AQA

AS
GEOGRAPHY
Unit 2 Geographical Skills

Friday 20 May 2016   Afternoon   Time allowed: 1 hour

Materials
For this paper you must have:
The Ordnance Survey map extract (enclosed)
- a pencil
- a rubber
- a ruler
- a protractor
- compasses.
You may use a calculator.

Instructions
- Use black ink or black ball-point pen. Use pencil only for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 50.
- You will be marked on your ability to
  – use good English
  – organise information clearly
 – use specialist vocabulary where appropriate.

Advice
- Where appropriate, credit will be given for the use of diagrams to illustrate answers and where reference is made to your personal investigative work. You are advised to allocate your time carefully.

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

1 (a) **Figure 1**, on the insert, is a 1:50 000 Ordnance Survey map extract of Gunnislake, Cornwall.

Using map evidence, describe the physical characteristics of the River Tamar and its valley as the river flows from 400750 to 436710.

[5 marks]

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1 (b) **Figure 2** is a graph showing the daily discharge of the River Tamar at Gunnislake in 2011.

Figure 2
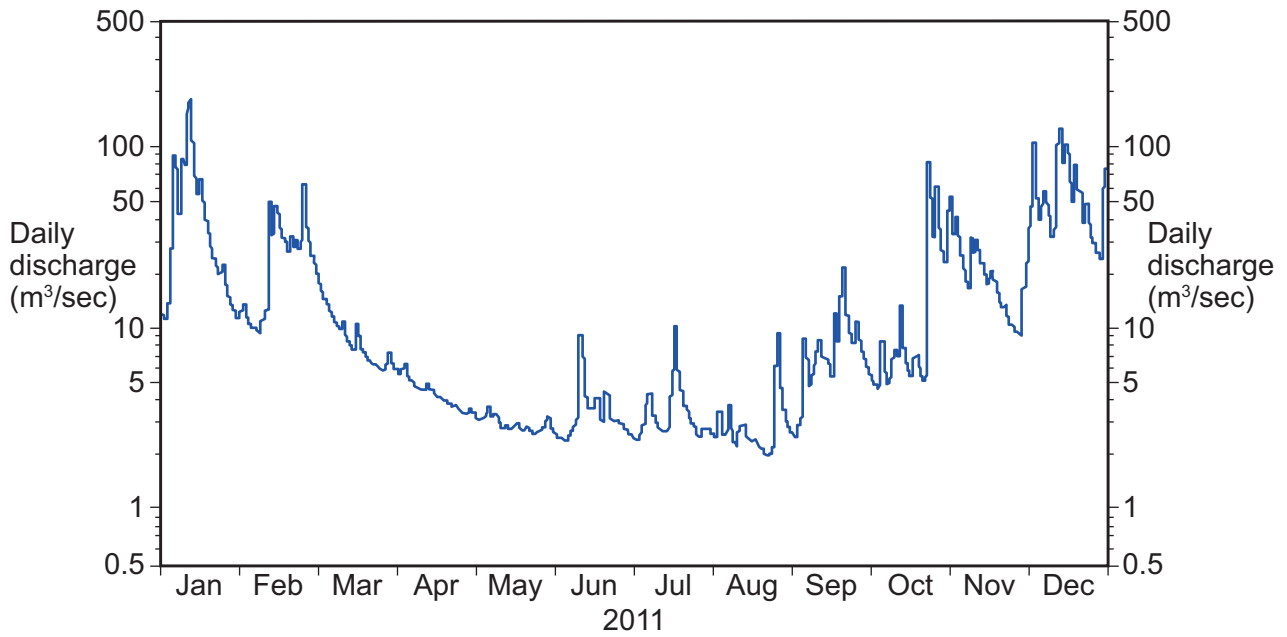
Using **Figure 2**, describe the pattern of discharge for the River Tamar in 2011.
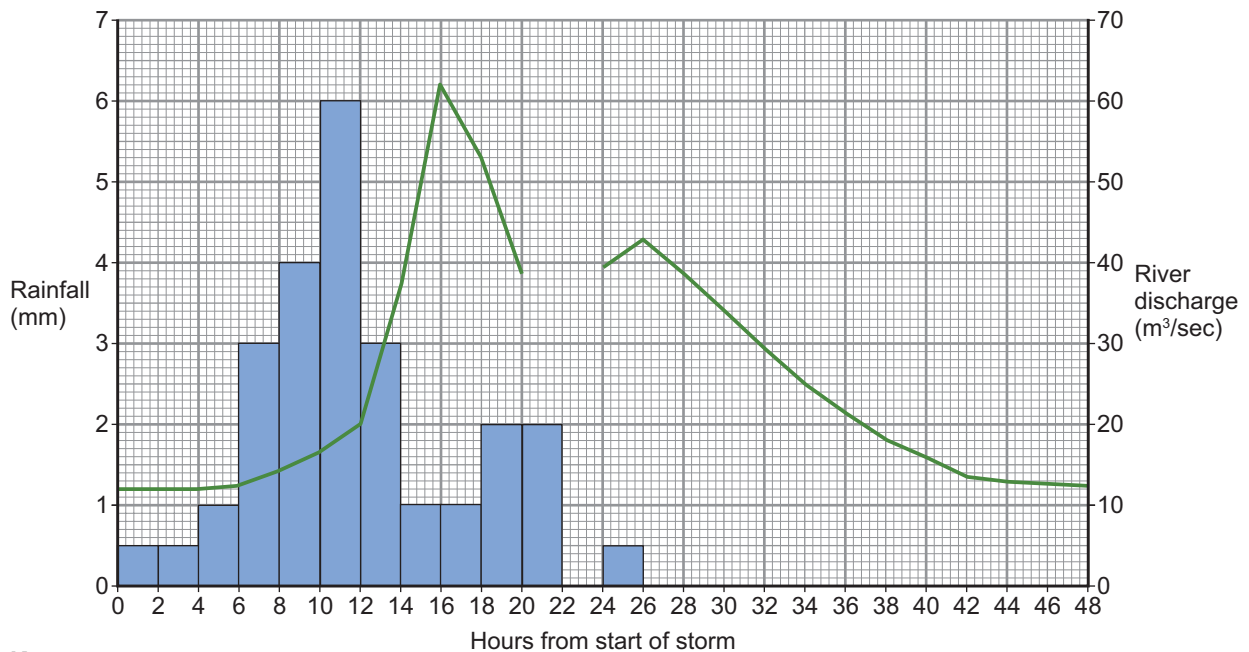
[4 marks]

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1 (c) **Figure 3** is a partly completed storm hydrograph for the River Tamar at Gunnislake in June 2012.

Figure 3

Key
▬ Rainfall (mm)
— River discharge (m³/sec)

1 (c) (i) Complete **Figure 3** by adding the following data.

Hours from start of storm	22–24	22
Rainfall (mm)	1.3	
River discharge (m³/sec)		34

[2 marks]

1 (c) (ii) **Figure 4** is a fact file about the River Tamar drainage basin.

Figure 4

The River Tamar Drainage Basin
• A mainly rural area with moderate to steep slopes.
• Annual rainfall ranges from approximately 1000 to 2000 mm. The England and Wales average is 900 mm.
• Underlying geology consists of impermeable rocks.
• Soils are generally poorly drained.
• Land use is predominantly farmland, with some forestry.
• The river has 8 major tributaries in its course of 78 km.

With the help of **Figure 4**, suggest reasons for the shape of the completed storm hydrograph in **Figure 3**.

[8 marks]

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1 (d) The relationship between hydraulic radius and river velocity is being investigated along part of the River Tamar.

The null hypothesis is: 'There is no relationship between hydraulic radius and river velocity.'

1 (d) (i) A Spearman's rank correlation test has been started in **Figure 5** below.
Rank order is descending with highest value ranked 1.

Complete **Figure 5** and, using the formula provided below, calculate the value of Rs to two decimal places.

[4 marks]

Figure 5

Hydraulic radius	Rank (R1)	Velocity (m/sec)	Rank (R2)	Difference (d) (R1 – R2)	d²
0.16	12	0.75	10	2	4
0.24	9	1.22			
0.43	8	1.18	8	0	0
0.21	10	0.56	12	–2	4
0.19	11	0.61	11	0	0
0.55	6	0.90			
0.63	5	1.39	6	–1	1
0.51	7	1.73	3	4	16
0.85	4	1.41	5	–1	1
1.23	1	1.86	2	–1	1
0.98	3	2.27	1	2	4
1.10	2	1.64	4	–2	4

$\sum d^2 = 48$

Correlation coefficient formula: $Rs = 1 - \dfrac{6\sum d^2}{n^3 - n}$

where Rs is the correlation coefficient and n is the number of paired data.

Complete the correlation coefficient calculation in the space below, showing your working.

1 (d) (ii) **Figure 6** shows critical values of the Spearman rank correlation coefficient.

Figure 6

Number of paired data in sample	0.05 level of significance	0.01 level of significance
12	0.497	0.703

Using the critical values provided in **Figure 6**, assess the statistical significance of your Rs calculation.
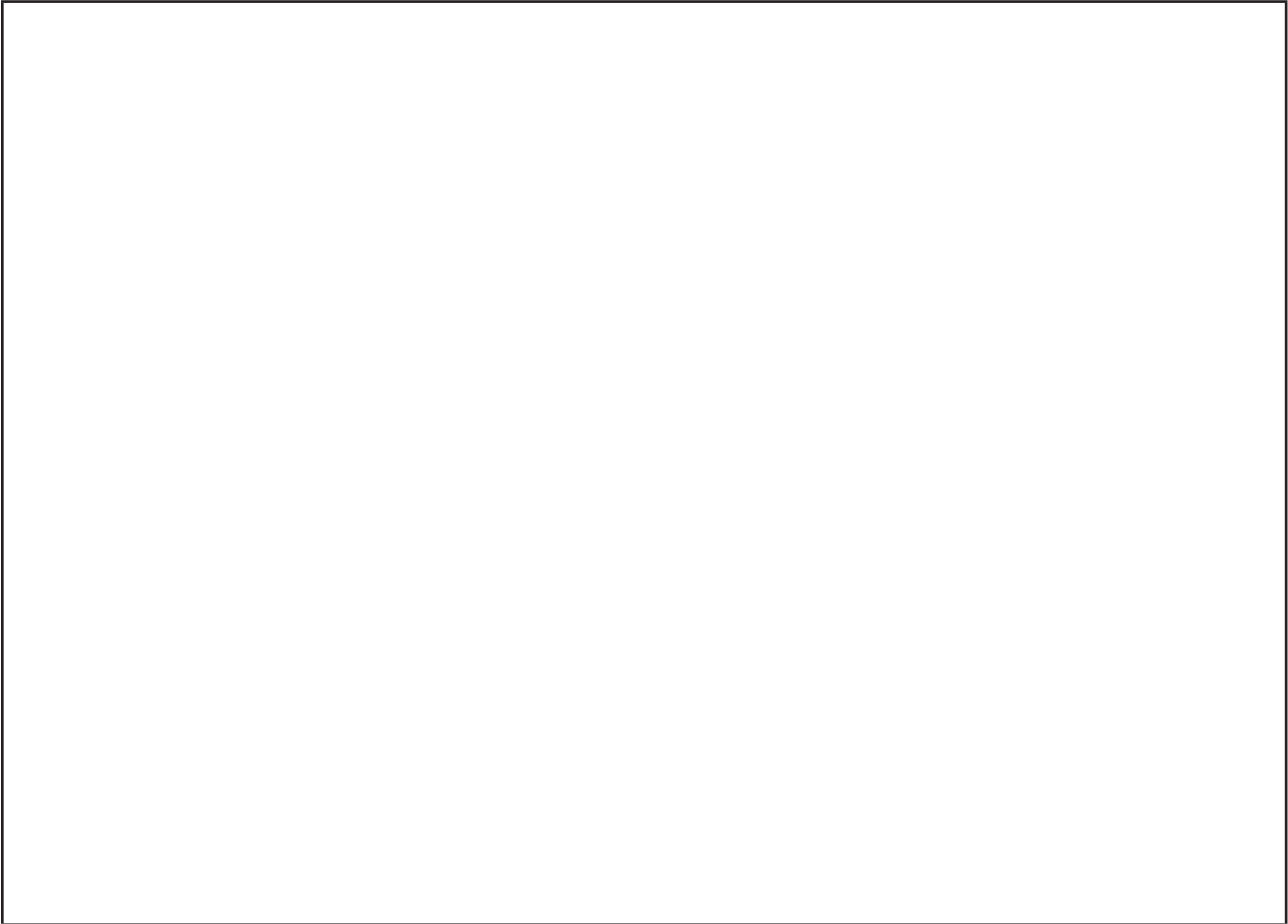
[2 marks]

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2 You have experienced geography fieldwork as part of the course. Use this experience to answer the following questions.

2 (a) The following list shows some of the possible elements of fieldwork planning:

- risk assessment
- pilot testing
- sampling design
- relevant geographical research.

Select any **two** of the elements listed above and describe their role within your fieldwork planning.

[6 marks]

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2 (b) Draw an annotated sketch map to show the location and main features of the study area for your investigation.

[5 marks]

2 (c) Outline the limitations of **one** method of data collection used in your fieldwork investigation.

[3 marks]

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2 **(d)**   Describe **one** technique of data presentation used in your fieldwork investigation.

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2 (e) To what extent did your fieldwork conclusions match the geographical theory, concept or idea on which your investigation was based.

[6 marks]

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END OF QUESTIONS

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