

## Mark schemes

## Q1.

(a) [AO2 = 4]

Award **up to 2 marks** for **each** reason as follows:

**2 marks** for a clear explanation of why the sign test would be appropriate.

**1 mark** for a muddled/limited explanation.

**Possible content:**

- there are two sleep conditions and the psychologist is looking for a difference in productivity between them (the difference between the two sleep conditions is significant and not down to chance)
- as the participants categorise their productivity as 'more', 'less' or 'the same' it is categorical/nominal data
- as the participants take part in both the 4 hour and 8 hour sleep conditions (day 1 and day 2), it is a related/repeated measures design.

4

(b) [AO2 = 3]

Award **one** mark for **each** of the following:

- $S = 6$
- ignore any nil differences (ignore the participants with the same productivity)
- the value of the category with the least number of cases is S (compare the number of participants who were 'more' and 'less' productive)

3

**[7]**

**Q2.****[AO1 = 1 AO2 = 1]****2 marks** for a clear, coherent explanation with appropriate application.**1 mark** for a limited or muddled explanation.**Content:**

- there is only a 1% possibility that the difference in stress ratings between the two conditions is due to chance (not due to the breaktime 2 km run)
- there is  $\leq 0.01$  chance that the observed difference in the stress ratings reported is not a real difference (resulting from doing or not doing the 2 km run at breaktime).

Accept alternative wording.

**Note** – A maximum of **1 mark** can be awarded for appropriate explanations of the consequences of the results being significant without reference to the 0.01/1% level e.g., rejection of the null hypothesis.

**[2]****Q3.****(a) [AO1 = 1 AO2 = 1]****2 marks** for a clear, coherent explanation with appropriate application.**1 mark** for a limited or muddled explanation.**Possible content:**

- the directional/experimental hypothesis is wrongly rejected/the null hypothesis is wrongly accepted (when the difference is actually due to the experimental manipulation) – when a difference between stress levels across the conditions is rejected as being not significant when there is a real difference between stress levels after running 2 km as opposed to not running
- a false negative – concluded that there was no significant difference in stress levels between running 2 km as opposed to not running.

Accept alternative wording.

2

**(b) [AO3 = 1]**Award **one** mark for any of the following points:

- set a less stringent/less demanding significance level
- use the 5% level
- increase the sample size

Credit other relevant material.

1

**[3]**

**Q4.****[AO2 = 4]**

Award **1 mark** for **each** of the following points:

- each player's performance is classified into one of two categories (high or low aggression)
- the data is therefore nominal/categorical
- the researcher is investigating a difference in aggression levels
- between the violent film/primed group and the neutral film/unprimed group.

**OR (alternatives for bullets 3 and 4)**

- the researcher is investigating an association between two variables
- ie type of film seen beforehand and aggression level.

No credit for answers based on type of design as this is ruled out in the question.

**[4]****Q5.****[AO2 = 4]**

Award **1 mark** for **each** of the following points:

- each profiler's performance is classified into one of two categories (high or low accuracy)
- the data is therefore nominal/categorical
- the researcher is investigating a difference in profiling accuracy level
- between the murder case group and the robbery group.

**OR (alternatives for bullets 3 and 4)**

- the researcher is investigating an association between two variables
- ie type of crime and level of profiling accuracy.

No credit for answers based on type of design as this is ruled out in the question.

**[4]****Q6.****[AO2 = 4]**

Award **1 mark** for **each** of the following points:

- each participant's bet in the test game is classified into one of two categories (high stakes, low stakes)
- the data is therefore nominal/categorical
- the researcher is investigating a difference in bet value/stakes in the test game
- between the reinforcement group and the no reinforcement group.

**OR (alternatives for bullets 3 and 4)**

- the researcher is investigating an association between two variables
- ie whether or not gambling is reinforced and the bet value/stakes in the test game.

No credit for answers based on type of design as this is ruled out in the question.

**[4]**

**Q7.****[AO2 = 7]**

**1 mark** for Mann-Whitney (or an alternative statistical test if appropriately justified in bullet point three).

**Plus**

For **each** of the following bullet points award:

**2 marks** for a clear and coherent reason explicitly linked to the study.

**1 mark** for a limited reason implicitly linked to the study.

- the psychologist is testing a difference (not a correlation) between the social behaviours of children of working parents compared to stay-at-home parents
- an independent group design is used as the children are either of working parents or of stay-at-home parents
- the data collected can be treated as ordinal as it is a social behaviour score (the difference between each score is not fixed/can be ranked).

**Note:** appropriate reason can be credited even if an incorrect test is named or no test is given.

**Note:** where more than three reasons are given, only the first three should be marked.

**[7]****Q8.****[AO2 = 4]**

For **each** of **two** valid reasons, award marks as follows:

**2 marks** for a clear and coherent reason.

**1 mark** for a limited/muddled reason.

**Reasons:**

- tested all participants both alone and in the presence of a friend therefore the psychologist used the same participants in each condition, thus the design was repeated measures/related
- data were ratings of happiness on a ratings scale which would be considered ordinal data as the units can be ranked from high to low but are not of a fixed size/equal intervals
- the psychologist was investigating a difference in happiness ratings between two conditions: the Alone Condition and the Friend Condition.

**[4]**