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| **Question** | **Scheme** | **Marks** | **AOs** |
| **1(a)** |  | M1 | 1.1a |
| = 9 **or** 9.166… awrt 9.17 | A1 | 1.1b |
|  | **(2)** |  |
| **(b)** | = | M1 | 1.1a |
| = **awrt 7.01** | A1 | 1.1b |
|  | **(2)** |  |
| **(c)** | or | M1 | 3.1b |
| Median =  (allow awrt 33.3 from “9.17” in (a)) | A1ft | 1.1b |
| Sd = (awrt 14.0) [allow awrt 14.3 if *s* used] | A1ft | 1.1b |
|  | **(3)** |  |
| **(d)** | The median time is  and “33” < 35 so 50% (30) should finish in 35 minutes.  ALT Probability of being < 35 mins is   applicants to choose from. | M1 | 2.4 |
| It is likely that they will fill all 25 positions [providing those offered accept] | A1 | 2.2b |
|  | **(2)** |  |
| **Notes: (9 marks)** | | | |
| 1. **M1:** For a suitable fraction ×5 (ignore end points)   **A1:** For 9 or awrt 9.17 if using *n* + 1 | | | |
| 1. **M1:** For a correct expression forand or   **A1:** For awrt or | | | |
| 1. **M1:** For realising  and then rearranging to get a correct equation with *t* as the subject   May be implied by a correct answer for the median of *t*.  **A1ft:** ft their median  **A1ft:** ft theiror . NB using *s* gives awrt14.3 | | | |
| 1. **M1:** For a suitable comparison following through their value for the median of *t*.   **A1:** A correct conclusion in contextfollowing through their value for the median of *t*. | | | |

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| **Question** | **Scheme** | **Marks** | **AOs** |
| **2(a)** |  | M1 | 1.1b |
| **= awrt 0.844** | A1 | 1.1b |
|  | **(2)** |  |
|  |  | M1  M1  A1  M1  M1  A1 |  |
|  |  | **(6)** |  |
| **(8 marks)** | | | |
| **Notes:** | | | |
| 1. **M 1:** For dealing withthey need to use the cumulative prob. Function on the calc.   **A1:** awrt 8.44 ( from calculator). | | | |
| 1. **B1:** Both hypotheses correct using *p* or  **and** 0.25   **M1:** Realising that the model B(40, 0.25) is to be used. This may be stated or used.  **M1:** Using or writing  **or**  a correct CR **or**  **and**  **A1:** awrt 0.0262 **or** CR **or**  **A1cso:** A fully correct solution with a correct conclusion in context to include the idea of proportion and increased plus referring to organic | | | |
| 1. **B1ft:** For 0.0262 < 0.05 [ft their probabilityin part(b)] **or** a CR of(allow)   **and** a correct contextual conclusion. | | | |

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| **Question** | **Scheme** | **Marks** | **AOs** |
| **3(a)** | Pressure outliers are <1004.75 and >1018.75  Rainfall outliers are (<₋3.05) and >82.95 | M1 | 2.1 |
| *p =* 1019 and 1022 are outliers  *w* = 102.0 is an outlier | A1cso | 1.1b |
|  | **(2)** |  |
| **(b)** | e.g. was a negative correlation, now no (zero) correlation | B1 | 2.2b |
|  | **(1)** |  |
| **(c)** | e.g. there are a lot of zeros for rainfall in Perth and there are none in the sample.  **or**  e.g. these are the highest figures and you are unlikely to get these if the sample was random. | B1 | 2.4 |
|  | **(1)** |  |
| **(d)** | On average, an increase of 1 hPa in daily mean pressure results in a decrease of 0.223 mm in daily rainfall. | B1 | 3.4 |
|  |  | **(1)** |  |
| **(e)** | Unreliable, as the large data set does not cover December. | B1 | 2.4 |
|  |  | **(1)** |  |
| **(6 marks)** | | | |
| **Notes:** | | | |
| 1. **M1:** At least one correct boundary point   **A1:** both upper boundary points and correct conclusions | | | |
| 1. **B1ft:** A suitable description of correlationbefore and after. | | | |
| 1. **B1:** For a comment that supports the idea that the sample is unlikely to be random. | | | |
| 1. **B1:** For a suitable description of the rate : rainfall per number of hPa with reference to figures | | | |
| 1. **B1:** For correct conclusion with a reason explaining why it would be extrapolation.   **NB: B0** For out of range, extrapolation o.e. on their own without a reason. | | | |

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| **Question** | **Scheme** | **Marks** | **AOs** |
| **4(a)** | *S* and *A* since there is no intersection between *A* and *S* or the probability of *S* and *A* happening is zero | B1 | 1.2 |
|  | **(1)** |  |
| **(b)** | [*p* = 0.3] | M1 | 3.1b |
| or | M1 | 1.1b |
|  | M1dd | 3.1b |
|  | A1 | 1.1b |
|  | **(4)** |  |
| **(c)** | Independent since | B1 | 2.2a |
|  | **(1)** |  |
| **(d)** | The teacher’s belief would appear not to be justified as *D* and *S* are independent | B1ft | 2.4 |
|  |  | **(1)** |  |
| **(7 marks)** | | | |
| **Notes:** | | | |
| 1. **B1:** For *S* and *A* and a sensible reason | | | |
| 1. **M1:** For forming a correct equation in terms of *p* using the information given.   **M1:** Writing or using  or  **M1dd:** dependent on both previous M marks being awarded.For using their values for *p* and *q* to form a correct equation to enable them to find *r*  **A1:** cao | | | |
| 1. **B1:** Yes and a suitable reason to support their answer bringing together the two pieces of information to draw the correct conclusion | | | |
| 1. **B1:** A correct comment following their answer to part (c) with reference to the teachers belief. | | | |