

Q1.

A psychologist investigated whether productivity levels are affected by the amount of sleep a person gets. They asked 30 participants to sleep for 4 hours on the first night and then stay awake all of the next day (**Day 1**). The same participants were then asked to sleep for 8 hours on the second night and stay awake all of the next day (**Day 2**).

Each participant was then asked to rate their productivity at the end of **Day 2** as 'more than', or 'less than', or 'the same as' **Day 1**.

The results of the study are given in the table below:

Number of participants giving each productivity rating at the end of Day 2

	More productivity	Less productivity	Same productivity
Number of participants	21	6	3

- (a) The psychologist analysed the results of the study using the sign test.

Explain **two** reasons why it was appropriate to use the sign test in this situation. Refer to the description of the study in your answer.

1.

2.

- (b) Use the data in the table above to calculate the value of S using the sign test. Explain how you calculated this figure.

(3)

(Total 7 marks)

Q2.

A psychologist wanted to investigate whether exercise would affect stress levels in 15-year-olds. Previous research into the effects of exercise on stress in teenagers had shown that exercise decreased stress levels.

The psychologist decided to use a repeated measures design to investigate the effects of exercise on stress levels in 20 15-year-old students. All the students were approaching their end-of-year exams.

For **Condition A**, students were required to complete a 2 km run during their morning breaktime each school day for one week.

In **Condition B**, students continued their normal activities in the playground during their morning breaktime each school day for one week.

At the end of each week of the investigation, for both **Condition A** and **Condition B**, each student was asked to rate their levels of stress on a rating scale of 1–10, where the higher the self-reported rating the greater the stress levels.

A Wilcoxon test was used to determine whether differences in stress ratings were significant. The psychologist used a 0.01 level of significance.

Explain what it would mean if the results in the above study were significant at the 0.01 level.

(Total 2 marks)

Q3.

A psychologist wanted to investigate whether exercise would affect stress levels in 15-year-olds. Previous research into the effects of exercise on stress in teenagers had shown that exercise decreased stress levels.

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A Wilcoxon test was used to determine whether differences in stress ratings were significant. The psychologist used a 0.01 level of significance.

The psychologist found that the difference was **not** significant at the 0.01 level.

The psychologist was concerned that there might have been a type II error.

- (a) Explain what is meant by a type II error in the context of this study.

(2)

- (b) Suggest **one** way the psychologist could reduce the chance of a type II error.

(1)

(Total 3 marks)

Q4.

In an experiment into the effects of cognitive priming, 20 participants played an unfamiliar computer game. Half of the participants watched a violent film before playing the computer game. The other half watched a neutral film before playing the computer game. After playing the computer game, each participant was classified as showing High Aggression or Low Aggression.

The researcher decided to use a Chi-Squared test to analyse the data from this study. One reason for choosing this test was that each participant only took part in one condition of the experiment.

Referring to information about the study, explain **two other** reasons why it was appropriate to use a Chi-Squared test in this case.

(Total 4 marks)

Q5.

In an experiment into the effectiveness of the top-down approach to offender profiling, 20 participants were asked to build a profile of an offender using information from real life cases. Half of the participants were given information about a murder case and asked to produce a profile. The other half were given information about a robbery and asked to produce a profile. After the profiling session, each profile was classified as High Accuracy or Low Accuracy.

The researcher decided to use a Chi-Squared test to analyse the data from this study. One reason for choosing this test was that each participant only took part in one condition of the experiment.

Referring to information about the study, explain **two other** reasons why it was appropriate to use a Chi-Squared test in this case.

(Total 4 marks)

Q6.

In an experiment into the effect of reinforcement on gambling, 20 participants played 10 practice card games on a computer. The computer system was pre-programmed so that half of the participants won in games 1, 2, 6, 8 and 10 and the other half won no practice games. After the 10 practice games, each participant played a test game and the amount of money each participant bet in the test game was classified as High Stakes (gambled more money) or Low Stakes (gambled less money).

The researcher decided to use a Chi-Squared test to analyse the data from this study. One reason for choosing this test was that each participant only took part in one condition of the experiment.

Referring to information about the study, explain **two other** reasons why it was appropriate to use a Chi-Squared test in this case.

(Total 4 marks)

Q7.

A controlled observation was designed to compare the social behaviours of pre-school children of working parents and pre-school children of stay-at-home parents. The sample consisted of 100 children aged three, who were observed separately. Half of the children had working parents and the other half had stay-at-home parents. The observation took place in a room which looked like a nursery, with a variety of toys available.

In the room, there were four children and one supervising adult. Their behaviour was not recorded.

Each child participant was brought into the room and settled by their parent. The parent then left to sit outside. Each child participant's behaviour was observed covertly for five minutes while they played in the room.

The observation was conducted in a controlled environment and a standardised script was used when the children and their parents arrived.

The data from the observation was summarised by converting the number of agreed observations into a total social behaviour score for each child.

The researcher then conducted a statistical test to identify whether there was a significant difference between the social behaviour scores for the children of stay-at-home parents and those of working parents.

Identify an appropriate statistical test that the researcher could use to analyse the social behaviour scores in this study. Explain **three** reasons for your choice in the context of this study.

[illegible]

(Total 7 marks)

Q8.

A psychologist investigated the effect of the presence of a friend on mood. She used a controlled laboratory experiment. She asked a group of participants to rate their happiness on a scale.

In **Condition 1** (Alone Condition), participants completed the scale after sitting alone in a room for 30 minutes.

In **Condition 2** (Friend Condition), the same participants completed the same scale after sitting for 30 minutes in a room with a friend.

The conditions were counterbalanced.

The psychologist analysed the results of the study using a Wilcoxon test. The analysis showed that happiness ratings were significantly higher in the Friend Condition.

Explain **two** reasons why it was appropriate to use a Wilcoxon test in this situation. Refer to the description of the study in your answer.

(Total 4 marks)