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| **Q** | **Scheme** | **Marks** | **AOs** | **Pearson Progression Step and Progress descriptor** |
| **1a** | Observation or measurement of every member of a population. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **1b** | Two from:* takes a long time/costly
* difficult to ensure whole population surveyed
* cannot be used if the measurement process destroys the item
* can be hard to manage and analyse all the data.
 | **B1****B1** | 1.21.2 | 3rdComment on the advantages and disadvantages of samples and censuses. |
|  | **(2)** |  |  |
| **1c** | The list of unique serial numbers. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **1d** | A circuit board. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **(5 marks)**  |
| **Notes** |

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| **Q** | **Scheme** | **Marks** | **AOs** | **Pearson Progression Step and Progress descriptor** |
| **2a** | A complete collection of relevant individual people or items. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **2b** | Opportunity (convenience). | **B1** | 1.2 | 3rdUnderstand quota and opportunity sampling. |
|  | **(1)** |  |  |
| **2c** | Systematic. | **B1** | 1.2 | 3rdUnderstand and carry out systematic sampling. |
|  | **(1)** |  |  |
| **2d** | Two from: * not random
* electoral register may have errors
* there may not be enough (500) households on the register.
 | **B1****B1** | 2.42.4 | 5thSelect and critique a sampling technique in a given context. |
|  | **(2)** |  |  |
| **2e** | **Either**: random sampling – it avoids bias.**Or**: quota sampling – no sampling frame required, continue until all quotas filled.  | **B1** | 2.4  | 5thSelect and critique a sampling technique in a given context. |
| **Either:** Random sampling from people buying kitchen cleaners in a large store, as this would reduce potential bias.**Or:** Quota sampling from people based on a chosen set of ages and genders who use kitchen cleaners, continuing until all quotas are filled, as this would avoid the need for a sampling frame and allow for a more clearly representative sample. | **B1** | 2.4 |
|  | **(2)** |  |  |
| **(7 marks)**  |
| **Notes** |

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| **Q** | **Scheme** | **Marks** | **AOs** | **Pearson Progression Step and Progress descriptor** |
| **3a** | One of: * to obtain a representative sample
* large number of students compared to staff so would be unfair to take same numbers of both.
 | **B1** | 2.4 | 5thSelect and critique a sampling technique in a given context. |
|  | **(1)** |  |  |
| **3b** | A list of the names of staff and students. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **3c** | A member of staff or a student. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **3d** | Find proportions for different strata out of 60 (either explained or some sensible calculation seen). | **M1** | 3.1b | 3rdUnderstand and carry out stratified sampling. |
|  students,  staff. | **A1** | 1.1b |
| Select at random using a random number generator. | **B1** | 1.1b |
|  | **(3)** |  |  |

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| **3e** | One of: * absence on the day of the survey
* sampling frame may contain errors.
 | **B1** | 2.2b | 5thSelect and critique a sampling technique in a given context. |
|  | **(1)** |  |  |
| **(7 marks)**  |
| **Notes****3d** Must be whole numbers for A1.  |

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| **Q** | **Scheme** | **Marks** | **AOs** | **Pearson Progression Step**  **and Progress descriptor** |
| **4a** | All readers of the online newspaper. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **4b** | A list of readers who subscribe to the extra content. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **4c** | The subscribers. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |

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| **4d** | Advantage: accuracy of the data, unbiased. | **B1** | 1.2 | 3rdComment on the advantages and disadvantages of samples and censuses. |
| Disadvantage: difficult to get a 100% response to a survey. | **B1** | 1.2 |
|  | **(2)** |  |  |
| **4e** | Natural variation in a small sample. | **B1** | 1.2 | 3rdComment on the advantages and disadvantages of samples and censuses. |
| Bias. | **B1** | 1.2 |
|  | **(2)** |  |  |
| **(7 marks)**  |
| **Notes** |

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| **Q** | **Scheme** | **Marks** | **AOs** | **Pearson Progression Step**  **and Progress descriptor** |
| **5a** | Quota. | **B1** | 1.2 | 3rdUnderstand quota and opportunity sampling. |
|  | **(1)** |  |  |
| **5b** | Advantages – two from: * easy to get sample size
* inexpensive
* fast
* can be stratified if required.
 | **B1****B1** | 2.42.4 | 5thSelect and critique a sampling technique in a given context. |
| Disadvantages – one from: * not random
* could be biased.
 | **B1** | 2.4 |
|  | **(3)** |  |  |
| **5c** | Allocate each of the males a number from 1 to 300 | **B1** | 3.1b | 3rdUnderstand and carry out simple random sampling. |
| Use calculator or number generator to generate 50 different random numbers from 1 to 300 inclusive. | **B1** | 1.1b |
| Select males corresponding to those numbers. | **B1** | 1.1b |
|  | **(3)** |  |  |
| **5d** | 300 ÷ 50 = 6 | **B1** | 3.1b | 3rdUnderstand and carry out simple random sampling. |
| Use a random number generator to select the first name (or one of the first 6 names on the list) as a starting point and then select every 6th name thereafter to get 50 names. | **B1** | 1.1b |
|  | **(2)** |  |  |
| **(9 marks)** |
| **Notes** |

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| **Q** | **Scheme** | **Marks** | **AOs** | **Pearson Progression Step and Progress descriptor** |
| **6a** | There are a very large number of bags. | **B1** | 2.4 | 3rdComment on the advantages and disadvantages of samples and censuses. |
| Bags are tested to destruction – there would be no bags left. | **B1** | 2.4 |
|  | **(2)** |  |  |
| **6b** | One value is less than 12 kg  | **B1** | 2.4 | 3rdComment on the advantages and disadvantages of samples and censuses. |
| therefore claim is not reliable. | **B1** | 2.3 |
|  | **(2)** |  |  |
| **6c** | Different samples can lead to different conclusions due to natural variations. | **B1** | 2.3 | 3rdComment on the advantages and disadvantages of samples and censuses. |
| Only a small sample taken so unreliable. | **B1** | 2.3 |
|  | **(2)** |  |  |
| **6d** | Larger sample. | **B1** | 2.4 | 3rdComment on the advantages and disadvantages of samples and censuses. |
|  | **(1)** |  |  |
| **(7 marks)** |
| **Notes** |

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| **Q** | **Scheme** | **Marks** | **AOs** | **Pearson Progression Step and Progress descriptor** |
| **7a** | (Quantitative) continuous. | **B1** | 1.2 | 1stUnderstand the difference between qualitative and quantitative data. |
|  | **(1)** |  |  |
| **7b** | A list of the first two digits of the date. | **B1** | 1.2 | 2ndUnderstand the vocabulary of sampling. |
|  | **(1)** |  |  |
| **7c** | Simple random sample | **B1** | 3.1b | 5thSelect and critique a sampling technique in a given context. |
| using a random number generator to select five dates. | **B1** | 1.1b |
|  | **(2)** |  |  |
| **7d** | Number ordered list of data. | **B1** | 3.1b | 3rdUnderstand and carry out systematic sampling. |
| Use random number generator is choose first selected piece of data. | **B1** | 3.1b |
| Then take every 6th value  | **B1** | 1.1b |
|  | **(3)** |  |  |
| **7e** | Some data may be missing or erroneous. | **B1** | 3.2b | 5thSelect and critique a sampling technique in a given context. |
|  | **(1)** |  |  |
| **(8 marks)** |
| **Notes** |