

New  
Specification



Rewarding Learning

ADVANCED

General Certificate of Education

2018

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

# Environmental Technology

Unit A2 1  
Building and Managing a  
Sustainable Future



AET11

[AET11]

FRIDAY 8 JUNE, MORNING

## TIME

2 hours.

## INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Answer **all** questions.

## INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Questions **6(b)**, **7** and **9**.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
<b>Total Marks</b>	



**BLANK PAGE**

**(Questions continue overleaf)**

2 Table 1 below shows data for two metals, copper and aluminium.

Table 1

Material	Embodied energy (MJ/kg)
Copper obtained from ore	57.0
Copper obtained by recycling of scrap metal	16.5
Aluminium obtained from ore	218.0
Aluminium obtained by recycling of scrap metal	29.0

(a) (i) Explain what is meant by the term **embodied energy**.

---

---

---

[2]

(ii) Using data from the table above, compare the embodied energy of copper and aluminium and the two production methods shown.

---

---

---

---

[2]

Examiner Only	
Marks	Remark

(b) Discuss **one** advantage and **one** disadvantage of waste incineration.

Advantage:

---

---

---

---

[2]

Disadvantage:

---

---

---

---

[2]

Examiner Only	
Marks	Remark



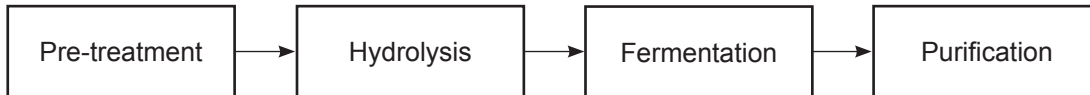


4 (a) List **two** different strategies used by policy makers to reduce transport demand.

1. \_\_\_\_\_ [1]

2. \_\_\_\_\_ [1]

(b) Some vehicles are being developed that use bioethanol as a fuel, either pure or mixed with petrol. The diagram below outlines the key steps involved in the production of bioethanol.



Examiner Only	
Marks	Remark





**BLANK PAGE**

**(Questions continue overleaf)**

6 (a) Wave and tidal energy have the potential to make a significant contribution to future energy needs in the British Isles. However, there can be environmental impacts associated with obtaining this energy. Outline **two** environmental impacts which can occur when wave or tidal energy devices are installed at a particular marine location.

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_ [2]

(b) Fig. 2 below shows a type of wave energy convertor. With reference to Fig. 2 name the type of wave energy convertor shown and describe the processes involved in its operation.

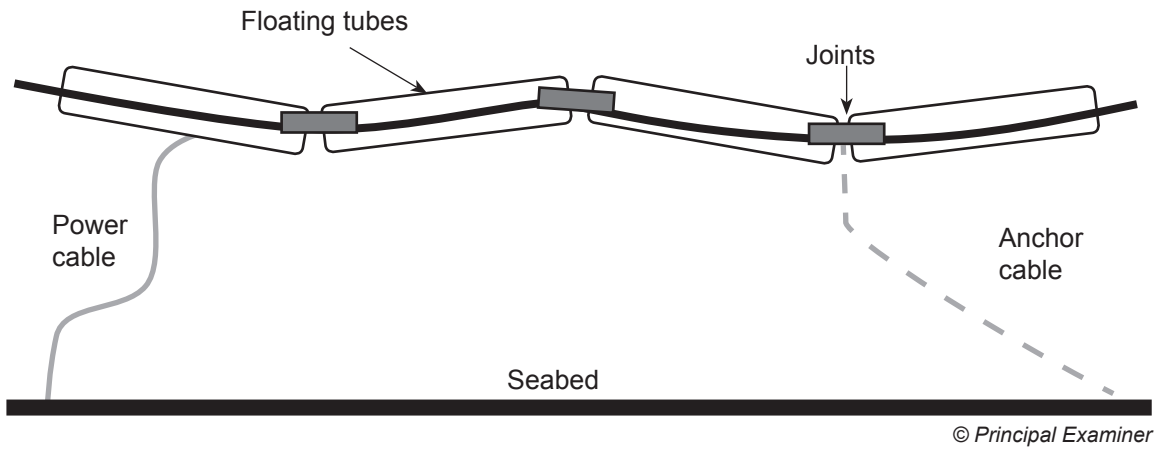


Fig. 2

© Principal Examiner

Examiner Only	
Marks	Remark





With reference to **Fig. 3** describe the three phases of the carbon capture and storage process.

Phase 1

---

---

---

---

Phase 2

---

---

---

---

Phase 3

---

---

---

---

[6]

Examiner Only	
Marks	Remark

















Permission to reproduce all copyright material has been applied for.  
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA  
will be happy to rectify any omissions of acknowledgement in future if notified.