



Cambridge International AS & A Level

PSYCHOLOGY

9990/21

Paper 2 Research Methods

October/November 2022

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **19** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

**Social Science–Specific Marking Principles
(for point-based marking)**

1 Components using point-based marking:

- Point marking is often used to reward knowledge, understanding and application of skills. We give credit where the candidate's answer shows relevant knowledge, understanding and application of skills in answering the question. We do not give credit where the answer shows confusion.

From this it follows that we:

- a** DO credit answers which are worded differently from the mark scheme if they clearly convey the same meaning (unless the mark scheme requires a specific term)
- b** DO credit alternative answers/examples which are not written in the mark scheme if they are correct
- c** DO credit answers where candidates give more than one correct answer in one prompt/numbered/scaffolded space where extended writing is required rather than list-type answers. For example, questions that require *n* reasons (e.g. State two reasons ...).
- d** DO NOT credit answers simply for using a 'key term' unless that is all that is required. (Check for evidence it is understood and not used wrongly.)
- e** DO NOT credit answers which are obviously self-contradicting or trying to cover all possibilities
- f** DO NOT give further credit for what is effectively repetition of a correct point already credited unless the language itself is being tested. This applies equally to 'mirror statements' (i.e. polluted/not polluted).
- g** DO NOT require spellings to be correct, unless this is part of the test. However spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. Corrasion/Corrosion)

2 Presentation of mark scheme:

- Slashes (/) or the word 'or' separate alternative ways of making the same point.
- Semi colons (;) bullet points (•) or figures in brackets (1) separate different points.
- Content in the answer column in brackets is for examiner information/context to clarify the marking but is not required to earn the mark (except Accounting syllabuses where they indicate negative numbers).

3 Annotation:

- For point marking, ticks can be used to indicate correct answers and crosses can be used to indicate wrong answers. There is no direct relationship between ticks and marks. Ticks have no defined meaning for levels of response marking.
- For levels of response marking, the level awarded should be annotated on the script.
- Other annotations will be used by examiners as agreed during standardisation, and the meaning will be understood by all examiners who marked that paper.

Question	Answer	Marks
1	The study by Milgram (obedience) used a shock generator, which looked real. Explain why it was necessary that the shock generator looked real. 1 mark identification of reason (may be generic) Ignore REP e.g. 'so they believed the situation was real'. 1 mark detail (must have link). To avoid demand characteristics / participants guessing the aim; (generic reason). Otherwise, participants might have gone to the full voltage / known they couldn't hurt anyone; (detailed link).	2

Question	Answer	Marks
2	Bill has two groups of children in his study and writes a directional hypothesis. It states that ‘Older children are more obedient than younger children’. He then decides that this might not be correct and uses a non-directional hypothesis instead.	
2(a)	Suggest a non-directional hypothesis for Bill’s study. 1 mark for non-directional hypothesis (must be a testable statement, not an aim, not a question). Older and younger children will differ in their obedience; Children of different ages will have different levels of obedience; There is a difference in obedience between younger and older children; There will be a correlation/relationship between age and obedience = 0 [not experimental] There will be no difference/correlation between age and obedience = 0 [null]	1
2(b)	State how Bill will find the mode for the age of the group of younger children. 1 mark for how to find mode (linked). Find the most frequent age of (all) the (young) children (in years/months) = 1	1
2(c)	Suggest <u>two</u> reasons why it could be ethically more difficult to measure obedience in children than in adults. 1 mark for reason ×2. 1 mark for link to obedience. Children cannot consent / are too young to give informed consent; (reason) So, they might not know what ‘obedience’ means (so wouldn’t know what they were agreeing to); (link) Children are more at risk of harm / unaware of the risks / vulnerable to pressure from adults / more easily upset than adults; (reason) So may follow orders / be obedient even though it will upset them; (link) This would put them at risk of harm as they may be obedient when they really don’t want to be; (link) Children may not be able to exercise their right to withdraw; (reason) As they are taught to be obedient to adults; (link).	4

Question	Answer	Marks
3	Describe <u>two</u> features of a laboratory experiment. Use a different example from the study by Schachter and Singer (two factors in emotion) for each feature. 1 mark per feature ×2. 1 mark per link to Schachter and Singer study [can get this mark without the feature mark]. Has a manipulated independent variable; (feature) They changed anger or euphoria (with a stooge) / changed adrenalin or saline (by injection) / INF or MIS INF; (link) Has a measured dependent variable; (feature) They scored angry or euphoric behaviour; (link) Has controls/standardisation; (feature) The stooge was scripted; (link) Injection (of saline/adrenalin) seemed the same; (link).	4

Question	Answer	Marks
4	Baron-Cohen et al. (eyes test) presented the eyes test results on a graph showing the percentage of participants who gained each score. The graph is shown in Fig. 1.	
4(a)	Label the axes on Fig. 1, using the answer spaces below. 1 mark for correct X-axis label = 'Eyes Test (score)' 1 mark for correct Y-axis label = 'Percentage of participants/subjects'	2
4(b)	Name the type of distribution shown in Fig. 1. Normal (distribution) = 1 mark (definitive).	1

Question	Answer	Marks
5	Participants in a study are learning to throw a ball through a hoop. Suggest how the variable of ‘learning’ could be operationalised in this study. 1 mark for operational definition of operant conditioning of learning to throw a ball through a hoop. Their accuracy of getting the ball through the hoop increases; How many balls go through the hoop on each trial; How fast they can get (10) balls through the hoop; How many minutes it takes <i>before</i> they get balls into the hoop accurately.	1

Question	Answer	Marks
6	Describe the ethical guidelines of ‘species and strain’ and ‘numbers’ in relation to animals, using any examples. Definitions/detail: up to a maximum of 4 marks for each guideline. Examples: maximum of 2 marks for each guideline. Examples can be from any studies (core studies, other studies, candidate's own studies). Max. 4 if no examples or if only one type of the guidelines is described. Species and strain: The species/strain which is least likely to become distressed should be chosen; That is able to fulfil the requirements of the study (i.e. it is a compromise); Each species has different needs e.g. for warmth / cover / space for exercise / to avoid overcrowding; The needs of each species may differ with age / sex / reproductive stage; Don't use endangered species; e.g. Pepperberg used a parrot, which is a domesticated species so not distressed by human interaction; e.g. Yamamoto et al. needed to use chimpanzees which may be distressed as helping is a complex concept. Number: The smallest number of animals possible should be used (so that the smallest number of animals experience harm/distress); However, enough should be used to achieve valid/reliable results; e.g. Pepperberg only used 1 parrot / only Alex (which is good); e.g. Yamamoto et al. only used 5 / a small number of chimpanzees (which is good).	6

Question	Answer	Marks
7	Kate is using a questionnaire to investigate how participants could feel about people who are older than them. The emotions she is investigating are: • boredom • empathy • fear • happiness.	
7(a)(i)	Kate needs to define each of these emotions. Suggest how Kate could operationalise <u>two</u> of the emotions that she is investigating. 1 mark for operationalisation ×2 [Accept definition, operationalisation or measure] Does not have to be linked. boredom = (finding an older person) dull / uninspiring / not interesting; empathy = understanding feelings (how the older person feels); fear = being scared / worrying (that the older may harm you); happiness = feeling positively (about the older person). These are examples, there will be many acceptable definitions.	2
7(a)(ii)	For <u>one</u> of your suggestions in (a)(i): Explain why Kate could misinterpret this emotion when gathering data in her study. 1 mark for explanation must be of one of the emotions from 7(a)(i) (NO mark for restating emotion). <i>boredom = dull:</i> The participants might be bored themselves, so appear to find the older person boring; <i>empathy = understand feelings:</i> The participants could be pretending to understand e.g. out of courtesy; <i>fear = worry:</i> Fear might alternatively be based on worry for or about someone or something other than yourself; <i>happiness = feeling positive:</i> Participants may be happy for some other reason, so appear to be linking happiness with the older person.	1

Question	Answer	Marks										
7(b)	Kate measures how strongly the participants feel each emotion about people who are older than them, using a score from 0–10.											
7(b)(i)	Kate wants to find the median ‘happiness’ score. Outline how to find a median score. 1 mark for explanation (can be generic). Put all the (happiness) scores in rank order / in a list from biggest to smallest, the middle one is the median; Find the middle number of the scores in rank order; Find the middle number of the scores = 0	1										
7(b)(ii)	Kate wants to use a graph to plot the median results for each of the four emotions. Name the <u>most</u> appropriate type of graph for Kate to use. 1 mark for identification of bar chart/bar graph (definitive).	1										
7(b)(iii)	Kate calculated the standard deviation of scores for each emotion. The standard deviations are shown in Table 1. Table 1 <table><tr><th>Emotion</th><th>boredom</th><th>empathy</th><th>fear</th><th>happiness</th></tr><tr><td>Standard deviation</td><td>1.4</td><td>3.2</td><td>2.2</td><td>2.6</td></tr></table> Explain which emotion had the widest spread of scores. 1 mark for identification of ‘empathy’ (definitive). 1 mark for explanation (can be generic). Empathy; (identification) Because this has the largest/highest standard deviation (showing these scores had the most variation/dispersion); (explanation) Because 3.2 is the biggest; (explanation).	Emotion	boredom	empathy	fear	happiness	Standard deviation	1.4	3.2	2.2	2.6	2
Emotion	boredom	empathy	fear	happiness								
Standard deviation	1.4	3.2	2.2	2.6								

Question	Answer	Marks
8	Gill is planning a structured interview about disruptions to sleep patterns. She is investigating the effects of work, sport and family. She begins by writing four questions: A Describe how your sleep pattern changes when extra family members stay for the night. B How long do you sleep after you have participated in sport compared to when you have not participated in sport? More time / less time. C Is your sleep quality in the week compared to the weekend better, worse or about the same? D Explain how any other factors affect your sleep patterns.	
8(a)	Identify <u>one</u> closed question from A to D. 1 mark for B or C (definitive). Accept responses that have copied out the question instead of giving a letter.	1
8(b)	Identify <u>one</u> open question from A to D. 1 mark for A or D (definitive). Accept responses that have copied out the question instead of giving a letter.	1

Question	Answer	Marks
8(c)	Gill plans two more questions to use in her structured interview: E Is your sleep better or worse if you eat a meal close to bedtime? Better / worse. F Explain how your sleep pattern is affected if you work at night. Suggest <u>one</u> problem that Gill could have when using <u>one</u> of the new questions. 1 mark for identification of problem (may be generic). 1 mark for link. NO mark for stating E or F. (E) Is your sleep better or worse if you eat a meal close to bedtime? Better / worse: • (Because it is a closed question) the choices are limited / the response offers little understanding; (generic problem) • They may want to say 'it makes no difference' but this isn't possible; (link) • (Because it is a closed question) they can't elaborate their answer; (generic problem) • Participants may want to say 'it depends on what / how much I eat' but couldn't; (link) (F) Explain how your sleep pattern is affected if you work at night: • (Because it is an open question) their answer could need interpretation; (generic problem) • (Because it is an open question) the researcher could be subjective in understanding their answer; (generic problem) • If they say 'I don't do shift work very often so the effect is minor', Gill won't know what the effect is; (link) • (invasion of) privacy; (generic problem)	2
8(d)	Gill's friend reads the six questions and says it would be better if she conducted a semi-structured interview instead of her structured interview.	
8(d)(i)	Explain what makes Gill's interview a structured interview. 1 mark for only fixed questions / cannot ask extra questions / questions the same for all participants = 1	1
8(d)(ii)	Suggest how Gill could change her structured interview into a semi-structured interview. 1 mark for suggestion. Gill would make up new questions for each participant = 1 Use questions based on what (each) participant said / make up new questions that follow on (from their answers) = 1	1

Question	Answer	Marks
8(e)	Gill notices that people who look like they have not slept well often refuse to take part in the study. Explain how this problem could affect the results of Gill's study. 1 mark for correct use of a term (e.g. low validity, sample bias, unrepresentative or less generalisable). 1 mark for identification of the nature of the problem. 1 mark for link explaining the effect on the results. This makes the sample biased / unrepresentative / lowers validity / lowers generalisability; (term) The participants/results will all be very similar; (generic problem) Participants with poor sleep will be less frequent in the sample (than in the whole population); (problem) (Using only people with good sleep) will make it seem that people sleep better than they really do; (linked effect).	3

Question	Answer	Marks
9	Manas is a researcher at a drug company and is conducting an experiment to test a new drug for patients who have phobias. The drug is a clear, tasteless liquid that should help the patients to relax during therapy. Manas selects 10 patients who will take the new drug and 10 other patients who will be given water, which is also clear and tasteless. The patients in both groups believe they are taking the new drug.	
9(a)	Identify the experimental condition <u>and</u> the control condition in this experiment. 1 mark for identifying both conditions (definitive answers). Answers MUST be in the correct space (unless unambiguously indicated otherwise). experimental condition = (10 patients being given) the (new) drug control condition = (10 patients being given) water/placebo.	1
9(b)	Manas has controlled two variables. The drug is: • a clear liquid • tasteless	
9(b)(i)	Suggest <u>two</u> other controls that could be used in this experiment to keep the experimental condition and the control condition as similar as possible. 1 mark for a control ×2. The liquids should be labelled / presented in the same way (e.g. both in a beaker); Taken at the same temperature; The drug should have no smell / smell like water; The liquids should look/taste the same = 0 marks (repetition from stem).	2
9(b)(ii)	Explain why it is important to keep the experimental condition and the control condition as similar as possible. 1 mark for generic explanation of the purpose of controls. To ensure that any differences / changes in the DV (phobia reduction) are due only to the IV (the drug).	1

Question	Answer	Marks
9(c)	Suggest <u>two</u> ethical problems with this experiment. 1 mark for identification of problem ×2. 1 mark for link. Informed consent; (problem) Because the participants do not know whether they are receiving the drug or not; (link) Participants must not know whether they are receiving the drug or not, so they cannot give fully informed consent = 2 Deception / they are being lied to; (problem) they may believe they are getting the drug, which will not be true if they are in the control group; (link) Protection from harm (physical) / it might be dangerous; (problem) participants in the drug group may be physically harmed by the drug as it is still being tested; (link) Protection from harm (psychological); (problem) control participants may suffer in therapy if they try too hard if they think they are getting the drug; (link) control participants may not make progress in therapy because they are only getting water; (link).	4

Question	Answer	Marks
10	Dr Angelo wants to investigate how young children respond when their teachers are helpful. She has seen teachers being helpful to children in the classroom and in the playground.	
10(a)	Describe how Dr Angelo can conduct an observational study to investigate the behaviour of children when their teachers are helpful. Three majors for an observational study are: (a) behaviours – that will be recorded e.g. two named (detail e.g. definition/operationalisation of behavioural categories) if structured. (b) observational technique – participant/<i>non-participant</i> (not interacting with children; sitting away from class at back of room) • <i>naturalistic/controlled</i> (teacher helps by giving pointers on questions; to every child / every 5 mins) • <i>covert</i> (hidden/unaware; dinner ladies / classroom assistant) / <i>overt</i> (c) further observational technique: • <i>participant/non-participant</i> (detail: how achieved, in one further case) • <i>naturalistic/controlled</i> • <i>covert/overt</i> The minors are: location of participants when data is collected (<i>classroom/playground</i>) participants (<i>school children</i>) Also: • sampling technique • sample size • description of how tallying will be done • description of how data will be analysed, e.g. use of averages / bar charts • ethical issues Other appropriate responses should also be credited.	10

Question	Answer	Marks
10(a)	Mark according to the levels of response criteria below: Level 3 (8–10 marks) • Response is described in sufficient detail to be replicable (i.e. what and how). • Response may have a minor omission (i.e. who or where). • Use of psychological terminology is accurate and comprehensive. Level 2 (5–7 marks) • Response is in some detail. • Response has minor omission(s) (i.e. who and/or where). • Use of psychological terminology is accurate. Level 1 (1–4 marks) • Response is basic in detail. • Response has major omission(s). • If response is impossible to conduct max. 2. • Use of psychological terminology is mainly accurate. Level 0 (0 marks) No response worthy of credit.	

Question	Answer	Marks										
10(b)	Identify <u>one</u> practical weakness/limitation with the procedure you have described in your answer to part (a) and suggest how your study might be done differently to overcome the problem. Do not refer to ethics or sampling in your answer. Answer will depend on problem identified. If the problem was an obvious omission in (a), fewer marks will have been awarded in (a), so they can be awarded here. Problems may, for example, be matters of: Validity: • operationalisation • difficulty with lying / social desirability • difficulty with response biases Reliability: • inter-rater consistency • intra-rater consistency This list is not exhaustive and other appropriate responses should also be credited.	4										
10(b)	<table><tr><th>marks</th><th>comment</th></tr><tr><td>3–4</td><td>Appropriate problem identified. Appropriate solution is clearly described.</td></tr><tr><td>2</td><td>Appropriate problem identified. <i>Plus</i> EITHER Explanation of why it is a problem. OR Ineffectual but possible solution described.</td></tr><tr><td>1</td><td>Appropriate problem identified. Little or no justification.</td></tr><tr><td>0</td><td>No response worthy of credit</td></tr></table>	marks	comment	3–4	Appropriate problem identified. Appropriate solution is clearly described.	2	Appropriate problem identified. <i>Plus</i> EITHER Explanation of why it is a problem. OR Ineffectual but possible solution described.	1	Appropriate problem identified. Little or no justification.	0	No response worthy of credit	
marks	comment											
3–4	Appropriate problem identified. Appropriate solution is clearly described.											
2	Appropriate problem identified. <i>Plus</i> EITHER Explanation of why it is a problem. OR Ineffectual but possible solution described.											
1	Appropriate problem identified. Little or no justification.											
0	No response worthy of credit											



Cambridge International AS & A Level

PSYCHOLOGY

9990/22

Paper 2 Research Methods

October/November 2022

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **18** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

**Social Science–Specific Marking Principles
(for point-based marking)****1 Components using point-based marking:**

- Point marking is often used to reward knowledge, understanding and application of skills. We give credit where the candidate's answer shows relevant knowledge, understanding and application of skills in answering the question. We do not give credit where the answer shows confusion.

From this it follows that we:

- a** DO credit answers which are worded differently from the mark scheme if they clearly convey the same meaning (unless the mark scheme requires a specific term)
- b** DO credit alternative answers/examples which are not written in the mark scheme if they are correct
- c** DO credit answers where candidates give more than one correct answer in one prompt/numbered/scaffolded space where extended writing is required rather than list-type answers. For example, questions that require *n* reasons (e.g. State two reasons ...).
- d** DO NOT credit answers simply for using a 'key term' unless that is all that is required. (Check for evidence it is understood and not used wrongly.)
- e** DO NOT credit answers which are obviously self-contradicting or trying to cover all possibilities
- f** DO NOT give further credit for what is effectively repetition of a correct point already credited unless the language itself is being tested. This applies equally to 'mirror statements' (i.e. polluted/not polluted).
- g** DO NOT require spellings to be correct, unless this is part of the test. However spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. Corrasion/Corrosion)

2 Presentation of mark scheme:

- Slashes (/) or the word 'or' separate alternative ways of making the same point.
- Semi colons (;) bullet points (•) or figures in brackets (1) separate different points.
- Content in the answer column in brackets is for examiner information/context to clarify the marking but is not required to earn the mark (except Accounting syllabuses where they indicate negative numbers).

3 Annotation:

- For point marking, ticks can be used to indicate correct answers and crosses can be used to indicate wrong answers. There is no direct relationship between ticks and marks. Ticks have no defined meaning for levels of response marking.
- For levels of response marking, the level awarded should be annotated on the script.
- Other annotations will be used by examiners as agreed during standardisation, and the meaning will be understood by all examiners who marked that paper.

Question	Answer	Marks
1	The hypothesis for a study is ‘Adults with children worry more than adults without children’.	
1(a)	State whether this is a directional hypothesis or a non-directional hypothesis. Include a reason for your answer. Award 1 mark for the correct answer and a reason. No mark for stating ‘directional’ alone. directional/one-tailed (hypothesis), because it says that the variable of worrying will be greater in one condition than the other = 1 directional/one-tailed (hypothesis), because it says that the variable of worrying will be greater in some adults than others rather than just saying they will be different = 1	1
1(b)	Write a null hypothesis for this study. 1 mark for null hypothesis. There will be no difference between worrying in adults with and without children; 1 There will be no difference in worrying between adults with and without children; 1 Any difference between the worrying of participants with or without children is due to chance; 1 One or two-tailed alternative hypotheses, and correlational nulls, are incorrect. There will be no difference between worrying in adults and children = 0 (incorrect). There is no correlation/relationship... = 0	1

Question	Answer	Marks
2	From the study by Yamamoto et al. (chimpanzee helping):	
2(a)	Outline what is meant by ‘reliability’, using this study as an example. 1 mark for simple explanation (generic). 1 mark for link to reliability in Yamamoto. Consistency (of a procedure, task or measure) = 1 (explanation). E.g. All chimps pre-trained with apparatus so they would be equally good at the task = 1 (link to reliability). When using the same procedure/study/experiment produces the same results = 1 (explanation). Poor reliability because one chimp always gave the brush = 1 (link to reliability). Poor reliability because one chimp peeped over = 1 (link to reliability). To be reliable, measures must test the phenomenon in the same way each time = 1 mark (explanation). Only the first offer counted so it was equally difficult for all chimps to offer help = 1 (link to reliability). It was reliable as trials were consistent, 5 minutes max, so no chimp had longer to help = 2 (explanation + link). Replication = 0 Getting the same results (in different situations) = 0	2
2(b)	Suggest <u>one</u> way to improve reliability in this study. 1 mark for simple explanation (linked). Any improvement to procedure/task/measurement to make it more consistent e.g. types of chimpanzee, room conditions. Use same chimpanzee; same age chimpanzee (rather than mother/child). Use chimpanzees with same level of experience/knowledge. Test-retest/inter-rater reliability are <i>measures</i> of reliability not ways to improve. Identification = 0. However, can be creditworthy if description fully justifies improvement.	1

Question	Answer	Marks
3	In the study by Pepperberg (parrot learning), quantitative data was collected from the questions about ‘same’ and ‘different’.	
3(a)	Outline what was observed to produce the quantitative data in this study. 1 mark for categories (any two): colour, shape, matter = 1 whether the parrot’s category response was correct (e.g. colour); How many times Alex correctly chose same and different = 0	1
3(b)	Qualitative data can also be useful in studies. Pepperberg could have collected qualitative data by observing the parrot.	
3(b)(i)	Describe what is meant by ‘qualitative data’. 1 mark for meaning. Descriptive data / in depth data / detailed data; Words / not numerical / subjective = 0	1
3(b)(ii)	Describe <u>one</u> behaviour that could have been observed to produce qualitative data in this study. 1 mark for description of behaviour. Verbal behaviour (feedback by Alex); What the parrot was doing when it was fidgeting; Where the parrot flew to when it flew away;	1
3(b)(iii)	Explain why qualitative data for the behaviour you identified in (b)(ii) would have been useful in this study. 1 mark for suggestion of why useful (can be generic). 1 mark detail (must have a link for 2 marks). Gives insight into avian thinking / how Alex understands the words he uses = 2 [Fidgeting] It could indicate frustration; (suggestion). E.g. if the parrot fidgeted it might mean he didn’t really know the answer and was guessing; (linked detail). [Fidgeting] It could indicate level of concentration; (suggestion). E.g. if the parrot wasn’t concentrating he might give the wrong answer even though he understood; (linked detail). [Flying away / eating] It could limit whether the parrot was listening; (suggestion). E.g. if he was flying/eating he might not listen to the question so be unable to answer; (linked detail).	2

Question	Answer	Marks
4	In the study by Dement and Kleitman (sleep and dreams), brain activity during sleep was recorded using an EEG (electroencephalograph). Another way to record brain activity is with fMRI (functional magnetic resonance imaging). Suggest <u>two</u> reasons why using an EEG to record brain activity during sleep is a more appropriate choice than using an fMRI. 1 mark for reason (comparison) } ×2. 1 mark for link to sleep } No link mark without reason. fMRI is very noisy; an EEG is silent; (reason). this might stop then sleeping / disrupt their dreams; (link). EEG only needs wires, an fMRI is a whole big machine; (reason). so, an EEG is less distressing so more likely to sleep well; (link). fMRI is dangerous (if you have anything magnetic inside the body); (reason). limits variety of participants / generalisability as people with metal in them might sleep differently; (link). being in an fMRI can trigger claustrophobia; (reason). limits variety of participants / generalisability as claustrophobics might sleep better/worse generally; (link). EEG can record REM and nREM; (reason). So, gives better information about sleep than an fMRI; (link). Description of EEG/fMRI = 0	4

Question	Answer	Marks
5	In the study by Andrade (doodling), a median could have been calculated for the results of the doodling group and the control group. Outline how a median could have been calculated for the number of names recalled by each group in this study. 1 mark for formula/description of median. 1 mark for link. Put scores in numerical/rank order and find middle score (if 2 middles add together and halve); (median). Using all the (name) recall scores of either doodlers or non-doodlers; (link). For the doodling or control condition she would put all the name recall scores in order and find the middle one = 2 (median and link). Put scores in numerical/rank order, 2 middles add together and halve; (median).	2

Question	Answer	Marks
6	Describe the ethical guidelines of ‘deception’ and ‘confidentiality’, using any examples. 4 marks max per guideline for definition and detail. 1 mark for each example that is linked to a guideline, up to a maximum of 2 per guideline. Examples can include examples from any research (core studies, other studies, candidate’s own studies). Max 4 if no examples or if only one of the guidelines is described. Deception: misinforming participants; failing to inform (1 for definition). Confidentiality: ensuring participants’ information is anonymous / safe / not made public; (1 for definition). Deception: • participants should not be lied to / is when participants are lied to (about the aim); (1 definition) • as this means they cannot give informed consent / may be distressed / might have wanted to withdraw; (+1 detail) • e.g. in Milgram the participants were told they were doing a study about memory/learning/punishment (when in fact it was about obedience) / were told the shocks were real; (1 for e.g.) • but sometimes deception is essential to avoid demand characteristics; (+1 detail) • Milgram’s participants would have gone to 450V if they knew that the shocks were not real; (+1 e.g.) • Piliavin et al.’s participants thought the victim was really drunk/ill; (+ e.g.) • Laney et al.’s participants were lied to about the ‘generated profile’ (from the FBI); (+1 e.g.) • Laney et al.’s participants were misled about food preferences and personality; (+1 e.g.) • If participants are deceived, they should be debriefed (although this may not be possible in field experiments) Confidentiality: • Participants should not be individually identifiable/named; (1 definition) • participants can be identified by numbers instead of names; (+1 detail) • Nor should locations such as schools/workplaces; (+1 detail) • So the number of researchers with access to this should be limited; (+1 detail) • And records should be stored safely/securely; (+1 detail) • for example, we don’t know the name of Saavedra and Silverman’s boy: (+1 e.g.) • although we know some details e.g. Hispanic, age, it’s not enough to identify him; (+1 e.g.) • the participants in Dement and Kleitman were identified by their initials; (+1 e.g.)	6

Question	Answer	Marks
7	Shula is investigating whether there are differences in the way that younger and older people behave when they see each other. She is using observations to record the following behaviours: • smiling • waving • shouting	
7(a)	Explain whether Shula is conducting a structured observation or an unstructured observation. 1 mark for explanation (generic). 1 mark for link. There is no mark for identifying 'structured'. Structured because she is using behaviour categories; (explanation). These are the three behaviours / used when people see each other / smiling, waving, shouting; (link).	2
7(b)(i)	Explain why it would be better for Shula to conduct a covert observation than an overt observation. 1 mark for reason it would be better (generic). 1 mark for link. The participants would be unaware of her presence / would behave normally; (reason). So, they wouldn't alter their behaviours when they see others because she was there / they were being watched; (link).	2
7(b)(ii)	Suggest <u>one</u> problem with Shula conducting a covert observation. 1 mark for problem (may be generic). 1 mark for link. The participants would not be able to give consent in a private place; (reason). Because they wouldn't know their greeting behaviour was being observed <i>If the greeting was in a non-public place</i>; (link). But is not a valid point if the meeting was in a public place because consent would not be needed; (link). The participants might move out of Shula's view (because she couldn't break cover); (reason). So, her records of their greeting behaviour would be incomplete; (link). The observer might not be able to clearly observe expressions; (reason). So, her observations, smile or not, might not be accurate. The participants would not be able to explain reason for behaviour (if asked) because not know being observed.	2

Question	Answer	Marks
8	Mahi is studying the effect of music on emotions. In part of her study she is collecting data from 20 participants about their emotional responses to songs. She is using the following categories to observe emotional responses: • angry • bored • happy • relaxed	
8(a)(i)	Suggest how Mahi could operationalise two of these categories of observed emotional responses. 1 mark for definition ×2. Angry e.g. they are frowning; Bored e.g. they are listless/fidgety/doodling; Happy e.g. they are smiling; Relaxed e.g. they are sitting in a slouched/lazy position; These are examples, there will be many acceptable definitions. ‘Observations’ must be observable for an observer (i.e. a person) not a machine.	2
8(a)(ii)	For <u>one</u> of your suggestions for the operationalisation of a category in part 8(a)(i): Explain why Mahi could misinterpret or incorrectly categorise an observed emotional response of a participant in her study. 1 mark for explanation. NO mark for identifying the category. <i>Angry = they are frowning:</i> They might be frowning because they don’t understand / because they haven’t heard what someone said; <i>Bored = they are listless/fidgety/doodling:</i> We might fidget because we are in pain or itch (not because we are bored); <i>Happy = are smiling:</i> For some people, smiling might just be ‘content’ (not happy); <i>Relaxed = they are sitting in a slouched/lazy position:</i> They might just have a bad posture but not be relaxed / they might be bored (and not relaxed); These are examples, there will be many acceptable responses.	1

Question	Answer	Marks															
8(b)	Mahi is collecting data in the table below. This is the number of participants who showed each of the four emotional responses. She wants to display this data on a bar chart. <table><tr><td></td><td colspan="4">Observed emotional responses</td></tr><tr><td></td><td>angry</td><td>bored</td><td>happy</td><td>relaxed</td></tr><tr><td>Number of participants showing each emotional response</td><td></td><td></td><td></td><td></td></tr></table> Label the axes for the bar chart that Mahi will use to display her results.  1 mark: y-axis label number of participants/people. 1 mark: y-axis units (for frequency: max 20). 1 mark: x-axis label 'observed emotional responses' / 'emotions'. 1 mark: x-axis categories angry, bored, happy, relaxed (must have all 4).		Observed emotional responses					angry	bored	happy	relaxed	Number of participants showing each emotional response					3
	Observed emotional responses																
	angry	bored	happy	relaxed													
Number of participants showing each emotional response																	
8(c)	In a second study, Mahi’s participants will listen to different types of music. She expects that fast music will make the participants feel happy and slow music will make them feel unhappy.																
8(c)(i)	Explain <u>one</u> ethical problem with the design of this study. Do <u>not</u> refer to deception or confidentiality in your answer. 1 mark for identifying a relevant ethical issue. 1 mark for linked detail. (Failure to protect from psychological) harm; (ethical issue). Because the people who hear a sad song may leave still sad; (linked detail). (no) Informed consent; (ethical issue). the participants are consenting to listening to music, not the effect it will have on them; (linked detail).	2															

Question	Answer	Marks
8(c)(ii)	Suggest <u>one</u> way that Mahi could solve the ethical problem you explained in part 8(c)(i). 1 mark for identifying a solution to the ethical issue. 1 mark for detail (e.g. details of implementing the solution or how it solves the problem). Always return the participants to a normal mood; (identification of solution). By playing them fast music at the end of the study; (detail). Inform the participants about the possible effect of the study; (identification of solution). By asking them to consent to having their mood changed (but not saying how); (detail). Gain consent; (identification of solution). Protect from harm; (identification of solution).	2

Question	Answer	Marks
9	Syd is using an experiment to test whether epinephrine affects sleep. He has two groups of participants; one group receives an epinephrine injection and the other group receives a saline injection. The participants do not know what their injection contains. Each participant is tested at a town centre laboratory on a different night over a 20-night period. The town centre is very busy at the weekend but quiet during the week.	
9(a)	Explain why it is important that participants do not know which condition they are in during an experiment. 1 mark for reason why. 1 mark for detail (can be linked but does not have to be). So that they are not affected by expectations / demand characteristics / do not alter their behaviour; (reason). As this would hide the effect of the IV on the DV / mean that causality could not be determined; (detail). This would mean Syd would not know if expectation or adrenalin was affecting their sleep; (linked detail).	2
9(b)	Identify Syd's experimental design. Include a reason for your answer. 1 mark for identifying independent groups design / measures (do not accept 'independent' alone). 1 mark for linked explanation. Independent measures/groups; (identification of design). Because the epinephrine and control groups have different people in them; (linked explanation).	2
9(c)	Suggest <u>one</u> participant variable that could affect Syd's experiment. 1 mark for suggesting a participant variable. 1 mark for link (e.g. why it is important in Syd's study / the effect it would have on his results). People may react differently to adrenalin; (participant variable). differences in sleep between groups may be partly due to the different participants' reaction; (detail). People may have different sleep needs/habits/patterns; (participant variable). differences between groups may be due participants' normal sleep rather than epinephrine; (detail).	2

Question	Answer	Marks
9(d)	Suggest <u>one</u> situational variable that could affect Syd's experiment. 1 mark for suggesting a situational variable. 1 mark for link (e.g. why it is important in Syd's study / the effect it would have on his results). People may be disrupted by the noise outside; (situational variable). Differences between groups may be caused by when in the week they are tested; (detail). People may work harder at weekends, this may affect their sleep; (situational variable). Differences in sleep between groups could be caused by when in the week they are tested; (detail).	2

Question	Answer	Marks
10	Dr Mitchell wants to investigate how physically active people are, and he believes that this may be related to how much they use social media.	
10(a)	Describe how Dr Mitchell could conduct a correlational study to investigate the relationship between how physically active people are and how much they use social media. To correlate data, the variables must be at least ordinal scales, being quantitative alone is not enough. Three majors for a correlational study are: (a) Variable 1 – how physically active people are (detail: correct operationalisation and quantification). (b) Variable 2 – use of social media (detail: correct operationalisation and quantification). (c) Technique 2 – for producing/collecting data i.e. procedure (detail: e.g. tests, observations, questionnaires). The minors are: • location of participants when completing the questionnaire / how it is distributed • participants, sampling technique Also: • a statement about whether a positive or negative correlation is expected • sample size • description of how data will analysed, e.g. use of scattergram • ethical issues Other appropriate responses should also be credited.	10

Question	Answer	Marks
10(a)	Mark according to the levels of response criteria below: Level 3 (8–10 marks) • Response is described in sufficient detail to be replicable (i.e. what and how). • Response may have a minor omission (i.e. who or where). • Use of psychological terminology is accurate and comprehensive. Level 2 (5–7 marks) • Response is in some detail. • Response has minor omission(s) (i.e. who and/or where). • Use of psychological terminology is accurate. Level 1 (1–4 marks) • Response is basic in detail. • Response has major omission(s). • If response is impossible to conduct max. 2. • Use of psychological terminology is mainly accurate. Level 0 (0 marks) No response worthy of credit.	
10(b)	Identify <u>one</u> practical weakness/limitation with the procedure you have described in your answer to part (a) and suggest how your study might be done differently to overcome the problem. Do <u>not</u> refer to ethics or sampling in your answer. Answer will depend on problem identified. If the problem was an obvious omission in (a), fewer marks will have been awarded in (a), so they can be awarded here. Problems may, for example, be matters of: Validity: • operationalisation • difficulty with lying / social desirability • difficulty with response biases Reliability: • inter-rater consistency • inter-rater consistency This list is not exhaustive and other appropriate responses should also be credited.	4

Question	Answer		Marks
10(b)			
	Marks	Comment	
	3–4	Appropriate problem identified. Appropriate solution is clearly described.	
	2	Appropriate problem identified. <i>Plus</i> EITHER Explanation of why it is a problem. OR Ineffectual but possible solution described.	
	1	Appropriate problem identified. Little or no justification.	
	0	No response worthy of credit.	



Cambridge International AS & A Level

PSYCHOLOGY

9990/23

Paper 2 Research Methods

October/November 2022

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **17** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

**Social Science–Specific Marking Principles
(for point-based marking)****1 Components using point-based marking:**

- Point marking is often used to reward knowledge, understanding and application of skills. We give credit where the candidate's answer shows relevant knowledge, understanding and application of skills in answering the question. We do not give credit where the answer shows confusion.

From this it follows that we:

- a** DO credit answers which are worded differently from the mark scheme if they clearly convey the same meaning (unless the mark scheme requires a specific term)
- b** DO credit alternative answers/examples which are not written in the mark scheme if they are correct
- c** DO credit answers where candidates give more than one correct answer in one prompt/numbered/scaffolded space where extended writing is required rather than list-type answers. For example, questions that require *n* reasons (e.g. State two reasons ...).
- d** DO NOT credit answers simply for using a 'key term' unless that is all that is required. (Check for evidence it is understood and not used wrongly.)
- e** DO NOT credit answers which are obviously self-contradicting or trying to cover all possibilities
- f** DO NOT give further credit for what is effectively repetition of a correct point already credited unless the language itself is being tested. This applies equally to 'mirror statements' (i.e. polluted/not polluted).
- g** DO NOT require spellings to be correct, unless this is part of the test. However spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. Corrasion/Corrosion)

2 Presentation of mark scheme:

- Slashes (/) or the word 'or' separate alternative ways of making the same point.
- Semi colons (;) bullet points (•) or figures in brackets (1) separate different points.
- Content in the answer column in brackets is for examiner information/context to clarify the marking but is not required to earn the mark (except Accounting syllabuses where they indicate negative numbers).

3 Annotation:

- For point marking, ticks can be used to indicate correct answers and crosses can be used to indicate wrong answers. There is no direct relationship between ticks and marks. Ticks have no defined meaning for levels of response marking.
- For levels of response marking, the level awarded should be annotated on the script.
- Other annotations will be used by examiners as agreed during standardisation, and the meaning will be understood by all examiners who marked that paper.

Question	Answer	Marks
1	Dement and Kleitman (sleep and dreams) investigated a correlation between the length of the dream narrative and the duration of the REM period. Describe the correlation that was found. 1 mark for direction of relationship 1 mark for link Positive (correlation); (definitive) Between the number of words (in the narrative) and the time/minutes of REM sleep; (link) The longer the duration of REM, the longer the narrative; (link only)	2

Question	Answer	Marks
2	A researcher is planning to investigate forgetting in very old people. However, measuring forgetting in very old people can be more ethically and practically difficult than measuring forgetting in younger people.	
2(a)	Suggest <u>one</u> ethical reason why measuring forgetting in very old people can be difficult. 1 mark for ethical reason 1 mark for link i.e. must be relevant to elderly people Protection from harm; (reason) Elderly people are likely to be more vulnerable; (reason or link) So may need additional protection if they find their forgetting distressing; (link) Elderly people may be distressed about their forgetting; (reason) Because it might reveal memories they don't want to recall / might reveal the extent of their memory loss; (link) Consent; (reason) Elderly people (e.g. with dementia) may lack the capacity to understand the demands of the study; (reason or link) So they may be unable to give (fully informed) consent to give information about their forgetting; (link) Privacy; (reason) Elderly people are more reserved than younger people / they will see it as an invasion of privacy; (reason or link) So they might find questions about the content of what they have forgotten too personal; (link)	2

Question	Answer	Marks
2(b)	Suggest <u>one</u> practical reason why measuring forgetting in very old people can be difficult. 1 mark for practical reason 1 mark for link The measure of forgetting may lack validity; (reason) Because elderly people forget a lot, so they might not actually know what they have forgotten; (link) Old people may have poor information processing / vision / hearing / speech / dementia; (reason) So the difference is not just age/forgetting/memory; (link) The measure of forgetting may not be objective / may be affected by social desirability; (reason) Because elderly people may be selective about what incidents of forgetting they reveal; (link)	2

Question	Answer	Marks
3	In the study by Laney et al. (false memory) two of the questionnaires used were the Food History Inventory (FHI) and the Restaurant Questionnaire (RQ).	
3(a)(i)	Each of these questionnaires included a ‘critical item’. Explain what is meant by a ‘critical item’. 1 mark for explanation The question/item that is used to collect data / that measures the DV	1
3(a)(ii)	Describe how the critical item in <u>either</u> the FHI <u>or</u> the RQ was measured. 1 mark for scale On a (rating) scale of 1–8; (FHI) from 1 = definitely did not happen to 8 = definitely did happen; (RQ) from 1 definitely yes to 8 definitely no;	1
3(b)	Explain the purpose of the items that are <u>not</u> critical items in the FHI and the RQ. 1 mark for purpose 1 mark for link Fillers / to distract participants / to hide aim / to avoid demand characteristics; (purpose) So participants believed it was about food preferences (and personality); (link) So participants did not suspect it was about false memories; (link)	2

Question	Answer	Marks
4	A teacher records each student's test results once a week. At the end of the year he calculates the mean of the test results for each student. Describe how the mean would be calculated in this study. 1 mark for formula/description of mean 1 mark for link The total of all the scores divided by number of scores (including any zeros) = 1 (mean) The scores are each student's test score and the number of scores is the number of weeks/tests = 1 (link) For each student he would divide the total of all their test scores (for the year) and divide this by the number of tests = 2 (mean and link)	2

Question	Answer	Marks
5	In the study by Yamamoto et al. (chimpanzee helping), a small sample of chimpanzees was tested.	
5(a)	Explain <u>one</u> practical weakness of using this small sample. 1 mark for identifying practical weakness. 1 mark for explanation Cannot generalise / unrepresentative; (from a small sample); (identification) These (5) chimpanzees may have differed from the majority in terms of their helpfulness; (explanation)	2
5(b)	Explain <u>one</u> ethical strength of using this small sample. 1 mark for identifying ethical strength. 1 mark for explanation Follows the guideline of 'numbers'; (identification) Only five / a few / limits number of individuals used; (explanation)	2

Question	Answer	Marks
6	Describe laboratory experiments and natural experiments, using any examples. Definitions/detail: up to a maximum of 4 marks for each type of experiment. Examples: maximum of 2 marks for each type of experiment. Examples can be from any studies (core studies, other studies, candidate's own studies). Max 4 if no examples or if only one type of experiment is described. <i>Laboratory experiment:</i> Manipulated independent variable; Has a measured dependent variable; Has controls/standardisation; e.g. Andrade doodling / no doodling; (lab IV example) e.g. (in a lab experiment) an IV could be coffee / no coffee; (made up example) e.g. Canli et al.: randomised picture order (controlling familiarity of type) / controlled participant attention with a fixation cross; e.g. Dement and Kleitman: controlled for factors affecting sleep as participants told not to drink alcohol/caffeine; e.g. Schachter and Singer: controlled the stooges' behaviours as they were scripted; e.g. Andrade: controls also given paper and pencil; all doodling condition given sheets to constrain doodling; e.g. Baron-Cohen et al.: access to a glossary controlled for understanding of the words; e.g. Laney et al.: controlled for processing of feedback by giving additional questions (imagine the setting...); e.g. Yamamoto et al.: same tool familiarisation process; <i>Natural experiment:</i> does not have a manipulated IV / conditions of the IV are not the result of experimental intervention; but does have a measured DV; So there can be few controls; e.g. in a study of the introduction of TV where the IV was before and after TV was available;	6

Question	Answer	Marks
7	Pranit uses a questionnaire to investigate whether psychology students know more about operant conditioning than the general public. His questions are: A Describe what you think a ‘reward’ is and does. B Tell me what ‘punishment’ is and does. C ‘Rewards are more effective than punishment’. Do you agree? yes / no. D How sure are you that you could accurately explain ‘operant conditioning’? 1 = certainly could, 5 = certainly could not.	
7(a)(i)	Identify <u>one</u> closed question from A to D. 1 mark for C or D (definitive) Accept responses that have copied out the question instead of giving a letter	1
7(a)(ii)	Identify <u>one</u> open question from A to D. 1 mark for A or B (definitive) Accept responses that have copied out the question instead of giving a letter	1

Question	Answer	Marks
7(b)	Pranit adds two new questions to his questionnaire: E Do rewards increase or decrease the frequency of a behaviour? increase / decrease. F Explain the effect of punishment on the frequency of a behaviour.	
7(b)(i)	Suggest <u>one</u> problem that Pranit could have when using <u>one</u> of the new questions. 1 mark for identification of problem (may be generic) 1 mark for link <i>e.g. E ‘Do rewards increase or decrease the frequency of a behaviour? increase / decrease’ (closed question)</i> (Because it is a closed question) the respondent can’t elaborate their answer; (generic problem) Participants could say ‘increase’ but might want to add ‘but not always’, but couldn’t; (link) It only has two options so they have a 50% chance of getting it correct; (generic problem) Even if the participant does not know whether it would increase or not; (link) Could cause a ceiling effect; (link) <i>e.g. F ‘Explain the effect of punishment on the frequency of a behaviour’ (open question)</i> (Because it is an open question) their answer could need interpretation; (generic problem) If they say ‘punishment affects the frequency of a behaviour’, it’s only partly right; (link) Protection from harm; (generic problem) Explaining punishment might be stressful for someone who was punished often; (link)	2
7(b)(ii)	Explain what the responses to Question E <u>and</u> Question F would tell Pranit about the participants’ understanding of operant conditioning. 1 mark for explanation × 2 <i>‘Do rewards increase or decrease the frequency of a behaviour? increase / decrease’</i> It would show whether the respondent understood that rewards act as reinforcers; It would show whether they know <i>that rewards increase the frequency of a behaviour</i> <i>‘Explain the effect of punishment on the frequency of a behaviour’</i> To see whether the participant knew that punishment decreases behaviour frequency;	2

Question	Answer	Marks
8	Candy is investigating sleepiness in a student population. She is recording the number of hours' sleep the students have at the beginning and at the end of the year. She has identified two extraneous variables. One is a participant variable and one is a situational variable: • Highly motivated students often work harder at the beginning of the year • Late-night parties are more common at the end of the year.	
8(a)	Explain which <u>one</u> of these is a participant variable. 1 mark for explanation (no mark for identification) No mark for repeating first bullet point <i>(Highly motivated students often work harder at the beginning of the year is a participant variable)</i> because mood is internal / each individual is different / individual differences / their personality matters; (explanation)	1
8(b)	Explain which <u>one</u> of these is a situational variable. 1 mark for explanation (no mark for identification) No mark for repeating first bullet point <i>(Late-night parties are more common at the end of the year is a situational variable)</i> because this is something external / in the environment / because any of the students could go to parties; (explanation)	1

Question	Answer	Marks
8(c)(i)	Suggest how Candy could limit the effect of <u>either</u> the participant variable <u>or</u> the situational variable. No mark for identifying the problem 1 mark for suggestion (can be solved by mitigation or elimination) 1 mark for detail Accept 2 brief ways for 2 marks (but must both be for the same variable) <i>Participant variable: Motivated personality:</i> Measure personality and see if it affects different people over the year; (suggestion) E.g. make sure there is a balance of highly motivated and unmotivated students; (detail) Remove students with extreme personalities from the sample; (suggestion) E.g. by giving out a questionnaire to find out who is highly motivated (and removing them); (detail) <i>Situational variable: Late-night parties:</i> Limit the effect by testing students' sleep before the parties begin; (suggestion) E.g. testing them the week before the last week of the year / ban parties; (detail) Remove students who attend parties from the sample; (suggestion) E.g. by giving out a questionnaire to find out who went to a party (and removing them); (detail)	2

Question	Answer	Marks
8(c)(ii)	Attempting to limit the effects of one extraneous variable in a study can create other problem effects. Suggest <u>one</u> problem that your answer to (c)(i) could create in Candy's study. Do <u>not</u> refer to demand characteristics in your answer. 1 mark for identifying issue 1 mark for detail (in order to gain two marks, the answer must apply to Candy's study) People might lie in questionnaires; (issue) So Candy thinks she is eliminating people who are unhappy / who went to parties, but she isn't; (detail) Protection from harm; (issue) Excluding some students from the sample / from the party might upset those that are not chosen; (detail) Stopping them going to parties could make them lonely; (detail) Removing some people from the sample makes it biased; (issue) E.g. the type of people who are lonely might also sleep more; (ORA) (detail) E.g. people who go to parties might happen be the type of people who sleep more anyway; (ORA) (detail) Protection from harm; (issue) Limiting students' sleep would be dangerous; (detail)	2
8(d)	Candy is also concerned about the effect of demand characteristics on her results.	
8(d)(i)	Suggest <u>one</u> way that demand characteristics could affect Candy's results. 1 mark for identification of a possible source of demand characteristics in this study (generic or linked) 1 mark for effect on results The participants might become aware of the aim; (generic identification) The participants might become aware of the aim from measuring their sleep at the start of term; (linked identification) This could lead them to worry about their sleep and sleep less; (effect on results) They might want to exaggerate the amount they sleep / deliberately sleep more; (effect on results)	2

Question	Answer	Marks
8(d)(ii)	Candy does not want to deceive her participants by giving them a false aim. Suggest <u>one</u> way that Candy might reduce the effect of demand characteristics on her results, other than by giving her participants a false aim. 1 mark for identification of a way to reduce demand characteristics (generic) 1 mark for link Hide the aim of the study; (generic) By adding lots of other tests/measures other than the record of sleep; (link) by adding filler questions to the questionnaire; (generic) So it isn't obvious that it is a study about sleep / e.g. by adding questions about holidays; (link)	2

Question	Answer	Marks
9	Vernon is conducting an observational study about the helping behaviour of students in a school.	
9(a)	Vernon wants to use an opportunity sample but his teacher tells him that his sample will not be representative. Explain what Vernon's teacher means, using an example relating to Vernon's study. 1 mark for explanation of non-representative (generic) 1 mark for linked example of why The sample would be biased / it won't be typical of the population fully / hard to generalise from; (generic) E.g. only the more helpful students are likely to say yes when asked to participate; (link)	2
9(b)	Vernon decides to use a random sample instead. Suggest how Vernon could obtain a random sample of 50 participants. 1 mark for how (generic) 1 mark for link Use the registers / a list of everyone in the school to put each person's number in the hat; (link) Get 50 numbers out of a hat / use a random number generator / number tables (to be the sample);	2

Question	Answer	Marks
9(c)	Vernon is planning how to observe and record helpful behaviour in the school.	
9(c)(i)	Suggest how <u>two</u> helping behaviours could be operationalised for Vernon's observation. 1 mark for operational definition of helping in a school ×2 Lending a pencil; Giving someone food; Carrying books for a teacher;	2
9(c)(ii)	Suggest how Vernon could be a non-participant observer to collect data about helpful behaviour. 1 mark for how (generic) 1 mark for linked detail (school/classroom/helpfulness) (Watching behaviour while) not joining in / not being in the social setting / ignoring the participants; (generic) Looking through a classroom window; (linked detail) Sitting at the back of the classroom; (linked detail) Watching the classroom through a one-way mirror / recording the children through CCTV; (linked detail)	2

Question	Answer	Marks
10(a)	Meena wants to investigate one child in a class who is very resistant to authority and is sometimes very disobedient. Meena wants to study the child in detail to explore the child's behaviour. Describe how Meena could conduct a case study to investigate the behaviour of this child. Three majors for a case study are: (a) techniques used to collect data asked e.g. interview, observations, questionnaire, tests/tasks (description of least two, can be generic e.g. open and closed questions, participant observation, behavioural categories) (b) content e.g. interview/questionnaire questions (open etc., about obedience/disobedience e.g. to parents, teachers) e.g. observe (in different situations, different techniques, qualitative data / behavioural categories) e.g. test/task (detail of content/procedure, multiple sessions) (for the detail, there must be information about one or more features from at least two of the techniques that is specific to this study) (c) use of data (e.g. open question interpretation, how obedience is analysed, e.g. quantitative – scoring, means, triangulation) The minors are: where: location of participant when being studied (home, school?) Who: – disobedient/naughty/resistant child Other details for replication: • ethical issues Other appropriate responses should also be credited. Level 3 (8–10 marks) • Response is described in sufficient detail to be replicable (i.e. what and how). • Response may have a minor omission (i.e. who or where). • Use of psychological terminology is accurate and comprehensive. Level 2 (5–7 marks) • Response is in some detail. • Response has minor omission(s) (i.e. who and/or where). • Use of psychological terminology is accurate. Level 1 (1–4 marks) • Response is basic in detail. • Response has major omission(s). • If response is impossible to conduct max. 2. • Use of psychological terminology is mainly accurate. Level 0 (0 marks) No response worthy of credit.	10

Question	Answer	Marks										
10(b)	Identify <u>one</u> practical weakness/limitation with the procedure you have described in your answer to part (a) and suggest how your study might be done differently to overcome the problem. Do <u>not</u> refer to ethics or sampling in your answer. Answer will depend on problem identified. If the problem was an obvious omission in (a), fewer marks will have been awarded in (a), so they can be awarded here. Problems may, for example, be matters of: Validity - operationalisation - difficulty with lying / social desirability - difficulty with response biases Reliability - inter-rater consistency - intra-rater consistency. This list is not exhaustive and other appropriate responses should also be credited. <table><tr><th>Marks</th><th>Comment</th></tr><tr><td>3–4</td><td>Appropriate problem identified. Appropriate solution is clearly described.</td></tr><tr><td>2</td><td>Appropriate problem identified. <i>plus</i> EITHER Explanation of why it is a problem OR Ineffectual but possible solution described.</td></tr><tr><td>1</td><td>Appropriate problem identified. Little or no justification.</td></tr><tr><td>0</td><td>No response worthy of credit</td></tr></table>	Marks	Comment	3–4	Appropriate problem identified. Appropriate solution is clearly described.	2	Appropriate problem identified. <i>plus</i> EITHER Explanation of why it is a problem OR Ineffectual but possible solution described.	1	Appropriate problem identified. Little or no justification.	0	No response worthy of credit	4
Marks	Comment											
3–4	Appropriate problem identified. Appropriate solution is clearly described.											
2	Appropriate problem identified. <i>plus</i> EITHER Explanation of why it is a problem OR Ineffectual but possible solution described.											
1	Appropriate problem identified. Little or no justification.											
0	No response worthy of credit											