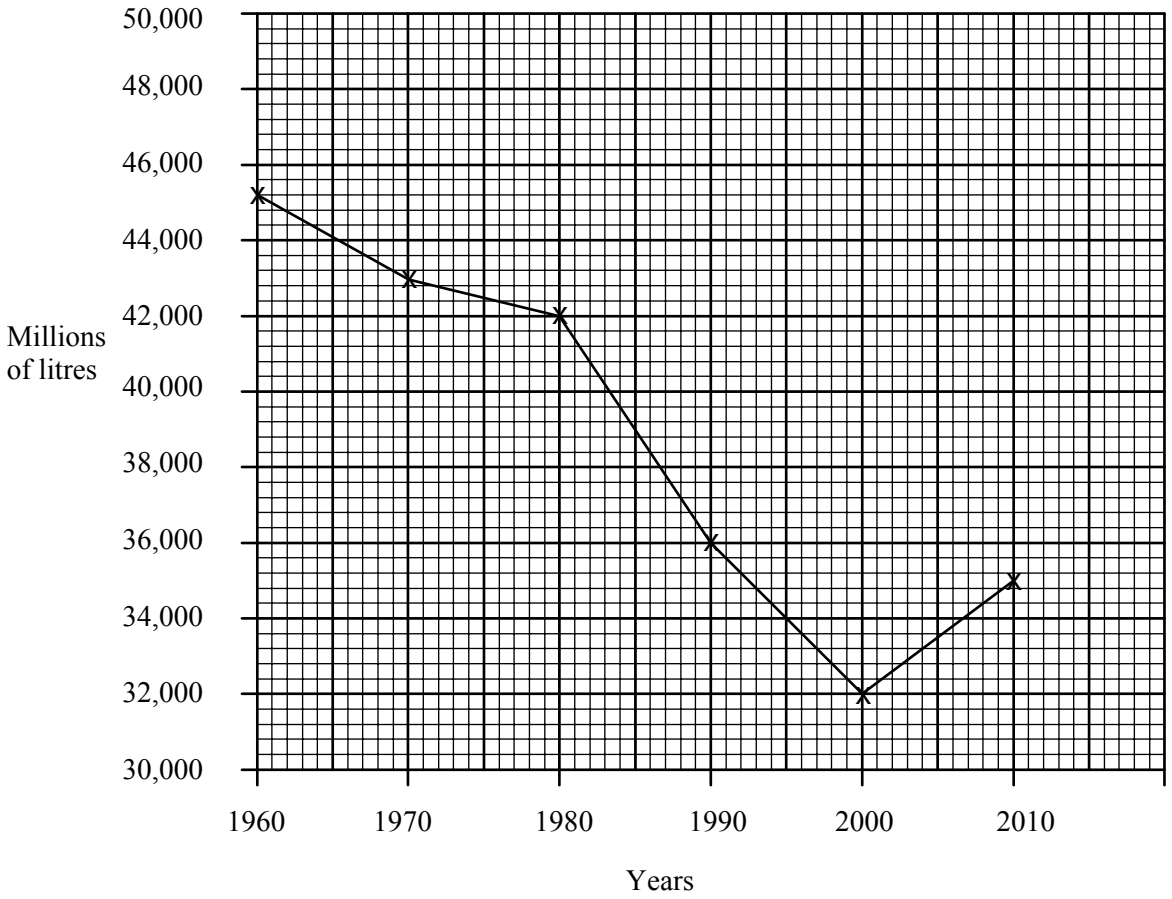
	Marks

12. (continued)

(c) In which year was most water removed from the reservoir?

- **2000** — **1**

(d) Draw a **line** graph on the graph paper below, showing the change in the volume of water in the reservoir from 1960 to 2010.



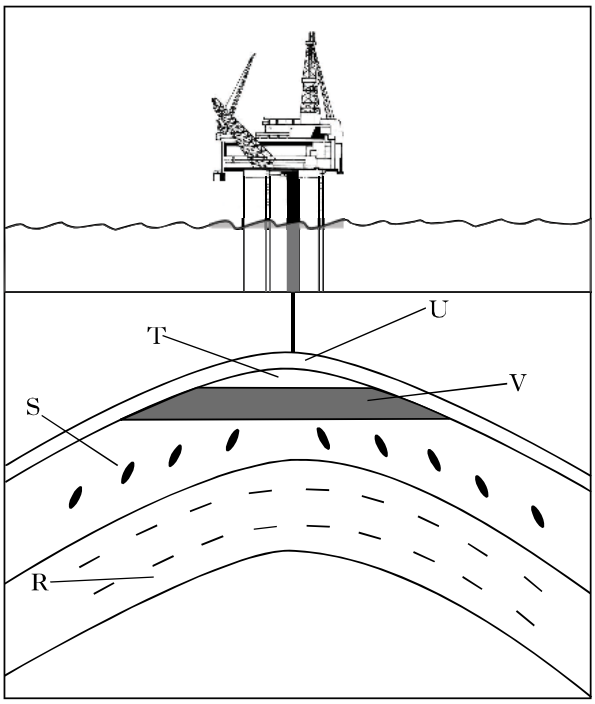
- **1 mark each for vertical scale, horizontal scale and accuracy.**
- **mark out of 2 for wrong type of graph** — **3**

(e) Between 2000 and 2010, the volume of water in the reservoir has increased. Suggest reasons for this.

- **Increased rainfall/precipitation**
- **Decreased evaporation**
- **Decreased use by industry**
- **Weather/climate change not accepted** — **2**

Marks

13. Look at the diagram below.



Word Box

Movement of oil		Source rock
Gas in rock	Cap rock	Oil in rock

Using the Word Box, complete the table below to name the features in the diagram.

Letter	*Feature*
R	**Source rock**
S	**Movement of oil**
T	**Gas in rock**
U	**Cap rock**
V	**Oil in rock**

5

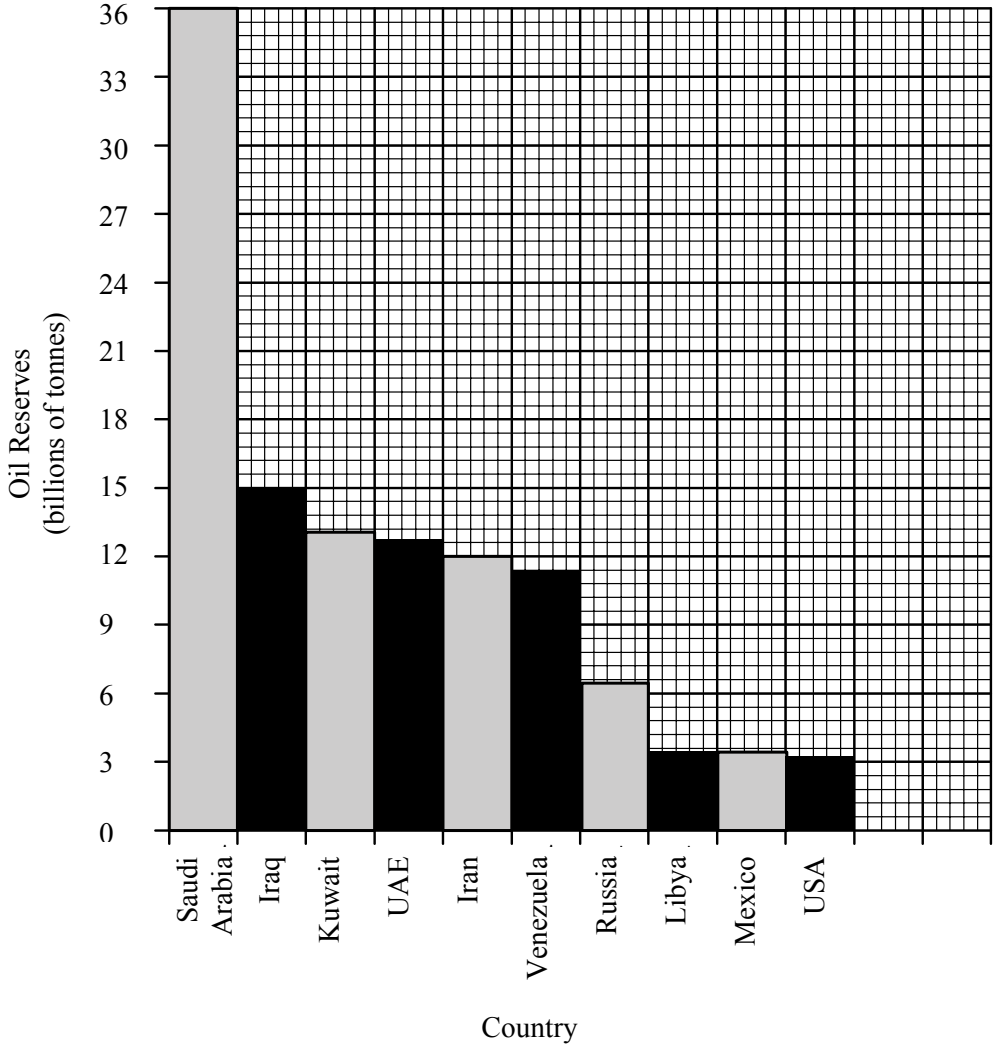
14. The table below shows the countries with the top ten oil reserves.

Country	*Oil reserves (billions of tonnes)*
Saudi Arabia	36
Iraq	15.1
Kuwait	13.3
UAE	13
Iran	12.3
Venezuela	11.2
Russia	6.7
Libya	3.8
Mexico	3.8
USA	3.7

	Marks

14. (continued)

(a) Using the information from the table on Page seventeen, draw a **bar** graph on the graph paper below.



Mark out of a maximum of 3 if wrong type of graph drawn (from any of marks below).
1 mark each for vertical scale, horizontal scale and 2 marks for accuracy.
Accept any appropriate scales by candidate. **4**

(b) Give **two** ways of discovering where oil reserves are found.

1 **Seismic surveys**

2 **Observation**

or **Drilling** **2**

(c) The price of oil is likely to increase. Give **two** ways of conserving oil.

- **Using alternative energy sources**
- **Use less oil – with examples** **2**

[END OF MARKING INSTRUCTIONS]