Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/23**

Paper 2 Research methods **May/June 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 May/June 2023 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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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.

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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.

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Question	Answer	Marks
1(a)	**Describe what is meant by the term 'random sampling'.** 1 mark for description. 1 mark for detail. Random sampling ensures each individual in the population has an equal chance of becoming a participant (description); Every member of the population has a number, pull numbers from hat (until enough participants in sample) (description/detail); Give numbers to individuals and select using a computerised/tabulated random number source (description/detail); Choosing people without bias = 0 By collecting random people (from the street) = 0 By choosing people at random = 0	**2**
1(b)	**Explain <u>one</u> weakness of random sampling.** 1 mark for weakness. May not be representative if access to parts of the population is limited; not all the people who are randomly selected may be willing to participate (potentially biasing the data);	**1**

Question	Answer	Marks
2	**The study by Yamamoto et al. (chimpanzee helping) followed ethical guidelines relating to the use of animals.** **Describe how <u>two</u> ethical guidelines relating to the use of animals in research were followed in this study.** 1 mark for **name**/**description** of **animal** guideline. 1 mark for link to Yamamoto et al. **x2.** Chimpanzees were **housed** appropriately (name/description of guideline); They are social animals and were kept together (link); They were appropriately fed, using monkey food and extra fruit and vegetables (link); The chimpanzees did not suffer **pain/distress** (name/description of guideline); They only had to pick up tools and pass them through a hole (which is not painful or distressing); (link); The chimpanzees were **rewarded not punished** (name/description of guideline); They were given juice rewards when they responded (link); **Numbers** were kept small/low/minimised (name/description of guideline); Only 5 chimps were used / 5 pairs were used (link);	**4**

Question	Answer	Marks
3	**In the study by Laney et al. (false memory), standard deviations were calculated**.	
3(a)	**State what is meant by a 'measure of spread'.** 1 mark for stating meaning. A way to indicate/express/show the dispersion / differences in / variety of values in a data set; how much scores vary = 1; The range (of scores) = 0 [NAQ] How *spread* out the scores are = 0 [REP] The *deviation* in the scores = 0 [REP]	**1**
3(b)	**State <u>one</u> advantage of using the standard deviation compared to <u>one</u> other measure of spread.** 1 mark for identification of alternative measure of spread. 1 mark for advantage of standard deviation [award this mark if advantage – i.e. strength – is correct but no alternative is given]. Range (identification); [Do not award for incidental use of word] Average spread / difference from the mean (rather than just smallest and largest) (advantage); [Do **not** accept 'deviation'] It considers how spread out **all** the points are (rather than just the extreme two) (advantage);	**2**

Question	Answer	Marks
4	**In the study by Pepperberg (parrot learning), Alex the parrot was tested using the categories of:** • **shape** • **material** • **colour.**	
4(a)	**Suggest why Pepperberg chose to test the parrot using the categories of 'shape' and 'material'.** 1 mark for suggestion [novel suggestion for *choice*, not reiterating aim]. 2nd mark for detail or a second suggestion (e.g. one suggestion for shape and one for material can be 2 marks, or two for both). Alex was able to say both words (just about) (suggestion); So it would be possible to test his comprehension (in a valid way) (detail); Both were simple/visual features so that it could be possible that Alex could learn them; If more complex concepts / concepts in a medium less familiar to parrots, it would have been too hard (so lacked validity / caused a floor effect);	**2**
4(b)	**Suggest <u>one</u> other category that Pepperberg could have used to test the parrot's understanding of categories.** 1 mark for suggestion. Ascending and descending / different **tones**; Different bird **songs**; Different **sounds**/**smells**;	**1**

Question	Answer	Marks
5	**The study by Dement and Kleitman (sleep and dreams) investigated two kinds of sleep: REM sleep and non-REM sleep.** **State <u>three</u> differences between REM sleep and non-REM sleep.** 1 mark per **explicit** difference stated. **Less** dream recall from non-REM (than REM) ORA; Brain waves **different** / lighter sleep in REM (than in non-REM) ORA; Four stages of non-REM **but** all REM is the same; When dreams are recalled from non-REM they are like thoughts **but** vivid dream recall from REM stage; More non-REM at start of night/more REM at end of night ORA; Rapid eye movements in REM sleep (related to dreams) (but none in nREM);	**3**

Question	Answer	Marks
6	**Describe the ethical guidelines of 'informed consent' and 'protection from harm', 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 include ones from any studies (core studies, other studies, candidate's own studies). Max 4 if no examples. Informed consent: Consent is giving participants enough information to make a choice about participating; by briefing participants; then getting them to (sign to) say they understand and want to do the study / to say yes or no; Presumptive consent is where you ask a similar group of people to the real participants and they agree; E.g., in Canli's study the participants will have consented to the risks of a PET scan; E.g. in Milgram's study they did not give informed consent as they thought it was a study about learning/punishment; Protection from harm: Protection means ensuring that participants are not harmed physically or psychologically; They should leave the study in at least as good a condition as they entered it; Psychological harm could be from the nature of the study / embarrassment at their performance; E.g. Milgram's participants were stressed by having to give the learner shocks; E.g. Milgram's participants were distressed by participation because they felt they could kill somebody; E.g. Piliavin's participants could have been frightened by a stooge falling; E.g. Piliavin's participants could have felt regret from failing to help the stooge (and weren't debriefed); Physical harm could arise from procedures/harm participants inflict on themselves due to participation; E.g. in a study testing motivation to keep your hand in ice cold water could damage your skin; E.g. one of Milgram's participants had a seizure; E.g. Milgram's participants did things to harm themselves like biting lips; this can be partly overcome by debriefing; E.g. Milgram reassured his participants that the stooge was unharmed; or by following up participants;	**6**

Question	Answer	Marks
7	**Nigel has conducted a laboratory experiment to compare children's choice of sweets (candy) in different packets.** **The children were shown sweets in:** • **brightly coloured packets with simple patterns** • **black and white packets with complex patterns.** **His results showed that more children chose the sweets from the 'brightly coloured packets with simple patterns' condition.**	
7(a)(i)	**Suggest <u>one</u> other condition that Nigel could have included in his study.** 1 mark for additional condition (can be a control or additional experimental condition). Black and white simple patterned packets (instead of complex ones); Complex patterned bright colours (instead of simple ones); Boxes instead of packets; (A control condition of) packets with no colours or patterns; Accept other suggestions that are linked to packets/colours/patterns.	**1**
7(a)(ii)	**Explain why the condition you suggested in <u>(a)(i)</u> would have been useful.** 1 mark for explanation. 1 mark for detail. Black and white simple patterns: To control for (the variable of) colour (explanation); To see if it is because they like bright colours or dislike simple patterns (detail); Brightly coloured complex patterns: To control for (the variable of) pattern (explanation); To see if it is because they like simple patterns or dislike black and white (plain) 'colours' (detail);	**2**
7(b)	**Nigel used a repeated measures design.** **Explain what is meant by a 'repeated measures design', using an example from this study.** 1 mark for explanation of repeated measures. 1 mark for link. In a repeated measures design all participants perform in all levels of the IV (explanation); So it means that each of Nigel's participants saw both types of sweet packet (link);	**2**

Question	Answer	Marks
7(c)	**Name <u>one</u> experimental design Nigel could have used, other than a repeated measures design.** 1 mark for independent measures / matched pairs. Independent (design) / matched (design) = 0.	**1**

Question	Answer	Marks
8	**Mila is planning a case study to investigate how a 21-year-old person feels about being the only young person in a community of 20 older people on a small island.**	
8(a)	**Suggest <u>two</u> techniques Mila could use to collect data from her participant in this study.** 1 mark for suggestion + 1 mark for linked detail **x2.** Observation (suggestion); E.g. use structured observation of interactions with others using behavioural categories e.g. **talking/following** (linked detail); Such as whether she speaks directly to **adults / to old people**/no one (linked detail); E.g. use an overt observation of her telephone/internet use to find out how she copes with **being alone** (linked detail); E.g. to see how she attempts to communicate with other **young people** (linked detail); Interview (suggestion); E.g. ask the girl questions about **how she feels** that are planned at first, then questions based on her answers (linked detail); Such as asking who she talks to instead if she says she doesn't talk to the **old people** (linked detail); A questionnaire; asking about feelings towards other **people in the community**; = 2 [just]	**4**

Question	Answer	Marks
8b	**For <u>one</u> of the techniques you suggested in (a):**	
8bi	**Explain <u>one</u> advantage of this technique.** 1 mark for suggested advantage. 1 mark for detail (likely to be linked, but not required). Observation: Access information about the relationship the participant might not know / be able to express (advantage); Such as changes in expression on the participant's face (detail); Interview: You would be able to ask for the reasons behind their interactions / lack of interactions with the old people (advantage); Such as who they talk to instead if they say they don't (detail); Questionnaire: Uses mainly easy to analyse closed questions; e.g. are your feelings to the community mainly positive/negative; = 2	**2**
8(b)(ii)	**Explain <u>one</u> disadvantage of this technique.** 1 mark for suggested disadvantage. 1 mark for detail (likely to be linked, but not required). Observation: Can only access information about the relationship which can be seen (disadvantage); So the underlying reasons for their interactions / lack of interactions with the old people cannot be investigated (detail); Interview: The participant may give socially desirable answers about their interactions with the old people (disadvantage); Such as lying because they are embarrassed about how little they talk to the old people (detail);	**2**
8(c)	**Mila wants to generalise her findings to all adults who live away from other people of their own age.** **Explain why Mila should <u>not</u> make this generalisation from the findings of her case study.** 1 mark for reason (linked or generic). One person is **unrepresentative** / would be **unique** / **everyone is different**; The participant lives in a **small community** / on a **small island** (so is unusual); one gender; one age;	**1**

Question	Answer	Marks
9	**Alan and Jocelyn are writing a questionnaire to ask about the level of euphoria created by listening to music at a concert, compared with listening to music at home.**	
9(a)(i)	**Suggest <u>one</u> closed question that they could use on the questionnaire to ask about euphoria.** 1 mark for a closed question + 1 mark for scoring. Do you feel euphoric when listening to music at home/at a concert? = 1; yes/no = 1; yes/sometimes/no = 1; Rate how euphoric you feel at a concert = 1; 0 not at all (euphoric) to 5 very (euphoric) = 1;	**2**
9(a)(ii)	**Suggest <u>one</u> open question that they could use on the questionnaire to ask about euphoria.** 1 mark for an open question. Describe/explain / tell me how you feel when you are listening to music at home / at a concert = 1;	**1**
9(b)	**For the questions you suggested in (a)(i) and (a)(ii):**	
9(b)(i)	**Explain <u>one</u> reason why the data from the open question could be more valid than data from the closed question.** 1 mark for explanation. 1 mark for link. Participants might have wanted to say ‘sometimes’ to the closed question but could only say yes or no (link); So the open question would have been more valid as they could have responded as they wanted (explanation); An open question is more valid because the participant can explain their behaviour / why (explanation); I.e. why they felt more euphoric (link);	**2**
9(b)(ii)	**Explain <u>one</u> reason why the data from the open question could be less valid than data the closed question.** 1 mark for explanation. 1 mark for link. Closed questions produce objective data / don’t need to be interpreted / can’t be affected by researcher bias (explanation); Alan and Jocelyn might interpret statement (on open questions) about euphoria differently (link);	**2**

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Question	Answer	Marks
9(c)	**Explain how Alan and Jocelyn could check their inter-rater reliability when they analyse their data.** 1 mark for explanation. 1 mark for detail. Alan and Jocelyn should take the (open question) responses from the same participants and analyse them (explanation); Correlate their scores for the same questions / see if their scores are the same (if so, inter-coder reliability is high) (detail);	**2**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>10</td><td>Dr Caesar is interested in animal phobias in his patients. He wants to investigate whether there is a correlation between the size of the animal causing the phobia and the severity of each patient's animal phobia.</td><td></td></tr>
<tr><td>10(a)</td><td>Describe how Dr Caesar could conduct a correlational study to investigate the relationship between animal size and the severity of the patients' phobias.

Three majors for this correlation are:
(a) variable: animal size (operationalisation and quantification of how big the animal is, must be continuous data)
(b) variable: phobia severity (operationalisation and quantification of severity of the phobia, must be continuous data)
(c) technique for producing/collecting data i.e. procedure (e.g. tests, observations, questionnaires).

The minors are:
where: location of participants when completing the study
who: participants (with phobias of varying severity, to various animals), sampling technique

Also
• a statement about whether a positive or negative correlation is expected
• sampling technique
• sample size
• description of how data will analysed, e.g. use of scattergram
• ethical issues

Other appropriate responses should also be credited.

Mark according to the levels of response criteria below:

Level 3 (8–10 marks)
• Response is described in sufficient detail to be replicable.
• Response may have a minor omission.
• Use of psychological terminology is accurate and comprehensive.

Level 2 (5–7 marks)
• Response is in some detail.
• Response has minor omission(s).
• 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.</td><td>10</td></tr>
</table>

<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.

Do <u>not</u> refer to ethics or sampling in your answer.

Answer will depend on problem identified.

Problems may, for example, be matters of:

Validity
• operationalisation
• situational/participant variables factors.

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
plus
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>
</td><td>4</td></tr>
</table>