**Question 1**

An investigation was carried out to determine whether a relationship exists between the average number of cigarettes smoked in a day and score on a smoking attitudes scale. The following data was recorded:

|  |  |  |
| --- | --- | --- |
| **participant** | **Average cigarettes smoked** | **Smoking attitude score** |
| 1 | 5 | 27 |
| 2 | 8 | 16 |
| 3 | 0 | 5 |
| 4 | 25 | 35 |
| 5 | 20 | 28 |
| 6 | 1 | 14 |
| 7 | 10 | 23 |
| 8 | 15 | 32 |

***The observed value was 0.952***

***Level of significance was 5%***

***A directional hypothesis was used***

1. What stats test should be used? (justify your answer) (3 marks)

2. What was the critical value? (1 mark)

3. Was the research significant and why? (3 marks)

**Question 2**

An investigation was carried out into students’ ability to concentrate in the morning and afternoon lessons. It was hypothesised that a difference will be seen in concentration (as rated on a scale of 1-20) between students in morning lessons and afternoon lessons. The following data was recorded. No previous research has been carried out in this area. ***The observed value must be less than, or equal to, the critical value to be significant***

|  |  |  |
| --- | --- | --- |
| Participant | morning | afternoon |
| 1 | 13 | 5 |
| 2 | 8 | 9 |
| 3 | 16 | 9 |
| 4 | 12 | 6 |
| 5 | 12 | 12 |
| 6 | 8 | 9 |
| 7 | 12 | 4 |
| 8 | 14 | 12 |
| 9 | 18 | 14 |
| 10 | 15 | 6 |

**The observed value was 19.5, the critical value was 8.**

**Level of significance was 5%**

1. What stats test should be used and why? (4 marks)

2. Was the research significant? Justify your answer (3 marks )

**Question 3**

Participants took part in a driving simulation where a number of hazards were presented, such as a child running across the road. Reaction times were recorded when participants were sober and on another instance when they had consumed enough alcohol to be over the legal driving limit.

**The observed value is 1**

**The degrees of freedom is 10, level of significance p=0.05 It is non-directional.**

***The observed value must be more than or equal to the critical value to be significant***

1. A Related t-test was used. Why? (2 marks)

2. Is it significant? Justify your answer (3 marks)