



CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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9990/21

October/November 2023

1 hour 30 minutes

You will need: Ruler

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [].

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[Turn over

Section A

Answer **all** questions in this section.

- 1 (a) Explain what is meant by 'covert' observation.

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..... [2]

- (b) Explain **one** strength of a covert observation.

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..... [2]

- (c) Explain **one** weakness of a covert observation.

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..... [2]

- 2 A hypothesis is 'There will be a difference in helpfulness between obedient and disobedient people'.

- (a) State whether this is a directional (one-tailed) hypothesis or a non-directional (two-tailed) hypothesis. Include a reason for your answer.

.....

..... [1]

- (b) Write a null hypothesis for this study.

.....

..... [1]

- 3 The study by Pepperberg (parrot learning) tested a parrot's understanding of the concepts of 'same' and 'different'. Table 3.1 shows the total results for correct responses and incorrect responses for two categories of objects.

Table 3.1

Category of objects	Total responses to 'same?' and 'different?' questions	
	correct	incorrect
objects used in training	99	30
objects not used in training	96	17

- (a) (i) Describe the results in Table 3.1 for correct responses.

.....
 [1]

- (ii) Describe the results in Table 3.1 for incorrect responses.

.....
 [1]

- (b) Whether or not the objects had been used in training affected the accuracy of the parrot's responses.

Describe how Pepperberg explained this effect.

.....

 [2]

- 4 In the study by Canli et al. (brain scans and emotions), all the participants were female.

State the **two** reasons that Canli et al. gave for using only female participants in this study.

1

 2
 [2]

- 5 In Experiment 1 of the study by Laney et al. (false memory), participants were randomly allocated to one of two conditions (levels of the independent variable).

(a) State what is meant by 'random allocation'.

.....
..... [1]

(b) State why one of the two groups was called a 'control condition'.

.....
..... [1]

- 6 Describe the ethical guidelines of 'right to withdraw' and 'confidentiality', using any examples.

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Section B

Answer **all** questions in this section.

- 7 Two female researchers, Meilin and Nina, are preparing a structured interview about dreams. Each researcher will interview 10 participants.

- (a) Suggest **three** ways that Meilin and Nina could standardise their structured interview, other than using the same questions.

1

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2

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3

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[3]

- (b) Explain **one** reason why a structured interview should be standardised.

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..... [2]

- (c) Explain **one** reason why it may be better for Meilin and Nina to use an unstructured interview.

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..... [2]

- (d) Outline **one** ethical problem with interviewing participants about their dreams.

.....

..... [1]

- 8 Alf conducted an experiment comparing the range of television programmes that old and young people watch. He collected his data by questionnaire and found that young people watch a wider range of television programmes than old people.

- (a) (i) Suggest **one** extraneous variable that could affect the range of television programmes that old people watch, other than their age.

.....

.....

..... [2]

- (ii) Explain how Alf could investigate whether the extraneous variable that you suggested in (a)(i) was the cause of the difference he found.

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..... [2]

- (b) Alf used opportunity sampling to obtain participants but would have preferred to use volunteer sampling.

- (i) Outline what is meant by 'volunteer sampling'.

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..... [1]

- (ii) Suggest **one** way that Alf could have used volunteer sampling to obtain both old and young participants.

.....

.....

..... [2]

- (c) Explain the experimental design that Alf used.

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..... [2]

- 9 Calle is planning a correlational study. He is measuring two variables: happiness and confidence.

Calle's friend Violet is helping him to plan his questions.

Calle has written two questions:

- For happiness: Are you happy? Answer 1 for yes and 0 for no
- For confidence: How certain do you feel that you will succeed when you begin a new task?
0 = not at all, 5 = very.

- (a) Violet says that the data Calle would get from his question on happiness would **not** be suitable to use in a correlation.

Explain why Violet is correct.

.....
 [1]

- (b) Suggest **one** problem with the validity of Calle's question on confidence.

.....

 [2]

- (c) (i) Calle changes his question for happiness and uses his original question for confidence. He finds a positive correlation.

Draw a line to show the pattern of Calle's data, using the axes below.



[1]

- (ii) Explain why Calle **cannot** conclude that greater happiness leads to higher confidence.

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..... [3]

10 Sophie is planning a natural experiment to investigate the effects of closing a road on anger in drivers. One road into a town will be closed for three weeks and the traffic will have to take a longer route. Sophie wants to investigate whether having to take the longer route makes drivers angry.

-
- This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Do **not** refer to ethics or sampling in your answer.

[4]

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9990/22

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1 hour 30 minutes

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[Turn over

Section A

Answer **all** questions in this section.

1 From the study by Pepperberg (parrot learning):

(a) State the aim of this study.

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..... [1]

(b) Explain why it was necessary to present the parrot with questions in a random order.

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..... [2]

2 Explain the importance of the ethical guidelines of anaesthesia, analgesia and euthanasia in relation to the use of animals in research.

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..... [3]

- 3** Participants in the study by Laney et al. (false memory) completed a 'Restaurant Questionnaire', which was formatted to look like a menu.

(a) Describe the Restaurant Questionnaire.

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..... [2]

(b) Explain why it was important that the Restaurant Questionnaire looked like a menu.

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..... [2]

4 The study by Yamamoto et al. (chimpanzee helping) used a repeated measures experimental design.

(a) Outline what is meant by a 'repeated measures design'. Include an example from the study by Yamamoto et al. in your answer.

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..... [2]

(b) Explain **one** advantage of using a repeated measures design for this study, compared to using an independent measures design.

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..... [2]

5 In a study that measured two variables, a relationship between the variables was found. As one variable increased, the other decreased.

(a) Name this relationship.

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..... [1]

(b) Suggest **two** variables, from any core study, that show this relationship.

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..... [1]

6 Describe natural experiments and naturalistic observations, using any examples.

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..... [6]

Section B

Answer **all** questions in this section.

- 7 James is conducting an interview to investigate topics that could influence anger and euphoria. He has already written his questions about anger. James needs to write questions which cover three topics that could increase euphoria. These topics are:

- sports or games
- films or music
- the natural world (e.g. animals and plants, being outside or good weather).

- (a) Suggest **one** closed question and **one** open question that James could use to investigate **one** of his three topics about euphoria. Do **not** use a rating scale in your answer.

Closed question

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.....

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Open question

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[3]

- (b) James has chosen to conduct a semi-structured interview.

Explain **two** strengths of a semi-structured interview.

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[4]

- (c) James was planning to use opportunity sampling to obtain participants from his university but has decided random sampling would be better.

- (i) Explain how James could use random sampling to obtain participants from his university.

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..... [2]

- (ii) Explain **one** advantage for James of using random sampling compared to using opportunity sampling.

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..... [2]

8 Olive and Durnaz are planning a questionnaire to use in their study, which aims to investigate forgetting in old people.

(a) Olive thinks that they should include some irrelevant questions so that the participants are less likely to guess the aim of the study. Durnaz thinks this is unethical.

(i) Explain why Olive's plan to include irrelevant questions would be useful.

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..... [2]

(ii) Explain why Durnaz thinks that Olive's plan would be unethical.

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..... [2]

(b) Olive and Durnaz want to be able to generalise their findings to all old people.

(i) Suggest **one** variable that could affect memory in old people, other than age.

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..... [1]

(ii) Explain why the variable you suggested in (b)(i) could affect memory in old people.

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..... [2]

9 Gagan has collected data about personality characteristics. Two of the questions he asked were:

- Personality question:
Which word best describes your personality? Angry / Confident / Kind / Worried.
- Shyness question:
How shy do you feel in new situations on a scale of 0–5? (0 = not at all, 5 = very).

(a) Name the **most** appropriate measure of central tendency to use with the data from each question.

Personality question

.....

Shyness question

.....

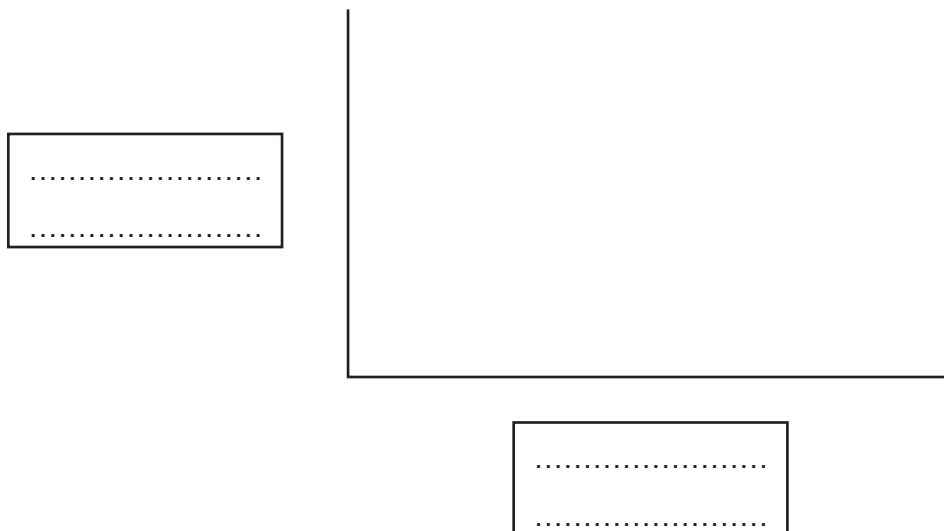
[2]

(b) Name the **most** appropriate type of graph for Gagan to use to display the results from the 'personality question'.

..... [1]

(c) When Gagan analyses the data for the 'shyness question', he finds that the scores are normally distributed.

Sketch a graph using the axes below to show the pattern of Gagan's data from the 'shyness question'. You **must** label the axes.



[3]

Do **not** refer to ethics or sampling in your answer.

[4]

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[Turn over

Section A

Answer **all** questions in this section.

- 1** A matched pairs design is an experimental design that can be used in studies comparing two conditions, or levels, of an independent variable.

(a) Explain what is meant by a 'matched pairs design'.

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..... [1]

(b) Explain **one** advantage of using a matched pairs design compared to using a repeated measures design.

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..... [2]

- 2** A range can be calculated when numerical scores are collected from participants in a study.

(a) Define the term 'range'.

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..... [1]

(b) Describe how the range of 'hours spent asleep' could have been calculated in the study by Dement and Kleitman (sleep and dreams).

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..... [2]

- 3 The reliability of a study is affected by the measures (scales or tasks) chosen by the researcher and the way that these are used when conducting the study.

(a) One way to check reliability is the test-retest technique.

Describe how this technique checks reliability.

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..... [3]

(b) Another type of reliability is inter-rater reliability.

Explain how the inter-rater reliability of studies can be improved.

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..... [2]

- 4 In each of the core studies, the researchers report their conclusions.

(a) Explain what is meant by the term 'conclusions', using an example from a core study from the social approach.

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..... [2]

(b) In the study by Baron-Cohen et al. (eyes test), two main conclusions were drawn.

Outline **one** of these conclusions.

.....

..... [1]

- 5 In the study by Saavedra and Silverman (button phobia), a boy was repeatedly asked to use the Feelings Thermometer. Other questions investigated his phobia further and showed that he disliked buttons touching his body.

Explain the type of interview used in this study.

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..... [2]

- 6 Describe the ethical guidelines of 'housing' and 'rewards' in relation to animals, using any examples.

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..... [6]

Question 7 appears on Page 6.

Section B

Answer **all** questions in this section.

- 7 Dr Casson conducted a field experiment to compare the emotions that people show when they respond to shop assistants who are either wearing a uniform or casual clothes. She asked the assistants at her local shop to wear a uniform on Saturdays and wear casual clothes on Sundays.

(a) Explain why Dr Casson's study was a field experiment.

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..... [3]

(b) (i) Suggest how Dr Casson could have measured the dependent variable in her study.

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..... [2]

(ii) Suggest **one** reason why it may be more difficult to measure the dependent variable in a field experiment than in a laboratory experiment.

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..... [2]

- 8 Keung and Jovita are planning a correlational study to investigate the relationship between a person's physical activity level and their attention level. They each make a different prediction about their results.

(a) Suggest how Keung and Jovita could measure the physical activity level of their participants.

.....

..... [1]

- (b) Write a null hypothesis for Keung and Jovita's correlational study.

.....
 [1]

- (c) Keung predicted that there would be a positive correlation and Jovita predicted that there would be a negative correlation.

Their results show that a higher physical activity level is related to a lower attention level.

Explain whether Keung or Jovita's prediction was correct.

.....

 [2]

- (d) Keung and Jovita plot a scatter diagram of their results.

Explain how they can see the strength of the correlation from their scatter diagram.

.....

 [2]

- (e) Keung and Jovita's friend says that their results show that the difference in physical activity level is affecting attention level.

Explain why they **cannot** draw this conclusion from their research.

.....

 [2]

- 9 Dr Wilson is conducting an experiment on memory for complex, coloured shapes. He is using students for his sample. Dr Wilson intends to generalise his results widely, to understand how well internet users remember visual stimuli.

(a) Suggest how **one** extraneous variable could affect Dr Wilson's study.

.....

.....

..... [2]

(b) (i) Dr Wilson is using a volunteer sample of students from his university. Suggest how he could recruit his sample.

.....

.....

..... [2]

(ii) Suggest **one** advantage of using a volunteer sample compared to an opportunity sample.

.....

.....

..... [2]

(iii) Suggest **one** disadvantage of using a volunteer sample compared to an opportunity sample.

.....

.....

..... [2]

(c) One reason why Dr Wilson cannot generalise the results from his study is his sampling technique.

State **one** reason why he should **not** generalise the results from his students to all internet users, other than his sampling technique.

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..... [1]

Question 10 appears on Page 10.

Answer **all** questions in this section.

[illegible]

Do **not** refer to ethics or sampling in your answer.

[4]

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