Published

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This document consists of **6** printed pages.

1 (a) A: Confluence
B: Watershed

[1 + 1 = 2]

(b) (i) <u>Examples</u>
Measure set/certain/specific/fixed distance / 5-15 m (<u>No need for equipment</u> (1)
Put/place/throw <u>float/example or type of float</u> at start of measured distance (1)
Start <u>stopwatch</u> when float is put in (1)
Measure time it takes to travel the measured distance / stop stopwatch or timer when float reaches end of measured distance (1)

[1 + 1 + 1 + 1 = 4]

(ii) <u>Examples</u>
Only measuring surface velocity / different velocities at different points (1)
Floats get stuck on vegetation / rocks / obstacles (1)
Strong wind may interfere with movement of float / float too light (1)
Only measuring once at each site /didn't repeat / may create anomaly (1)
Measurement will depend on where float is put into river (1)
Start/finish points not clear (1)
Student error <u>with reason</u> e.g. inaccurate timing (1)

[1 + 1 = 2]

(iii) <u>Width</u>: (1 + 1)
Measure from one bank to the other/across the river/ one student at each side (1)
Keep tape measure taut/horizontal/stretched (1)
Measure perpendicular/at right angles to banks (1)

<u>Depth (1 + 1)</u>
Measure vertically (1)
Equipment to touch river bed (1)
Measure at equal intervals (1)
Measure the wet part of equipment (1)   [2 x 1 + 1 = 4]

(iv) Completion of cross-section; credit each plot – no credit for shading
0.38 m at 5.5 m and 0.21 m at 6 m.

[1 + 1 = 2]

(v) <u>Examples: Answers must compare</u>
Cross section is wider at site 3/narrower at Site 1 **OR** accept Cross section is longer from left bank at Site 3/shorter from left bank at Site 1 (1)
Cross section is deeper at site 3 / shallower at Site 1 (1)
Cross section is more irregular/rougher at site 3 / smoother or more rounded at site 1 (1)
Cross section is larger at site 3 / smaller at site 1 (1)
Cross section has steeper sides at site 3 / gentler sides or slopes at Site 1 (1)

[1 + 1 = 2]

(vi) Average depth = 0.46m [1]

(vii) 6.5×0.46 (1) <u>Accept use of ▪ or * as multiplication symbols.</u>
= 2.99 m squared (1)

OR $6.5 \times$ answer to (vi) (1)
= correct calculation by <u>multiplication</u> (1)

<u>This last line avoids</u> *Error Carried Forward* (ECF) penalty [1 + 1 = 2]

(c) (i) Plot discharge at site 3 = 0.9 cumecs; no credit for shading; ignore if wrong width. [1]

(ii) Hypothesis is correct / true – 1 mark reserve (1)

<u>Examples of paired data from Fig 4 for 1 mark. Could choose any pair. No need for</u>
<u>Units. Must refer to Site numbers</u>

Site 1 is 0.13 but Site 4 is 2.34 (1)
Site 4 is 2.21 higher than Site 1 (1)

<u>For reference allow tolerance as they are referred to the graph not the table i.e.</u>
Site 1 = 0.1-0.14   Site 2 = 0.33-0.39   Site 3= 0.9 only   Site 4= 2.32 – 2.36

<u>If say Hypothesis is partly true or false CROSS HA = 0 and do not mark rest</u>
[1R + 1 = 2]

(iii) <u>Examples</u>
Streams/rivers/tributaries join (1)
Tributaries bring water from other areas of drainage basin (1)
Larger catchment area downstream (1)

[1 + 1 = 2]

(d) (i) Score at site 3 = 10 [1]

(ii) Hypothesis is <u>generally / to some extent / partly / mostly / somewhat true</u>
– 1 mark reserve<u>.</u>

Credit <u>figures</u> to show overall increase from site 1 to site 4.   (1 Reserve/max)
Credit <u>figures</u> to show anomaly at site 2 (1 Reserve/max)

<u>Example</u>: At sites 1 to 4 the pollution increases downstream from 5 to 17 (1)
However at Site 2 it falls to 3 from 5 at Site 1 (1)
[1R + 1 + 1 = 3]

(iii) <u>Examples</u>
Do survey at more sites along river (1)
Take more surveys from different students/pairs/groups/someone else at each site (1)
Work out average for different surveys/multiple times and take average (1)
Same student does all the surveys at all sites – consistency (1)
All surveys to take place at the same time (1)
[1 + 1 = 2]

[Total: 30 marks]

2 (a) (i) <u>Examples</u>
Many shops/services to plot (1)
Sections of pie chart would be very small/ many less than 1%/ unplottable/ many segments/some are zero (1)
Problem of shading / colouring different segments /key too long (1)
Pie charts would be too complicated to compare/hard to read/ confusing (1)
Difficult to create any sensible groups /not in categories or groups (1)
Take a long time to calculate size of slices / plot (1)
[1 + 1 = 2]

(ii) Hair & beauty salon = E
Jewellers = A [1 + 1 = 2]

(iii) Comparison [1]

(iv) <u>Pie chart completion must be clockwise in order of completed pies/key.</u>

Group D = 28% (plot must be at 68% clockwise by eye OR within 113-118 range of degrees from vertical using protractor tool – ideal is 115 degrees**)** (1)

Shading (including the correct diagonal) must match key. (1)

<u>Credit 1 for shading if the plot is wrong but the larger slice is correct diagonal and the smaller slice has small crosses</u> [1 + 1 = 2]

(v) Note: the candidates are told the hypothesis is true; no need for decision in response. Comparative statements to maximum of 2 marks and use of comparative data to maximum of 2 marks. Comparison can be given from perspective of any centre – example from suburban centre below. Statements must be linked to relevant stats for [1 + 1]

Group A/ (One type/more expensive) – Smaller percentage/less in suburban centre (1) with 8 compared to 21 and 20 (1)

Group B/ (Variety/cheaper) – Larger percentage/more in suburban centre (1) with 25 compared to 14 and 11 (1)

Group C/ (Food) – Larger percentage/more in suburban centre (1) with 16 compared to 4 and 5 (1)

Group D/ (Clothes) – Smaller percentage/less in suburban centre (1) with 16 compared to 28 and 33 (1)

Group E/ (Services) - All three are similar/suburban larger or more (1) with 35 compared to others at 32 (1) [2 × 1 + 1 = 4]

(vi) Examples

Different types of transport available (1)

Distances prepared to travel (1)

Demand/ need for different types of goods / services OR food or convenience shops close to residents (1)

Amount of population/likely customer base/threshold population (1)

Wealth/income/salaries/spending patterns of customer base (1)

Cost of running shop or service in each centre (1)

Amount of land available/space for building (1)

[1 + 1 = 2]

(b) (i) Mark 2 sections as whole i.e. credit **Plan** answers in **Carry out or** reverse

Plan:

When to do count / do at same time (1)

Where to do count / location of counting points (1)

How long to do each count for (1)

How many different counting points to have (1)

Individuals or pairs/groups (1)

How many times to do count per day (1)

Whether to do count on same day/more than one day / weekday/ weekend (1)

Carry out

Tally method / 'clicker' (1)

Timing of count / use a watch (1)

Jobs of student in each group e.g. two students do each count / count people going in different directions (1)

Record the data in a table/use recording sheet (1)

[1 + 1 + 1 +1 = 4]

(ii) 109 – 111 (110 is best answer) [1]

(iii) Candidates are told the hypothesis is partly true so no need for their own decision. Need one statement supporting decrease and 1 supporting increase plus 1 set of data. Answer within tolerance/range given below allowed as statistic mark as reading from graph only.

Evidence examples

Supports decrease: Decrease from CBD to suburban centre/3km (1reserve and max)) from 76 to 13-15 / down 61-63 (1)

Supports increase: Increase from suburban centre/3km to mall/10km (1 reserve and max) from 13-15 to 109-111 / up 94-98 (1)

OR Increase from CBD to mall/10km (1 reserve and max) from 76 to 109-111 / up 33-35 (1)

1 mark max/reserve for use of 1 pair of data; 2 reserve marks for two statements

[1R + 1R + 1R = 3]

(iv) Examples
Count done at different times of day (1)
Differences in weather encourage / discourage people to go shopping (1)   [1 + 1 = 2]

(v) Collected by other people / not collected by students themselves/ already collected/collected before/ second hand.

[1]

(vi) Examples
Same pattern of results as those of students' fieldwork (1)
Number in suburban centre lower and number at mall higher than CBD (1)   [1]

(c) (i) Area served by a settlement or service   [1]

(ii) Examples
Questionnaire/survey/interview/ask questions (1)
Sampling methodology to select people to complete questionnaire/ choosing areas to carry out survey (1)

Questions such as:
In which area do you live? / Which area have you come from? (1)
How far have you travelled? (1)
What method of transport have you used today? (1)
How frequently do you come here? (1)
Why do you come here? (1)

Credit other methods such as questionnaire in surrounding villages, mapping bus routes, mapping store delivery area, mapping desire/flow lines, mapping the sphere of influence.

[1 + 1 + 1 + 1 = 4]

[Total: 30 marks]