Cambridge Assessment International Education

# Cambridge International AS & A Level

**PSYCHOLOGY** **9990/21**

Paper 2 Research Methods **October/November 2023**

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 2023 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

## 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.

**Guide to marking annotations**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BOD | benefit of doubt | ✓ | correct point (do not use more than one tick per mark) | ✗ | incorrect point | ✓a | Each point of description for a major |
| NBOD | no benefit of doubt | G | indicates a point is a Generic mark | CONT | continued (use 'link' icon) | ✓b | |
| IRRL | irrelevant | ? | Unclear point | NAQ | not answering question | ✓c | |
| REP | repetition (of stem / within response) | ~~~ | wiggly underline e.g. use to bring attention to a key part | | | ✓a ~~~ | Award when description of a major is in *detail* (see MS) |
| E | ethical point in Q 10a | ∧ | 'something is missing' | SEEN | Acknowledge blank pages | ✓b ~~~ | |
| L1 | Level 1 in Q10a | L2 | Level 2 in Q10a | L3 | Level 3 in Q10a | ✓c ~~~ | |

| Question | Answer | Marks |
|---|---|---|
| 1(a) | **Explain what is meant by 'covert' observation.**<br><br>1 mark for partial explanation + 1 mark for full explanation<br>(e.g. explicit / detailed / relevant example)<br><br>A covert observer is hidden (from the participants); 1 (partial)<br>e.g. when an observer uses a camera; 1 (detail)<br>e.g. (Bandura et al. watched through) a one-way mirror; (example)<br>When the **role** of the observer is **hidden from the participants**; 2 (full) | **2** |
| 1(b) | **Explain <u>one</u> strength of a covert observation.**<br><br>1 mark strength<br>1 mark detail<br><br>The participants will not know the observer is there / will act more naturally / less risk of changing their behaviour;<br>**less** risk of demand characteristics / **less** risk social desirability / **more** valid; | **2** |
| 1(c) | **Explain <u>one</u> weakness of a covert observation.**<br><br>1 mark weakness<br>1 mark detail<br><br>Observer less likely to be close to participants / have direct contact with them / be able to speak to them;<br>So their observations may be **less** detailed / clear / valid;<br><br>They may be discovered and influence the participants' behaviour;<br>So the results would be **less** valid;<br><br>They may be discovered and upset the participants;<br>So the study would **cause** the participants harm / **break** the guideline of protection;<br><br>They are being watched without their permission;<br>**breaks** the ethical guideline of consent; (weakness or detail)<br>**denied** participants the right to withdraw; (weakness or detail) | **2** |

| Question | Answer | Marks |
|---|---|---|
| 2 | **A hypothesis is 'There will be a difference in helpfulness between obedient and disobedient people'.** | |
| 2(a) | **State whether this is a directional (one-tailed) hypothesis or a non-directional (two-tailed) hypothesis.**<br>**Include a reason for your answer.**<br><br>1 mark for **reason** (note there is no mark for stating that it is non-directional)<br><br>Non-directional because it does not say whether the helpfulness of obedient and disobedient people will be greater;<br>Non-directional because it does not say whether obedient and disobedient people will more helpful;<br>Non-directional because it does not say how obedience will affect helpfulness;<br><br>Non-directional because it does not say which level of the IV produce a greater score on the DV; (generic)<br><br>Non-directional because it does not say the direction of the effect = 0<br>Non-directional because it does not say the direction of the effect of obedience and disobedience = 0<br>Non-directional because it does not say the direction of the effect on helpfulness = 0<br><br>Directional because… = 0 | **1** |
| 2(b) | **Write a null hypothesis for this study.**<br><br>1 mark for null hypothesis (does **not** have to be operationalised)<br><br>There will be no difference between helpfulness in obedient and disobedient people = 1<br>There will be no difference between how helpful obedient and disobedient people are = 1<br>Any difference between helpfulness in obedient and disobedient people is due to chance = 1<br><br>The level of obedience will not affect helpfulness = 1<br><br>There will be no difference between helpfulness and obedient and disobedient people = 0<br>There will not be a difference between helpfulness and obedience = 0<br>Any difference between helpfulness **and** obedience is due to chance = 0 | **1** |

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>3</td><td>The study by Pepperberg (parrot learning) tested a parrot's understanding of the concepts of 'same' and 'different'.<br>Table 3.1 shows the total results for correct responses and incorrect responses for two categories of objects.<br><br>Table 3.1<br><br>
<table>
<tr><th rowspan="2">Category of objects</th><th colspan="2">Total responses to 'same?' and 'different?' questions</th></tr>
<tr><th>correct</th><th>incorrect</th></tr>
<tr><td>objects used in training</td><td>99</td><td>30</td></tr>
<tr><td>objects not used in training</td><td>96</td><td>17</td></tr>
</table></td><td></td></tr>
<tr><td>3(a)(i)</td><td>Describe the results in Table 3.1. for correct responses.<br><br>1 mark for description of 'correct responses' results<br><br>The number / proportion of correct responses was (very) similar for the two categories of objects;</td><td>1</td></tr>
<tr><td>3(a)(ii)</td><td>Describe the results in Table 3.1. for incorrect responses.<br><br>1 mark for description of 'incorrect responses' results<br><br>The number / proportion of incorrect responses was higher for the objects used in training (than those not used);<br><br>30 for familiar / training objects and 17 for unfamiliar / non-training ones = 0 [NAQ]</td><td>1</td></tr>
<tr><td>3b</td><td>Whether or not the objects had been used in training affected the accuracy of the parrot's responses.<br>Describe how Pepperberg explained this effect.<br><br>1 mark description [definitive reasons] + 1 mark detail<br><br>Alex received the objects themselves as his primary reward;<br>the new items were (potentially more) interesting / motivating;<br>so paid more attention to them;<br>e.g. chew apart / to try to eat / to use for preening;</td><td>2</td></tr>
</table>

| Question | Answer | Marks |
|---|---|---|
| 4 | **In the study by Canli et al. (brain scans and emotions), all the participants were female.**<br>**State the <u>two</u> reasons that Canli et al. gave for using only female participants in this study.**<br><br>1 mark for each reason **x2**<br><br>because females show stronger physiological reactivity (than men);<br>because females are more likely to report intense emotional experiences (than men); | **2** |

| Question | Answer | Marks |
|---|---|---|
| 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).** | |
| 5(a) | **State what is meant by 'random allocation'.**<br><br>1 mark<br><br>Each participant has an equal chance of being assigned to each group / condition / level of the IV;<br><br>random sampling = 0 [incorrect] | **1** |
| 5(b) | **State why one of the two groups was called a 'control condition'.**<br><br>1 mark<br><br>Because the IV was absent (from this level of the IV);<br>Because they were not exposed to the IV (of having loved asparagus); | **1** |

| Question | Answer | Marks |
|---|---|---|
| 6 | **Describe the ethical guidelines of 'right to withdraw' and 'confidentiality', using any examples.**<br><br>Definitions / detail: up to a maximum of 4 marks for each guideline<br>Examples: maximum of 2 marks for each guideline.<br>Examples can include ones from any studies (core studies, other studies, candidate's own studies).<br><br>**Right to withdraw**: ensuring participants know they can leave if they want to / without reason; (1 for definition)<br>• and take their data with them / remove their data from the study; (+ 1 detail)<br>• Milgram denied the participants the right to leave with the **verbal prods** (but they were told they could); (+ 1 for example)<br>• E.g. Piliavin / in a covert observation participants did / would not know they were being observed so they could not withdraw;<br>• Schachter and Singer participants could leave if they did not want the **injection**; (+ 1 for example)<br><br>**Confidentiality**: participants' information is anonymous / not individually identifiable / not made public; (1 for definition)<br>• (anonymity achieved by) remove names; (+ 1 detail)<br>• (anonymity achieved by) participants given codes; (+ 1 detail)<br>• e.g. the participants in Dement and Kleitman were identified by their initials; (+ 1 for example)<br>• Saavedra and Silverman's details known e.g. boy / Hispanic / age, it's not enough to identify him; (+ 1 for example)<br>• number of researchers with access to this should be limited; (+ 1 detail)<br>• records should be stored safe / securely; (+ 1 detail) | **6** |

| Question | Answer | Marks |
|---|---|---|
| 7 | **Two female researchers, Meilin and Nina, are preparing a structured interview about dreams. Each researcher will interview 10 participants.** | |
| 7(a) | **Suggest <u>three</u> ways that Meilin and Nina could standardise their structured interview, other than using the same questions.**<br><br>1 mark for a way to standardise × **3**<br><br>Questions in the same order;<br>(Meilin and Nina should wear the) same clothes;<br>Same tone of voice;<br>Same length of time to complete the interview;<br>Same (sort of) location / setting / environment;<br>Just one of them interview all participants; | **3** |
| 7(b) | **Explain <u>one</u> reason why a structured interview should be standardised.**<br><br>1st mark explanation of **reason**<br>2nd mark detail / term<br><br>To ensure that each participant is treated in the same way; (explanation)<br>So that the results are **reliable**; (term)<br><br>If participants were treated differently, variations in their data might not be real / might be due to the interview(er); (explanation)<br>So the results would be **invalid**; (term) | **2** |
| 7(c) | **Explain <u>one</u> reason why it may be better for Meilin and Nina to use an unstructured interview.**<br><br>1 mark explanation + 1 mark link<br><br>Because they could ask individual participants different questions; (explanation)<br>This means they would be able to find out details about each individual's dream; (link) | **2** |
| 7(d) | **Outline <u>one</u> ethical problem with interviewing participants about their dreams.**<br><br>1 mark problem (stating a guideline is not outlining a problem)<br><br>participants may be **embarrassed** about the content; (problem)<br>participants might **not want to reveal** them; (problem)<br>They think the topic was **private**; (problem)<br>They might worry that they interviewer would laugh / might tell someone else; (problem) | **1** |

| Question | Answer | Marks |
|---|---|---|
| 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.** | |
| 8(a)(i) | **Suggest <u>one</u> extraneous variable that could affect the range of television programmes that old people watch, other than their age.**<br><br>1 mark for identifying an extraneous variable (variables such as age, gender = 0 [NAQ])<br>1 mark for link to old people<br><br>The variety of channels they can **access** or **choose from** / whether they have streaming services; (extraneous variable)<br>Old people might only have terrestrial channels / not have access to the internet / satellite TV; (link)<br><br>Old people might not have much money; (extraneous variable)<br>So they might not be able to afford lots of channels / paid TV channels / broadband; (link)<br><br>They might only like / prefer old-fashioned programmes; (link but no reason)<br>Because modern programmes seem offensive / boring to them; (extraneous variable)<br><br>How well the old people can hear; (extraneous variable)<br>Because lots of old people are deaf so prefer programmes that are loud / with subtitles; (link) | **2** |

| Question | Answer | Marks |
|---|---|---|
| 8(a)(ii) | **Explain how Alf could investigate whether the extraneous variable that you suggested in <u>8(a)(i)</u> was the cause of the difference he found.**<br><br>1 mark for idea for how to investigate, e.g. add questions to questionnaire / interview / observe<br>1 mark for detail<br><br>*Access to channels*:<br>Add a question to the questionnaire; (idea)<br>about how many channels they have; (detail)<br>Only use participants who have access to about the same number of channels; (detail control)<br><br>*Broadband:*<br>Ask the young and old people if they have broadband; (idea)<br>Only use (young and) old people who have broadband; (detail of control)<br><br>*Streaming services:*<br>Ask about technology and streaming services; (idea)<br>By using questions such as 'Do you have more than just terrestrial TV? Y/N'; (detail of how)<br><br>*How well people can hear:*<br>Send young and old people for a hearing test; (idea)<br>To see whether it is volume or background noise that matters; (detail of how) | **2** |
| 8(b) | **Alf used opportunity sampling to obtain participants but would have preferred to use volunteer sampling.** | |
| 8(b)(i) | **Outline what is meant by 'volunteer sampling'.**<br><br>1 mark for outline<br><br>Self-selecting (participants); 1 mark (generic)<br>Choosing a group of people who c*hoose* to join the study = 1 mark (generic)<br>participants who *respond to a request* to be in the study from the researcher = 1 mark (generic) | **1** |

| Question | Answer | Marks |
|---|---|---|
| 8(b)(ii) | **Suggest <u>one</u> way that Alf could have used volunteer sampling to obtain both old and young participants.**<br><br>1 mark for **one** way to collect a volunteer sample<br>2nd mark if **one** way would give good access to both young and old people<br><br>Putting an advert in a newspaper; 1st mark<br>That is read by everyone in the locality; 2nd mark<br><br>Putting an advert up at the local swimming baths; 1st mark<br>That has sessions for young and old people; 2nd mark<br><br>Stopping both young and old people as they leave a shop / surgery; 2nd mark (reverse credit)<br>To give out cards asking them to join his study; 1st mark<br><br>Using emails asking people to join his study; 1st mark<br><br>using people aged 10–80 = 0 marks (this is the sample, not how to obtain volunteers)<br><br>Ask (old and young) people he sees / people nearby = 0 [**NAQ**, opportunity sample] | **2** |
| 8(c) | **Explain the experimental design that Alf used.**<br><br>1 mark for identification of independent measures<br>1 mark for explanation linked to Alf's study<br><br>Independent measures / independent groups / between subjects;<br>young and old people cannot be in the same group / he cannot wait for the young people to grow old (and retest them);<br>young and old in two / different groups;<br><br>'Independent' = 0, 'individual measures' = 0 | **2** |

| Question | Answer | Marks |
|---|---|---|
| 9 | **Calle is planning a correlational study. He is measuring two variables: happiness and confidence.**<br><br>**Calle's friend Violet is helping him to plan his questions.**<br>**Calle has written two questions:**<br>• **For happiness: Are you happy? Answer 1 for yes and 0 for no**<br>• **For confidence: How certain do you feel that you will succeed when you begin a new task? 0 = not at all, 5 = very.** | |
| 9(a) | **Violet says that the data Calle would get from his question on happiness would <u>not</u> be suitable to use in a correlation.**<br>**Explain why Violet is correct.**<br><br>1 mark for idea that correlational data must be on a scale<br><br>It is only two points / not a scale / nominal data / categorical data / discrete data;<br><br>Note that whether it is **quantitative or qualitative** data is irrelevant to this question = **0 marks [NAQ]** | **1** |
| 9(b) | **Suggest <u>one</u> problem with the validity of Calle's question on confidence.**<br><br>1 mark for partial explanation (can be generic)<br>2 marks for full and linked explanation<br><br>Calle is not testing what he claims to be testing; (generic explanation)<br>both happiness and confidence may also be linked to how likely someone is to succeed on a new task; (full and linked)<br>because confidence not just about 'tasks'; (full and linked)<br>because 'task' is vague, it would depend on what (exactly) it was participants had to do;<br>e.g. I'd be confident doing a handstand but not baking a cake; | **2** |
| 9(c)(i) | **Calle changes his question for happiness and uses his original question for confidence. He finds a positive correlation.**<br>**Draw a line to show the pattern of Calle's data, using the axes below.**<br><br>1 mark for positive correlation (points or line of 'best fit')<br><br>  <br> | **1** |

| Question | Answer | Marks |
|---|---|---|
| 9(c)(ii) | **Explain why Calle <u>cannot</u> conclude that greater happiness leads to higher confidence.**<br><br>1 mark per generic point of explanation<br>1 mark per link (must be one link for full marks)<br><br>*Answer must be about:*<br>absence of conclusion about *causality or*<br>absence of conclusion about *direction* of causality<br><br>Because a correlation (only shows a relationship and) cannot demonstrate causality; (generic)<br>A positive correlation could be caused by either of the variables; (generic)<br>It could be that greater confidence causes greater happiness; (linked = 2)<br>Because a third factor could affect both variables; (generic)<br>i.e., a third factor could affect both happiness and confidence; (linked = 2)<br>for example having lots of friends could increase both happiness and confidence; (linked)<br>for example being tired could decrease both happiness and confidence; (linked) | **3** |

| Question | Answer | Marks |
|---|---|---|
| 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.** | |
| 10(a) | **Describe how Sophie can conduct a natural experiment to investigate whether having to take the longer route makes drivers angry.**<br><br>Three **majors** for a **natural experiment** are:<br>**a)** **IV** – before and during road closure (clearly not under Sophie's control, independent measures unless recontacting participants)<br>**b)** **DV** – anger (e.g. heart rate, questions, beeping horn – focus is on data does not necessarily need technique details)<br>**c)** **location:** near a road (e.g. car park, at home, at destination, e.g. work)<br><br>The **minors** are:<br>**who**: drivers (so adults only)<br>**how**: controls (same time of day e.g. arriving at work)<br><br>Other details for replication:<br>sampling technique<br>sample size<br>ethical issues<br>description of how data will analysed, e.g. use of averages / bar charts<br><br>Other appropriate responses should also be credited.<br><br>Mark according to the levels of response criteria below:<br><br>**Level 3 (8–10 marks)**<br>• Response is described in sufficient detail to be **replicable**.<br>• Response may have a minor omission.<br>• Use of psychological terminology is accurate and comprehensive.<br><br>**Level 2 (5–7 marks)**<br>• Response is in some detail.<br>• Response has minor omission(s).<br>• Use of psychological terminology is accurate.<br><br>**Level 1 (1–4 marks)**<br>• Response is basic in detail.<br>• Response has major omission(s).<br>• If response is impossible to conduct max. 2.<br>• Use of psychological terminology is mainly accurate.<br><br>**Level 0 (0 marks)**<br>No response worthy of credit. | **10** |

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>10(b)</td><td>
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.<br>Do <u>not</u> refer to ethics or sampling in your answer.<br><br>
Answer will depend on problem identified.<br><br>
Problems may, for example, be matters of:<br>
Validity<br>
• operationalisation<br>
• situational / participant variables factors<br><br>
Reliability<br>
• inter-rater consistency<br>
• intra-rater consistency.<br><br>
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.<br>Appropriate solution is clearly described.</td></tr>
<tr><td>2</td><td>Appropriate problem identified.<br>plus<br>EITHER<br>Explanation of why it is a problem<br>OR<br>Ineffectual but possible solution described.</td></tr>
<tr><td>1</td><td>Appropriate problem identified.<br>Little or no justification.</td></tr>
<tr><td>0</td><td>No response worthy of credit</td></tr>
</table>
</td><td>4</td></tr>
</table>