

Candidate Name	Centre Number	Candidate Number

WELSH JOINT EDUCATION COMMITTEE  
 General Certificate of Education  
 Advanced Subsidiary/Advanced



CYD-BWYLLGOR ADDYSG CYMRU  
 Tystysgrif Addysg Gyffredinol  
 Uwch Gyfrannol/Uwch

443/01

**GEOGRAPHY – UNIT GG3 a**

**INVESTIGATIVE GEOGRAPHY**

**A. PHYSICAL GEOGRAPHY INVESTIGATION**

**B. HUMAN GEOGRAPHY INVESTIGATION**

P.M. THURSDAY, 18 January 2007

(1½ hours)

<b>For Examiner's use only</b>	
<b>Section A</b>	
<b>Section B</b>	
<b>Total</b>	

**ADDITIONAL MATERIALS**

In addition to this examination paper, you will need a calculator and drawing instruments.

**INSTRUCTIONS TO CANDIDATES**

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions in the spaces provided.

**Your answers should be confined to the lined spaces provided. The lined sheets at the back of the book may only be used if you have made substantial deletions in your answers.**

**INFORMATION FOR CANDIDATES**

You are reminded that marking will take into account the quality of communication used in your answers.

The number of marks is given in brackets at the end of each question or part-question.

No certificate will be awarded to a candidate detected in any unfair practice during the examination.

**SECTION A. PHYSICAL GEOGRAPHY INVESTIGATION**

**A field study of soil profiles**

A group of students wanted to compare the soil moisture content of two soil profiles. They chose to dig one soil pit within a woodland and one in a nearby grassland. There was a period of rain on the day before the fieldwork was done.

1. (a) Give **two** reasons, apart from safety considerations, why the students needed to show great care when digging the two soil pits. [2]

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- (b) Suggest why the students should take photographs or draw field sketches of each pit and its surrounding area. [2]

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- (c) What should always be done to a soil pit once all the fieldwork at the site has been completed? [1]

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2. In order to measure the soil moisture content, the students took soil samples from the same depths within each pit. The samples were put into polythene bags and carefully labelled.

(a) Suggest why the students took their samples back to a laboratory for analysis as soon as possible. [2]

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(b) Describe **two** appropriate sampling methods they could have used when deciding on the depths for their soil samples. [2]

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3. After weighing the samples before and after drying, values for the soil moisture content were obtained for each soil pit.

**Table 1**, below, shows this data.

Depth of soil sample (cms) from surface	Soil Pit A (within woodland) All weights in grams			Soil Pit B (in grassland) All weights in grams		
	Weight of wet sample (grams)	Weight of dry sample (grams)	% soil moisture content	Weight of wet sample (grams)	Weight of dry sample (grams)	% soil moisture content
10	57	52.3	8.2	51	42.7	
20	45	41.5	7.8	47	38.9	17.2
30	53	49.2	7.2	54	45.5	15.7
40	41	38.2	6.8	51	44.6	12.5
50	56	52.5	6.2	59	52.2	11.5
60	44	41.4	5.9	54	48.8	9.6
70	43	40.7	5.3	46	42.3	8.0
80	55	52.2	5.1	48	45.1	6.0
90	43	40.9	4.9	52	49.2	5.4
100	50	48.5	3.0	41	39.2	4.4

**Table 1**

The equation for calculating Soil Moisture Content is:

$$\frac{\text{weight loss due to drying}}{\text{weight of wet soil}} \times 100 = \text{\% water (by weight) contained in the soil}$$

- (a) Using the equation above, calculate the soil moisture content for the soil sample taken from 10cms depth in **Soil Pit B**. Show your workings. Put your answer in **Table 1**. [1]

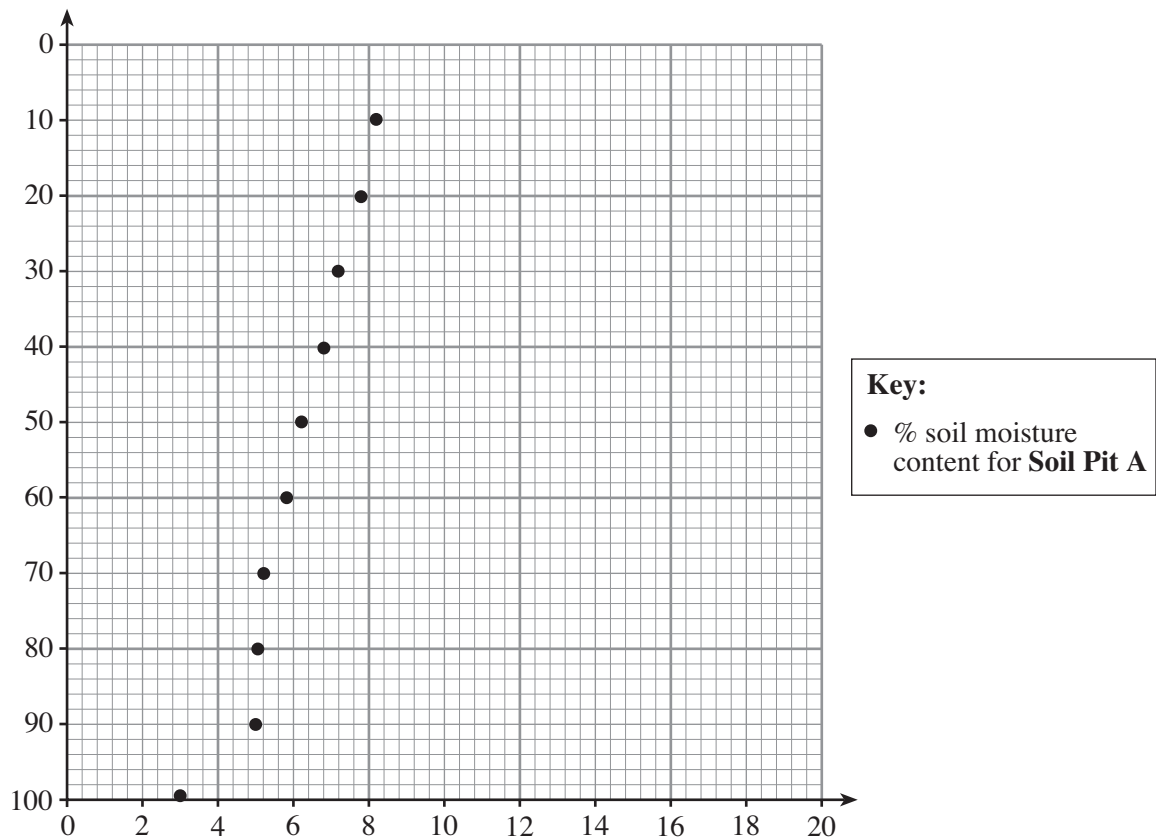
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- (b) (i) **Graph 1** below shows the completed plots for soil moisture content for **Soil Pit A**, located within the woodland. The two axes have not been labelled but the scale of each one is indicated.
- (ii) Complete the plot for the soil moisture content for **Soil Pit B**, within the grassland. Label **each** axis. [3]

**The relationship between soil moisture content and depth of soil sample.**



**Graph 1**





**SECTION B. HUMAN GEOGRAPHY INVESTIGATION**

**A study of land-use change at the urban – rural fringe**

A student decided that she wanted to study land use changes since 1955 in part of the urban-rural fringe of her home city. This city had a population of about 300,000 in 2006. Her investigation was based on an analysis of sample areas of two maps and then a visit to the areas in 2006.

- 1. Suggest why it would have been difficult for her to investigate the whole of the urban-rural fringe of her home city. [2]

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- 2. She obtained 1:25,000 Ordnance Survey maps for this part of the city for 1955 and 1995. **Map 1** shows the area in 1955 and **Map 2** shows the same area in 1995. These are shown on **page 9**. The city centre is 3 km to the north-west of the area shown on the maps. By studying the two Ordnance Survey maps, the student was able to see that many major changes had occurred over the 40 years.

- (a) Give **two** reasons why 1:25,000 scale maps would be more helpful in this study than 1:50,000. [2]

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- 2. ....
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- (b) Apart from Ordnance Survey maps, suggest **two** other secondary sources that could have helped the student with this study. [2]

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- 2. ....
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- (c) For **one** of the secondary sources named in (b) above, explain why it would have been of help. [2]

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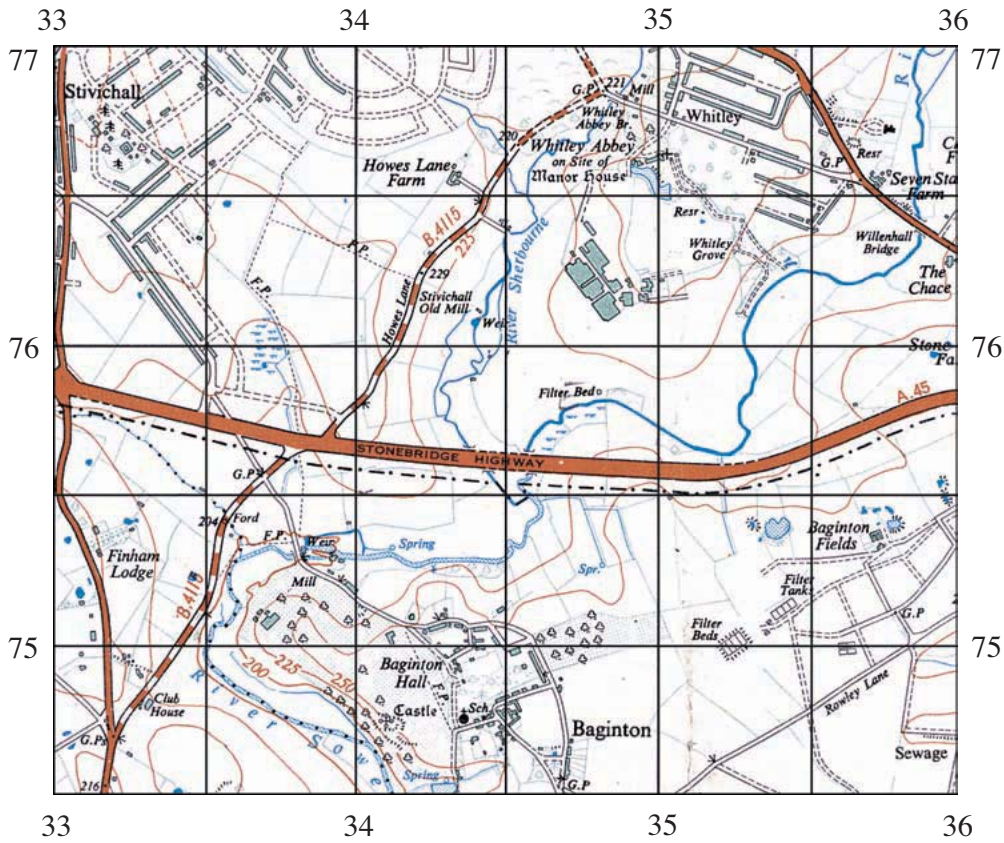
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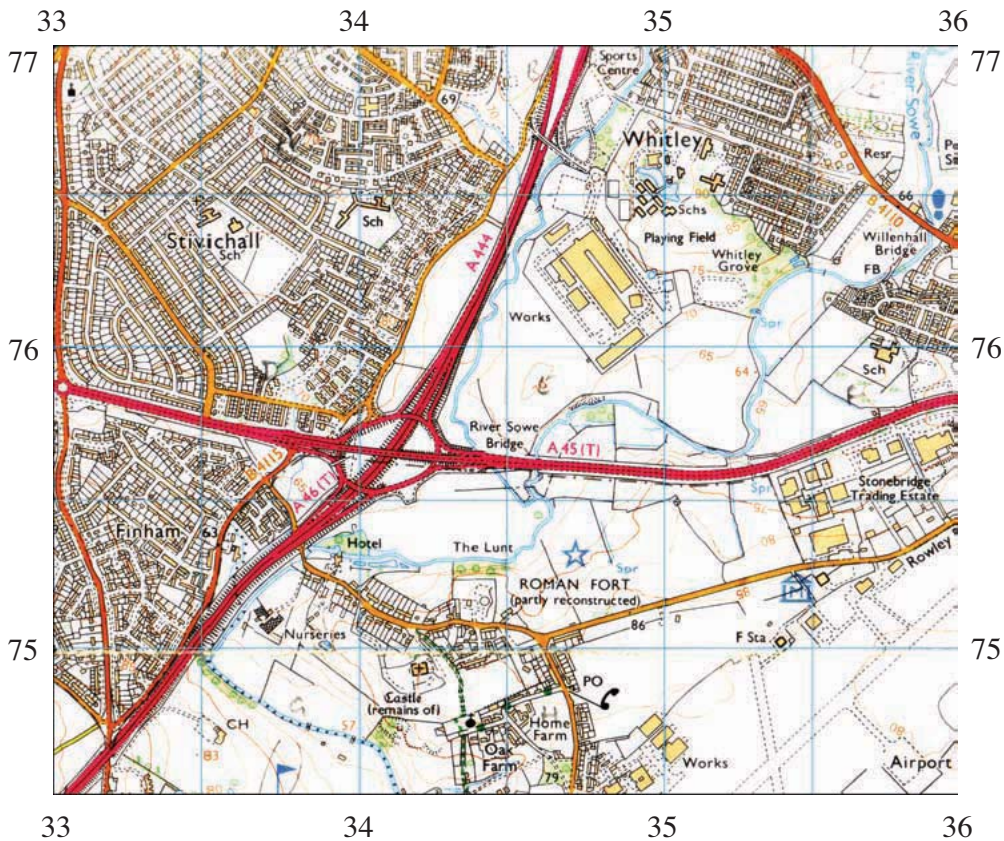


Part of the urban-rural fringe in 1955



Map 1

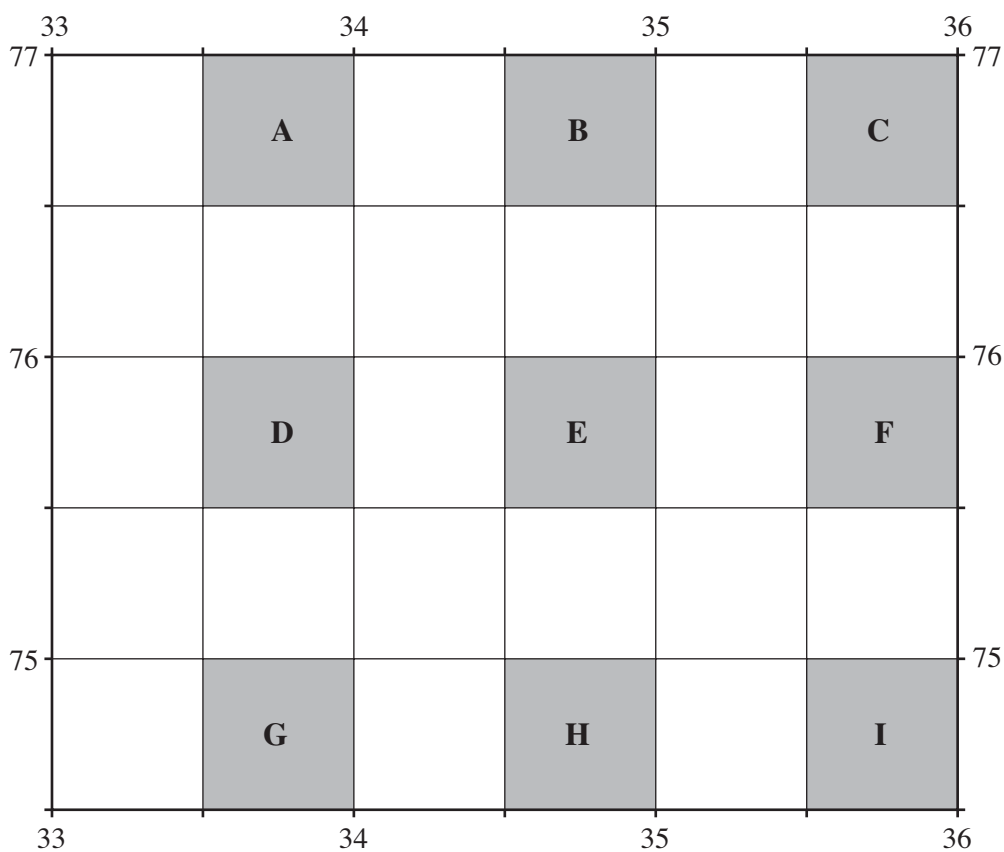
Part of the urban-rural fringe in 1995



Map 2

3. The student decided to use the maps to estimate the major changes in land use in the area between 1955 and 1995. However, she decided that she only had time to estimate these changes from the maps in a sample of nine grid squares. The nine squares that she chose are shaded within the grid, shown in **Diagram 1** below.

**The sample grid squares**



**Diagram 1**

Each of the nine sample grid squares has been labelled with a letter A to I.

**Table 1**, below, shows the percentages of different land uses for the nine grid squares, as estimated by the student from the 1955 map. **Figure 1**, below **Table 1**, has been completed using the same information.

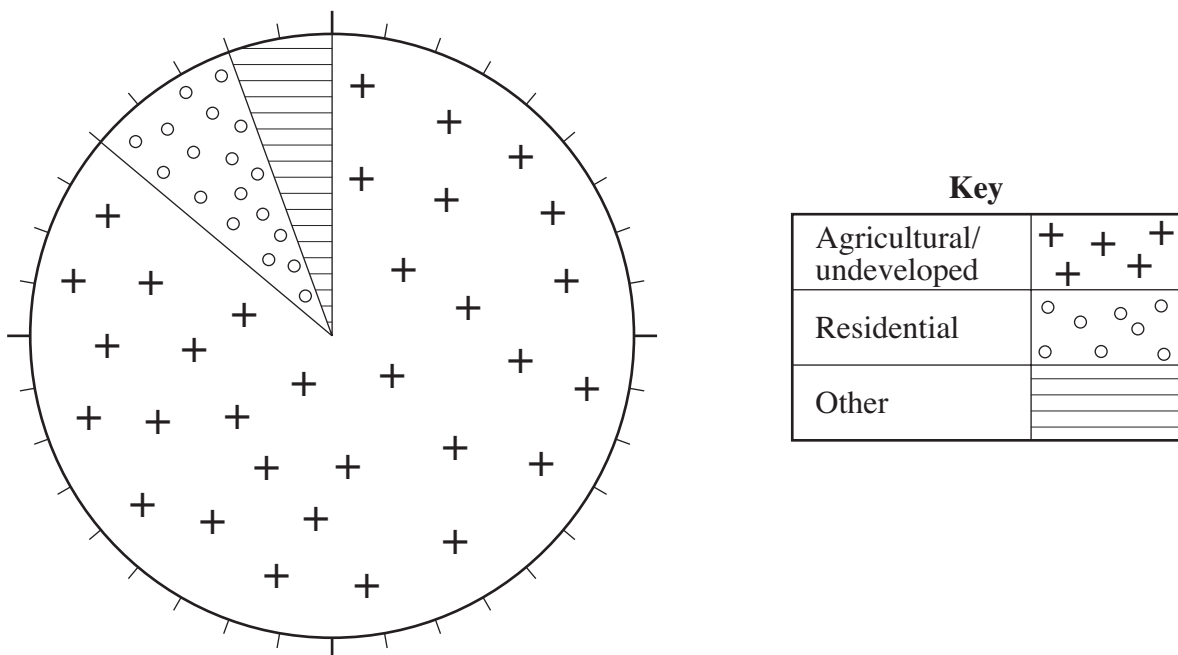
**Land Use Percentages, 1955**

Percentage Land Use Grid square	Agricultural/Undeveloped %	Residential %	Other %	Industrial %
A	50	50	0	0
B	90	5	5	0
C	90	10	0	0
D	80	0	20	0
E	90	0	10	0
F	90	0	10	0
G	100	0	0	0
H	80	15	5	0
I	100	0	0	0

Land-use percentages for 1955			
Agricultural/Underdeveloped	Residential	Other	Industrial
85.6	8.9	5.5	0

**Table 1**

**Urban-rural fringe land use 1955**



**Figure 1**

**Table 2**, below, shows the percentages of land uses for 1995.

- (a) Using a pie graph technique, complete **Figure 2** opposite to show the land-use percentages for the nine sample squares in 1995. Use the shading given in the key. To help you, the outline of the graph has been drawn, with each 10 degrees indicated.

Clearly show your calculations.

[4]

**Land Use Percentages, 1995**

Land Use Percentage Grid square	Agricultural/Undeveloped %	Residential %	Other %	Industrial %
A	0	100	0	0
B	45	10	45	0
C	65	20	15	0
D	10	50	40	0
E	85	0	10	5
F	35	5	10	50
G	100	0	0	0
H	55	25	0	20
I	0	0	100	0

Land-use percentages for 1995			
Agricultural/Underdeveloped	Residential	Other	Industrial
<b>43.9</b>	<b>23.3</b>	<b>24.5</b>	<b>8.3</b>

**Table 2**

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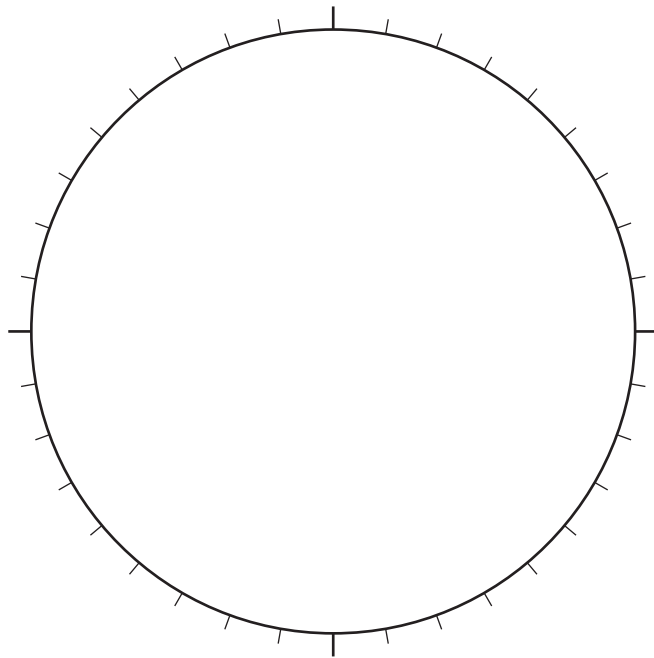
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**Urban-rural fringe land use 1995**



**Key**

Agricultural/ undeveloped	+ + + + +
Residential	o o o o o o o
Other	_____ _____ _____
Industrial	_____

**Figure 2**

(b) Using **Figures 1 and 2, Tables 1 and 2, and Maps 1 and 2**, describe the main changes in land-use between 1955 and 1995. [4]

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