

SECTION 1

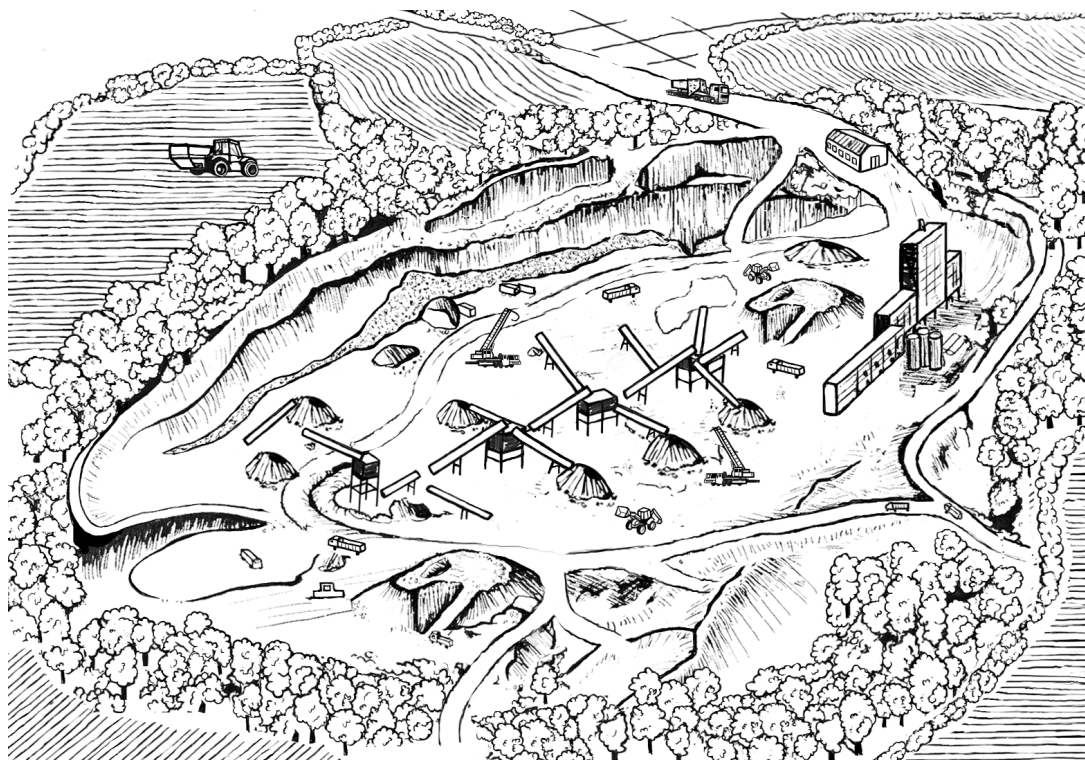
DO NOT
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MARGIN

Answer ALL questions in the spaces provided.

Marks

Use the map extract to answer Question 8.

1. The sketch below shows a large quarry.



- (a) Rock is the natural resource being quarried.

Is this a renewable or a non-renewable resource? Underline the correct answer and give a reason for your choice.

Renewable

Non-renewable

Reason _____

1

- (b) Name **two** man-made resources required at the site other than fuel.

1 _____

2 _____

2

- (c) Give **one** other land use shown in the sketch.

1

*Marks***1. (continued)**

- (d) Building rock from this quarry was used in the construction of a nearby road. Suggest **one** advantage of this to the environment.

1

- (e) Give a reason why the trees were planted around the quarry.

1

- (f) Suggest **two** ways in which quarrying causes pollution of the air.

1 _____

2 _____

2

- (g) The quarry company is required by law to plan for the future use of the site when the quarry closes.

Suggest **one** future use of the quarry.

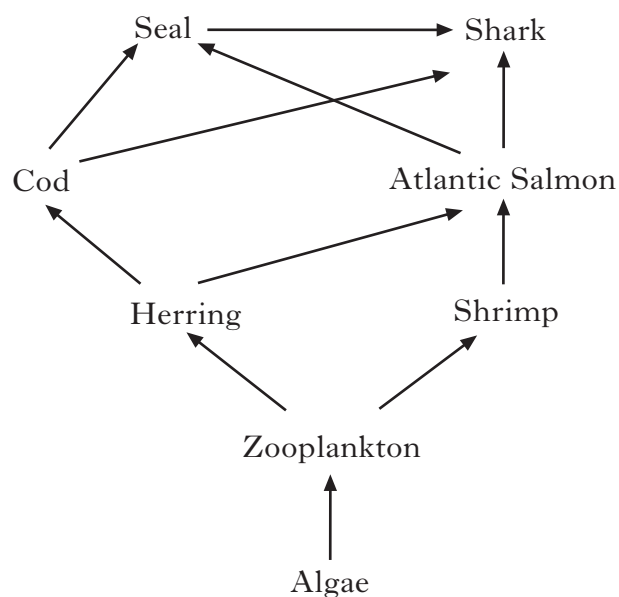
1

- (h) Name **one** piece of conservation legislation at National level.

1**[Turn over**

2. The diagram below shows part of a marine food web.

Marks



(a) Use information from the diagram to answer the following.

(i) Name **one** primary and **one** secondary consumer.

Primary consumer _____

Secondary consumer _____

1

(ii) What do the arrows in the diagram indicate?

1

(iii) Draw a pyramid of biomass to show the relationship between shark, cod, herring, zooplankton and algae.

2

*Marks***2. (a) (continued)**

- (iv) The extent of energy loss varies with the length of a food chain. Use **two** food chains from the diagram to explain what this means.

2

- (v) Over-fishing of cod and herring is an environmental problem. Predict an effect of over-fishing on the numbers of the shrimp population in this food web.

Prediction _____

Give a reason for your answer. _____

1

- (b) The sea louse is a parasite of some fish. Explain what is meant by the term parasite.

1

- (c) Complete the word equation of photosynthesis.

Water + _____ + _____ $\xrightarrow[\text{by chlorophyll}]{\text{Captured}}$ Carbohydrate + _____

2**[Turn over]**

Marks

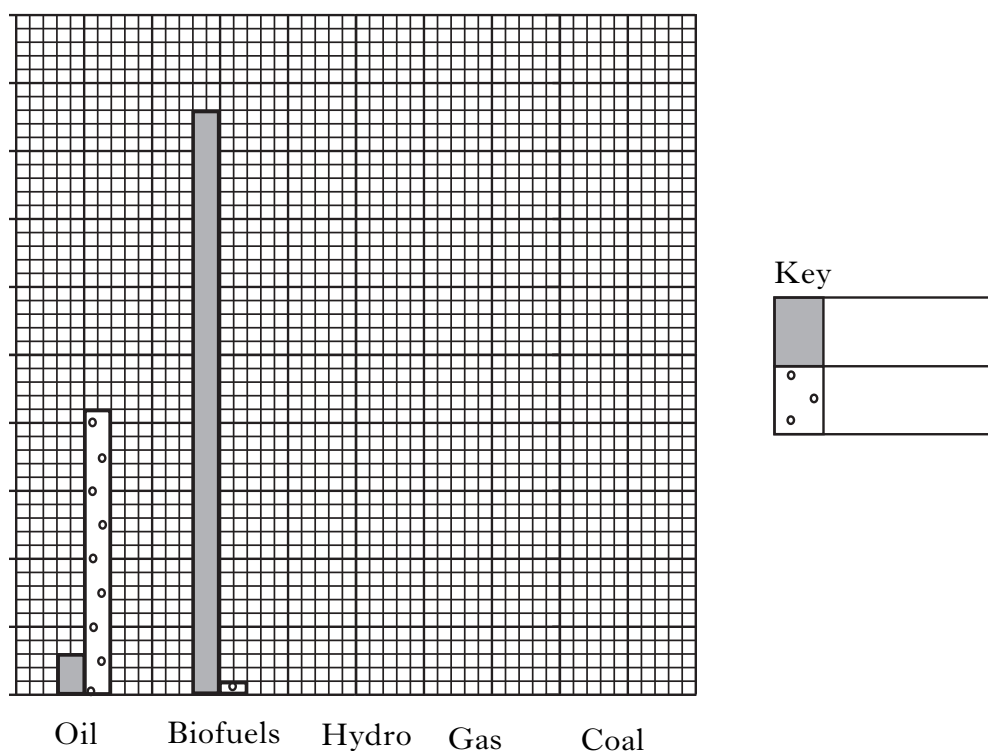
3. (a) The table below shows the percentage (%) energy from different sources used in an economically less developed country (ELDC) and an economically more developed country (EMDC).

Source of energy	Percentage of energy used (%)	
	ELDC	EMDC
Oil	6	42
Bio-fuels	86	2
Hydro	8	2
Gas	0	30
Coal	0	24

- (i) Using the information from the table, complete the bar graph below by:

- 1 adding the scale and label to the vertical (y) axis;
- 2 adding a label to the horizontal (x) axis;
- 3 completing the bar graph and key.

(An additional bar graph can be found on page 25.)



3

*Marks***3. (a) (continued)**

- (ii) Calculate the percentage of energy obtained from non-renewable sources in the **EMDC**.

Space for calculation

_____ %

1

- (iii) Calculate the ratio of energy from oil in the ELDC to that in the EMDC.

Space for calculation.

ELDC ____ : ____ EMDC

1

- (b) Oil is used to generate electricity. Give **one** other major use of oil.

1

- (c) Large dams have been built to generate electricity from hydro sources in some ELDCs. Suggest **one** advantage and **one** disadvantage of this.

Advantage _____

1

Disadvantage _____

1

- (d) Give **one** reason why energy use per person is greater in an EMDC.

1**[Turn over**

4. (a) “T in the Park”, a music festival, took place in 2006 near Kinross.

Website entry: “*T in the Park was absolutely fantastic! All the bands were amazing, the atmosphere was superb. The only thing I will not miss is the toilets – they were disgusting!*”

Facts

- 75 000 people per day
- Limited number of portable toilets
- Site clean up afterwards takes two weeks
- Skips removed to landfill
- Waste includes tents, mattresses, BBQs, plastic and glass bottles, food waste and paper

- (i) From these facts, name **two** types of waste which could be recycled.

1 _____ 2 _____ **1**

- (ii) Suggest **one** way the festival organisers could promote recycling.

_____ **1**

- (iii) Give **one** environmental problem associated with landfill.

_____ **1**

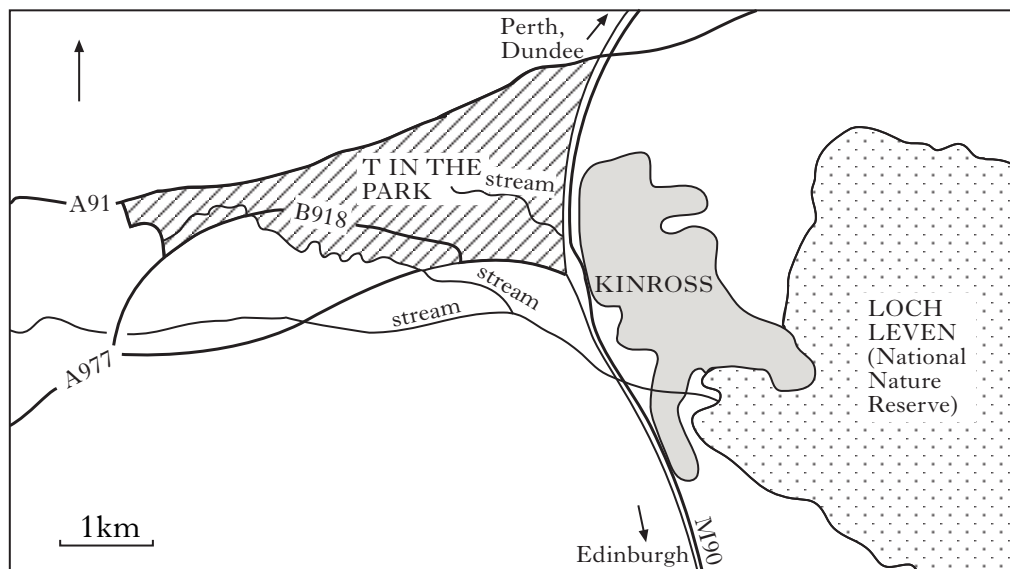
- (iv) Explain why recycling is a key objective in sustainable development.

_____ **1**

Marks

4. (continued)

(b) The map below shows the site of “T in the Park”.



- (i) Monitoring of the use of portable toilets was carried out. This indicated that toilet facilities were inadequate and, as a consequence, resulted in pollution of the site.

Name **two** natural resources which could have been polluted.

1 _____ 2 _____ **1**

- (ii) Suggest **one** advantage and **two** disadvantages that the siting of the festival might bring to the local residents in Kinross.

Advantage _____

_____ **1**

Disadvantage 1 _____

_____ **1**

Disadvantage 2 _____

_____ **1**

[Turn over

5. Read the passage below and answer the questions which follow.

The History of Scotland's Vegetation

At the end of the last Ice Age, about 9000 BC, Scotland became invaded with plants from neighbouring countries. This invasion finished when Britain was cut off from mainland Europe by rising sea levels, leaving Scotland covered with birch, Scots Pine, juniper and oak trees. This woodland was known as the great forest of Caledon.

There is little archeological evidence that the arrival of Man in Britain around 5000 BC made much impact on Scottish wildlife. The area with pine trees was reduced as a result of climate changes. A warmer, wetter climate allowed blanket bog to develop in the North West Highlands with the remains of pine trunks and stumps preserved in the peat.



It was not until Roman times that woodland was cut down for settlements and agriculture. Despite this exploitation, and more widespread burning carried out by the Vikings between the 9th and 12th centuries, the forest quickly regenerated.

Economic exploitation for timber began in the sixteenth century. Much of the wood was used for charcoal to fuel the smelting of iron ore. Deforestation accelerated in the mid-eighteenth century after Highland estates were seized from the Jacobites. The late eighteenth and early nineteenth centuries saw the introduction of intensive sheep farming and the Highland Clearances. Woodland was cut down for sheep farming. Grazing by sheep and wild deer prevented forest regeneration.

Finally, in the twentieth century, the two World Wars created a demand for timber and the ancient forest of Caledon was reduced to a fraction of its size. Today, strict conservation measures are in place to preserve and extend the remnants of the great forest of Caledon.

- (a) Name the main type of ecosystem found in Scotland after Britain was cut off from mainland Europe.

1

- (b) What is meant by archeological evidence?

1

5. (continued)*Marks*

- (c) Describe the effect of **one** natural factor that resulted in changes to the Scottish vegetation.

_____ **1**

- (d) Suggest **two** uses of wood cut down in Roman times.

_____ and _____ **1**

- (e) Give **three** other human activities which have reduced the size of the forest.

1 _____

2 _____

3 _____ **2**

- (f) Suggest **two** conservation measures which can protect the remaining Scottish pine forest.

1 _____

2 _____ **2**

- (g) What is the word used to describe a plant species like the Scots Pine which has been found in Scotland since the last Ice Age?

_____ **1**

- (h) Climate change once again is affecting Scottish wildlife.

- (i) Name **one** greenhouse gas linked to climate change.

_____ **1**

- (ii) Suggest **two** ways in which climate change can affect Scottish ecosystems.

1 _____

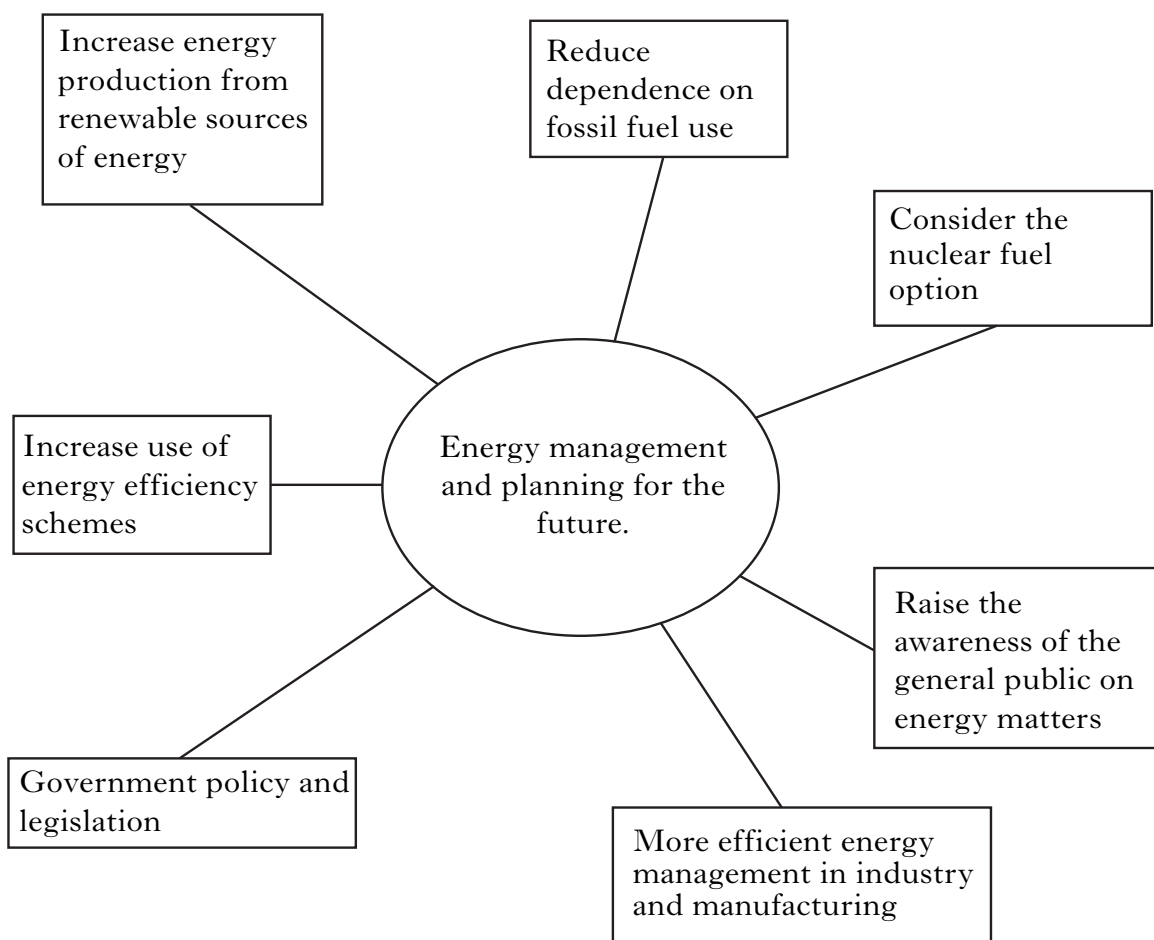
2 _____ **2**

- (iii) Name **one** species affected by climate change.

_____ **1**

Marks

6. (a) The diagram below shows some of the issues linked to energy management and planning for the future.



- (i) Give **one** advantage of using renewable sources of energy.
- _____ 1
- (ii) Give **one** disadvantage of using wind as a source of renewable energy.
- _____ 1
- (iii) Name **two** fossil fuels.
- _____ and _____ 1
- (iv) Give **one** disadvantage of using more uranium as a source of energy in the future.
- _____ 1

*Marks***6. (a) (continued)**

- (v) Suggest **two** ways in which awareness of energy matters could be raised with the general public.

1 _____

2 _____

1

- (vi) Give **two** ways in which industry and manufacturing reduce the environmental impacts made by their large energy demands.

1 _____

2 _____

2

- (vii) Government policies set targets for raising energy production levels from renewable sources and for extending the use of nuclear power. Suggest **one** way in which government policy is influenced by public opinion.

1

- (viii) Give **two** ways in which you could personally contribute to saving energy.

1 _____

2 _____

1

- (b) Draw a line to match each country to its main energy source.

Country**Energy source**

Sweden

Geothermal

Nepal

Nuclear fuel

Iceland

Biomass - wood

France

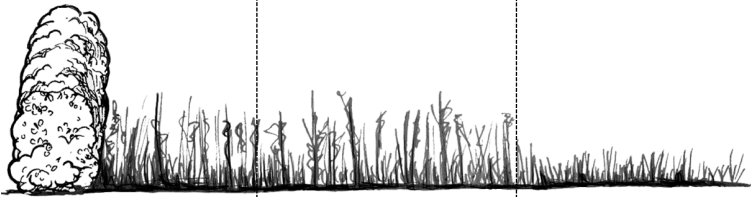
Biomass - dung

2**[Turn over**

7. (a) Students used pitfall traps as part of an investigation into biodiversity of soil organisms. The traps were set up at the margins of a field of improved grassland.

The moisture, pH and temperature of the soil were also measured.

The results of the investigation are shown in the table below.

	<i>Hedge with leaf litter</i>	<i>Buffer zone</i>	<i>Improved grassland</i>
			
Average number of species found	12	10	6
Average soil moisture content	5	6	4
Average soil pH	6.5	6.5	7.0
Average soil temperature	11°C	11°C	11°C

Soil moisture scale 1 = low 7 = high

- (i) Name **two** habitats shown in the diagram.

_____ and _____ **1**

- (ii) Calculate the percentage decrease in the average number of species found in the improved grassland area compared to the hedge.

Space for calculation

_____ % **1**

- (iii) Name a piece of equipment used to measure soil moisture.

_____ **1**

*Marks***7. (a) (continued)**

(iv) Describe how a pitfall trap is set up. You may use a diagram.

2

(v) How were the results of this survey made more reliable?

1

(vi) Name **one** type of organism that breaks down the dead and decaying leaf litter.

1

(vii) The students concluded that biodiversity of soil organisms was greatest in the area beneath the hedge but this was not related to any of the abiotic factors measured. From the results, explain why the students made this conclusion.

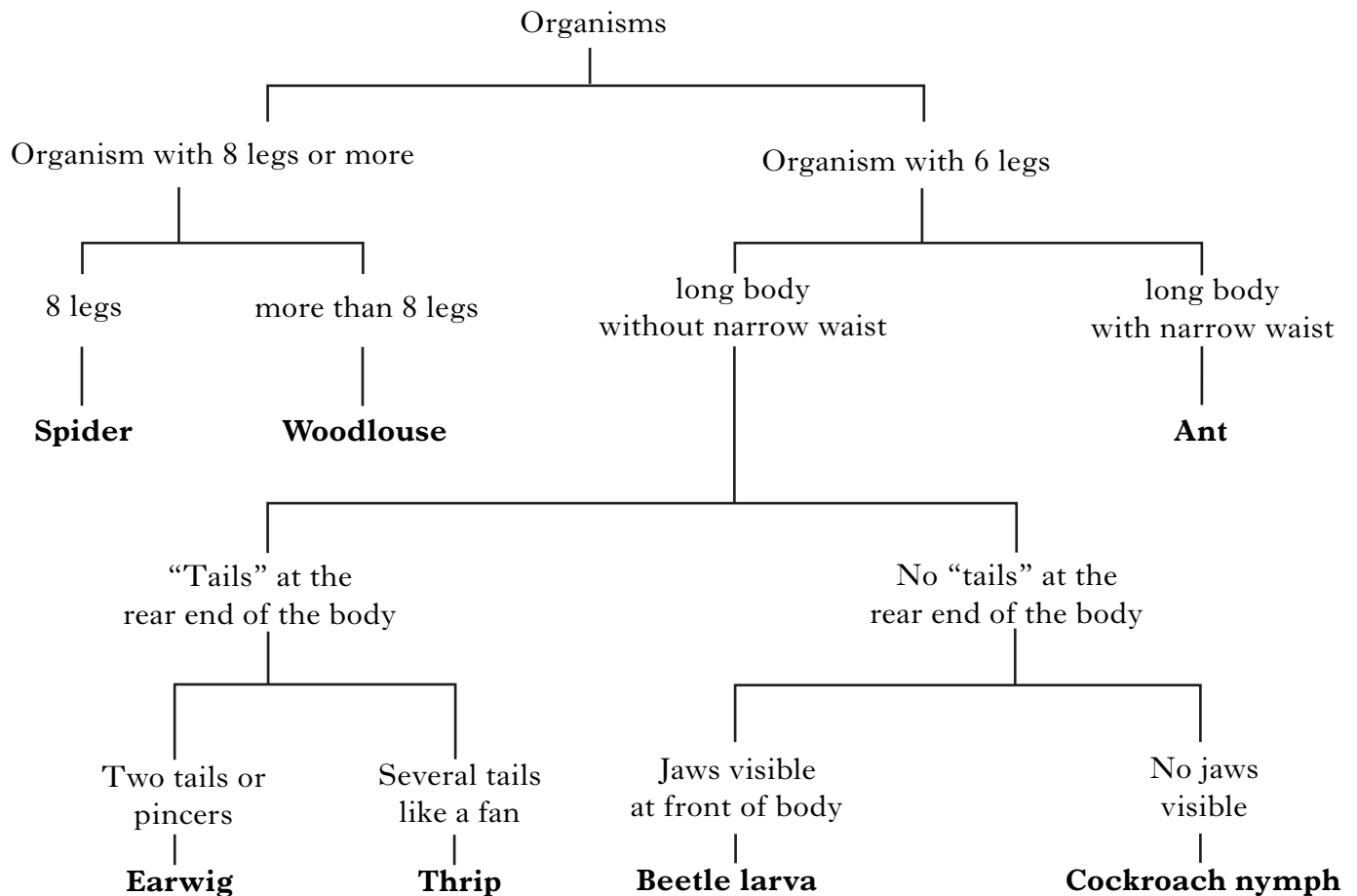
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(b) A buffer zone is an uncultivated strip of land. Explain why farmers are encouraged to leave buffer zones around their fields.

1

7. (continued)

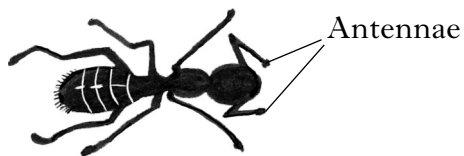
- (c) The students constructed the following simple key to help identify some of the common organisms found in the pitfall traps.

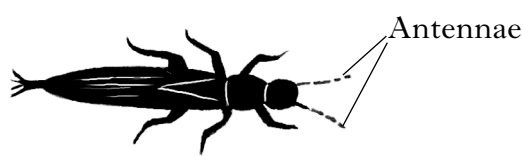


Marks

7. (c) (continued)

- (i) Use the key to name the organisms shown in the diagram below.





1

- (ii) Give **one** similarity and **one** difference between an earwig and a beetle larva.

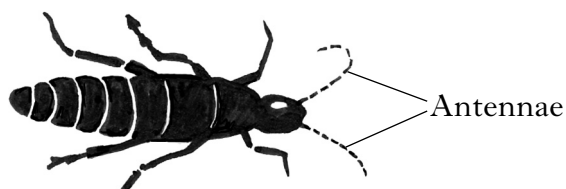
Similarity _____

1

Difference _____

1

- (iii) The rove beetle, commonly found in pitfall traps, is shown below.
Explain why this organism cannot be identified specifically from this key.



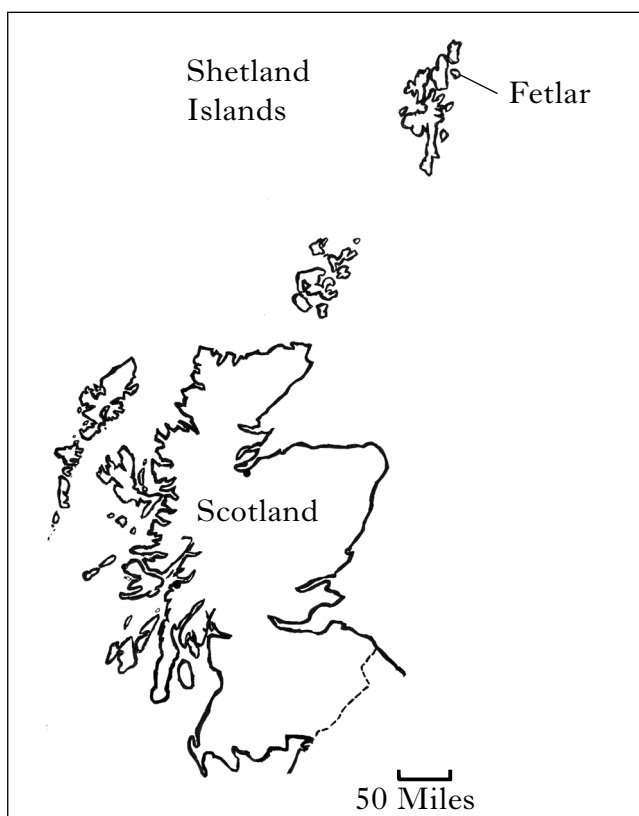
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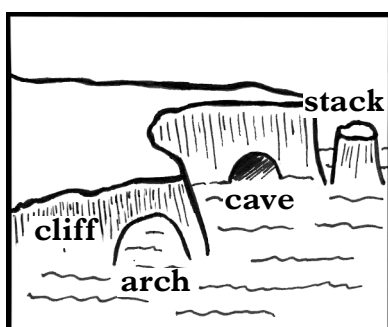
Marks

8. Use the map extract of Fetlar, one of the Shetland Islands lying north of the Scottish mainland – Extract No 1661/1 (**separate item**).

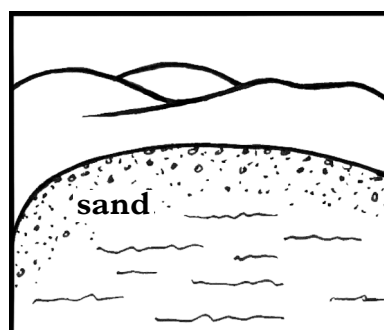
The location of Fetlar is shown below.



- (a) Use the map extract to circle the correct grid reference which shows the natural landscape features in the sketches below.



GR 6489 or 6194

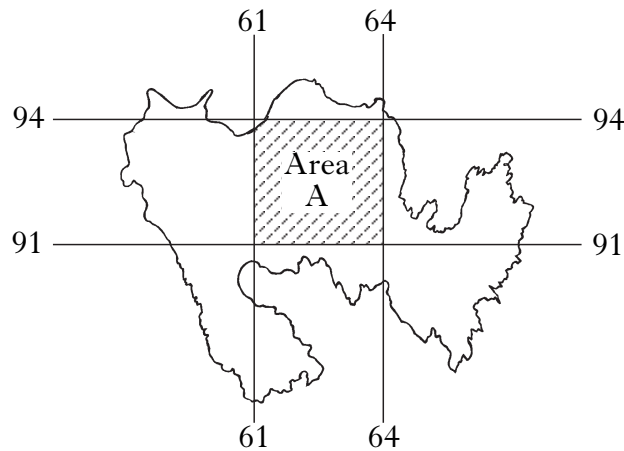


GR 6689 or 6090

1

8. (continued)*Marks*

(b) The diagram below shows Area A on the map extract.

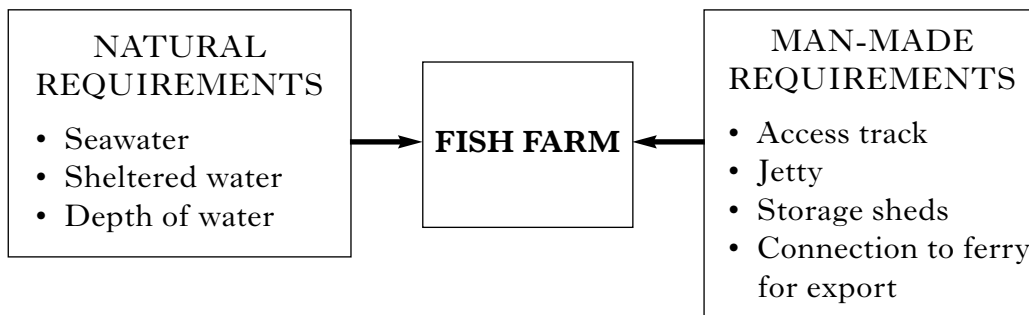


Use Area A on the map extract to complete the table below.

<i>Type of feature</i>	<i>Example</i>	<i>Grid Reference</i>
Topographical		6293
Freshwater	Loch	
Historical		613927
Settlement	School	
Transport		6191

3

(c) There is a proposal to develop a new fish farm.
The requirements of a fish farm are shown below.



(i) Two potential sites have been identified at GR 6289/6290 **or** GR 5794/5795.

Choose **one** of the sites and give a reason for your choice.

Site _____

Reason _____

1

8. (c) (continued)*Marks*

- (ii) Give **two** ways in which this new development would contribute to the local economy.

1 _____

2 _____

2

- (iii) Give **one** possible negative effect of this new development to the:

environment; _____

1

local community. _____

1

- (d) Tourists are attracted to Fetlar for its scenery, geology, wild life and tranquillity.

- (i) Using the map extract, name **three** tourist facilities on Fetlar.

1 _____

2 _____

3 _____

2

- (ii) Give **two** reasons that may limit expansion of the tourist industry on the island.

1 _____

2 _____

2

- (e) There is no forestry on Fetlar. Name **one** abiotic factor which is responsible for this.

1

Marks

8. (continued)

- (f) The planned refurbishment of Houbie Pier (GR 624904) will benefit local boatmen, anglers and conservationists. This is an example of multi-use integration by user groups.

Describe a successful example of multi-use integration in your area.

2

[Turn over

*Marks***SECTION 2****Answer only ONE question—Option A or B or C.****Write your answers on the pages which follow.****Option A**

Describe the possible environmental effects of generating electricity using:

- (a) coal;
- (b) uranium.

5**5****(10)****OR****Option B**

Describe:

- (a) the possible causes of fresh water pollution;
- (b) the role of indicator species in detecting water pollution.

5**5****(10)****OR****Option C**

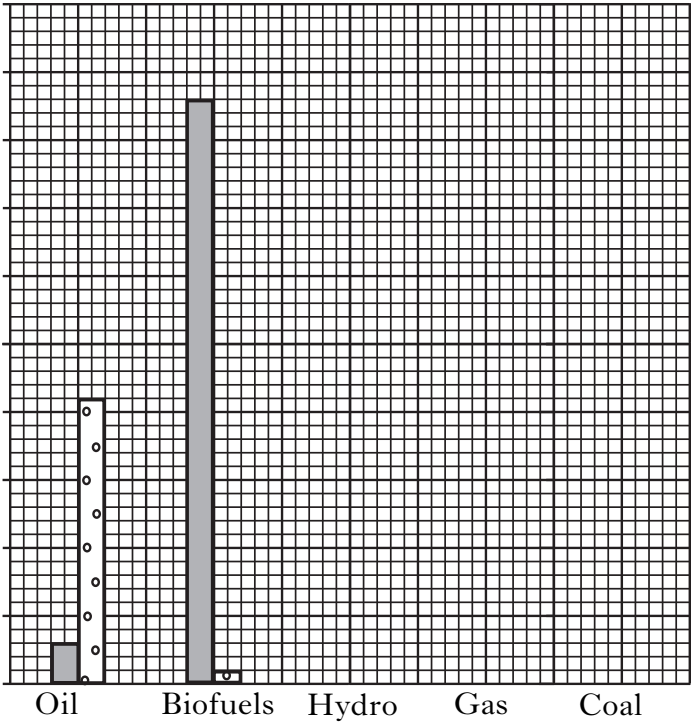
- (a) Describe how you would investigate the flora (plants) of your area.
- (b) Plant species can be categorised as cultivated, wild, native, naturalised or weed. Categorise your local **animal** species giving one named example in each category.

5**5****(10)***[END OF QUESTION PAPER]*

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ADDITIONAL BAR GRAPH FOR QUESTION 3 (a)(i)



Key

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