



Rewarding Learning

ADVANCED

General Certificate of Education

Centre Number

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Candidate Number

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Environmental Technology

Unit A2 1
Building and Managing a
Sustainable Future



AET11

[AET11] Assessment

TIME

2 hours.

Assessment Level of Control:

Tick the relevant box (✓)

| | |
|-----------------------|--|
| Controlled Conditions | |
| Other | |

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.

Complete in black ink only. **Do not write with a gel pen.**

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 **3(c)**, **7** and **9**.

| For Examiner's use only | |
|-------------------------|-------|
| Question Number | Marks |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |

| | |
|--------------------|--|
| Total Marks | |
|--------------------|--|

(c) Discuss **two** ways in which **T**, Technology, can be used to decrease the environmental impact.

1. _____

_____ [2]

2. _____

_____ [2]

(d) Discuss the concept of One Planet Living (OPL), making specific reference to water.

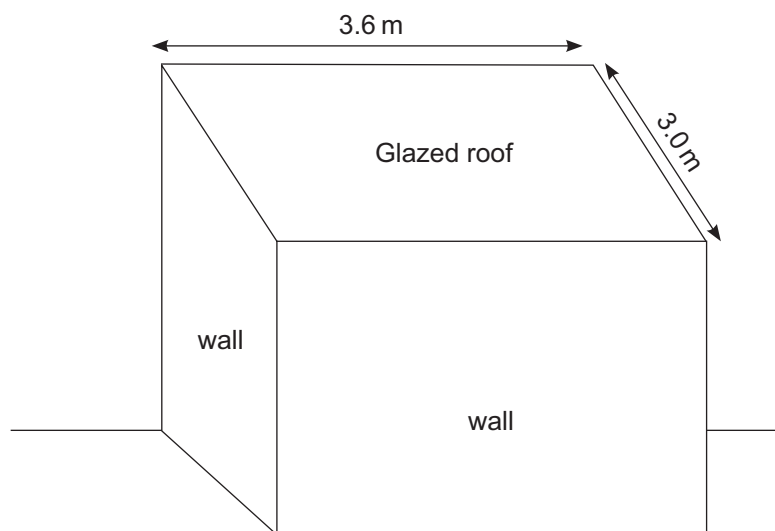
_____ [2]

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
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(Questions continue overleaf)

- 3 (a) Fig. 1 shows a sketch of a conservatory which is attached to the rear wall of a typical house.



Source: © Principal Examiner

Fig. 1

In Fig. 1 the glazed roof of the conservatory has a rate of heat loss of 604.8 W when the temperature inside is 18°C and the temperature outside is -2°C.

- (i) Calculate the U value of the glazed roof.
Show your working out in the space below.

U value of glazed roof = _____ Wm⁻²K⁻¹ [4]

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |

- (ii) Calculate the new rate of heat loss through the conservatory roof if the temperature outside increases to 8°C . You should assume that all other variables remain constant.
Show your working out in the space below.

Rate of heat loss if outside temperature is 8°C _____ W [2]

- (b) The Code for Sustainable Homes (CSH) is an environmental assessment method for rating and certifying the performance of new homes. It measures the assessment score across nine categories of environmental impact. Identify **two** of these categories.

1. _____

2. _____

_____ [2]

Examiner Only

Marks Remark

5 Composting is a way of breaking down organic materials. It can take weeks or months depending on the conditions. The compost is ready to use when it is crumbly in appearance and has a slightly earthy smell.

(a) Identify **two** types of waste that are suitable for composting.

1. _____
 _____ [1]

2. _____
 _____ [1]

(b) Explain why catering waste is unsuitable for composting.

 _____ [2]

(c) Anaerobic digestion consists of five stages. Name each stage and name **one** specific chemical product formed at each stage.

| Name of stage | Name of one product |
|----------------------------|--------------------------------|
| 1. Mechanical pretreatment | <i>No answer required here</i> |
| 2. | |
| 3. | |
| 4. | <i>No answer required here</i> |
| 5. | |

[7]

Examiner Only

Marks Remark

7 Copenhagen, pictured in **Fig. 2**, is an example of a city that embodies the main characteristics of sustainable urban development. Copenhagen focused on strategies involving sustainable energy use, sustainable transport and sustainable waste and water management.

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |



Source: © Getty Images

Fig. 2

Discuss the main characteristics of sustainable urban developments. Your discussion should focus on the following:

- Energy
- Transport
- Waste and water management

The quality of written communication will be assessed in your answer.

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(Questions continue overleaf)

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