Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/22**

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.

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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.

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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)

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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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IMPORTANT NOTICE

Guide to marking annotations

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

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Question	Answer	Marks	Guidance
1	**From the study by Pepperberg (parrot learning).**		
1(a)	**State the aim of this study.** 1 mark for aim To test whether a parrot could understand / learn the **concepts of 'same' and 'different'**; To test whether a parrot could understand / learn the **concepts of shape / colour / matter**;	**1**	DEFINITIVE
1(b)	**Explain why it was necessary to present the parrot with questions in a random order.** 1 mark for generic idea – of avoiding bias / order effects 1 mark for **linked detail**, e.g. type or consequences of order effects in this study. e.g. Alex may have given the wrong answer because he was bored at the end. If all one type of questions, e.g. 'matter', were at the end, he could do badly on these; e.g. questions were in a systematic order, e.g. all 'shape' questions together, he may have been more likely to guess correctly by chance / he would only have guessed a shape;	**2**	Accept 'control' for standardisation Accept increase validity

Question	Answer	Marks	Guidance
2	**Explain the importance of the ethical guidelines of anaesthesia, analgesia and euthanasia in relation to the use of animals in research.** 1 mark for each relevant point. Each point (e.g. 'pain' or 'distress') can only be used once. Max 2 for examples. They help to reduce animal suffering / make sure safe (are well treated); as analgesia reduces pain; e.g. after an operation; as anaesthesia reduces pain and distress; e.g. during an operation; as euthanasia prevents endurance of suffering / pain / distress; by killing the animal; e.g. if they have been injured in a fight with another animal / by an experimental procedure; it makes the study more ethical = 0 [**REP**]	**3**	A full mark answer could cover one, two or three aspects of the guideline. If two marks for examples they must offer detail.

Question	Answer	Marks	Guidance
3	**Participants in the study by Laney et al. (false memory) completed a 'Restaurant Questionnaire', which was formatted to look like a menu.**		
3(a)	**Describe the Restaurant Questionnaire.** 1 mark for each descriptive point Had five categories; e.g. appetizers, soups and salads, entrees, sides, desserts; (any two) Assessed the desire to eat different dishes; 32 different dishes; Based on imagining they were 'out for a special meal'; Asked to rate how likely they were to **order** each item (regardless of price); 1 = 'definitely no', '8' = definitely yes' (circled);	**2**	Looked like a menu = 0 [REP] Asparagus was just one of the 32 choices to order They were **NOT** asked if they liked asparagus on this questionnaire
3(b)	**Explain why it was important that the Restaurant Questionnaire looked like a menu.** 1 mark for explanation 1 mark for link To make it more realistic / to increase mundane realism; (generic) To distract the participants from the aim / to reduce demand characteristics; (generic) So that they were less likely to spot that the study was really about memory; (link) So the participants did not know that the asparagus information was critical / notice the sautéed asparagus spears; (link)	**2**	Accept 'to increase ecological validity'

Question	Answer	Marks	Guidance
4	**The study by Yamamoto et al. (chimpanzee helping) used a repeated measures experimental design.**		
4(a)	**Outline what is meant by a 'repeated measures design'. Include an example from the study by Yamamoto et al. in your answer.** 1 mark outline 1 mark link This is where all participants do all/both levels/conditions of the independent variable; (outline) In Yamamoto et al. each chimp did both the 'can see' and 'cannot see' condition; (link)	**2**	
4(b)	**Explain <u>one</u> advantage of using a repeated measures design for this study, compared to using an independent measures design.** 1 mark explanation 1 mark link Yamamoto et al. had young and old chimps, and age might affect helpfulness; (link) so if they were in different groups, this would affect the DV; (explanation) Individual differences can confound an independent measures design; (generic explanation) e.g. if some chimps may be more helpful than others; (link)	**2**	Comparison can be implicit

Question	Answer	Marks	Guidance
5	**In a study that measured two variables, a relationship between the variables was found. As one variable increased, the other decreased.**		
5(a)	**Name this relationship.** 1 mark for 'negative correlation' (accept 'inverse correlation') Positive correlation = 0 (for correlation) 'Negative' = 0 'Negative relationship' = 0 A relationship = 0 A link = 0 A causal / non-causal relationship = 0 (NAQ)	**1**	
5(b)	**Suggest <u>two</u> variables, from any core study, that show this relationship.** 1 mark for **both** variables from a correlation in a core study (ignore direction of correlation) **Baron Cohen** (inverse / negative correlation between) **AQ** and **eyes test** score (in male HFA/AS); **Canli et al.** (negative correlation –.66) **intensity ratings** and **normative valence**; Any experimental variables = 0 (NAQ) Dement and Kleitman = 0 Piliavin 'amount of helping' = 0 **Piliavin et al.** negative correlation <u>EXPECTED</u> between **number of bystanders** and **latency to help** = 1 **Piliavin et al.** negative correlation between **latency to help** and **receiving help less** =1 **Canli et al.** negative correlation between increase in **emotional intensity** and **number of pictures forgotten** =1	**1**	'negative relationship' = 0 Dement & Kleitman (*positive* correlation) duration of time in REM and number of words in / length of dream narrative = 0 Canli et al found a *positive* correlation between intensity ratings and arousal Piliavin et al. positive correlation <u>FOUND</u> between number of bystanders and latency to help = 0

Question	Answer	Marks	Guidance
6	**Describe natural experiments and naturalistic observations, using any examples.** Definitions / detail: up to a maximum of 4 marks for each method. (So 4 marks max if only 1 method) Examples: maximum of 2 marks for each method. Examples can include ones from any studies (core studies, other studies, candidate's own studies). **Natural experiment**: IV which occurs spontaneously and a measured DV; (definition) the researcher has to use existing differences in variables rather than deliberately changing them; (detail) e.g. instead of Bandura et al. manipulating aggressive stooge, could compare children in violent and in non-violent settings; e.g. instead of Piliavin et al. using the 'victims', they could have waited for situations needing help on the subway; **Naturalistic observation:** participants are observed without interference from researchers / no variables are manipulated; (definition) and no controls; (detail) setting is normal / like normal for the behaviour being observed; (detail) e.g. if children's aggression was observed during school playtime; (detail) e.g. in Dement & Kleitman participants' eye movements initially observed without interrupting dreaming;	**6**	Only 1 example is needed to access full 6 marks. Allow evaluative points, e.g.: natural experiments more ethical (than lab / field) as no interference with participants' existence natural experiments less ethical as participants unlikely to know they are in a study Natural experiment done in the natural environment / real world = 0

Question	Answer	Marks	Guidance
7	**James is conducting an interview to investigate topics that could influence anger and euphoria. He has already written his questions about anger. James needs to write questions which cover three topics that could increase euphoria. These topics are:** • **sports or games** • **films or music** • **the natural world (e.g. animals and plants, being outside or good weather).**		
7(a)	**Suggest <u>one</u> closed question and <u>one</u> open question that James could use to investigate <u>one</u> of his three topics about euphoria. Do <u>not</u> use a rating scale in your answer.** 2 marks for closed question: 1 mark for question and 1 mark for answer options 1 mark for open question *e.g. sports or games:* *Closed*: Does playing football make you euphoric?; (question) Yes / no; (answer options) *Open*: When you are playing a game, explain what emotions you experience; *e.g. natural world:* *Closed*: Choose how euphoric you are when you are outdoors; (question) Bored / normal / euphoric / confused / scared; (answer options) *Open*: Why does patting an animal make you happy?;	**3**	

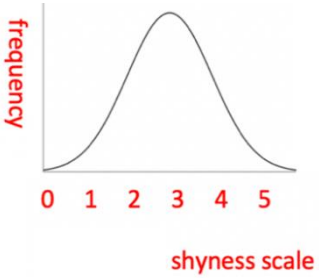
Question	Answer	Marks	Guidance
7(b)	**James has chosen to conduct a semi-structured interview.** **Explain <u>two</u> strengths of a semi-structured interview.** 1 mark for strength + 1 mark for detail (can be a link to James's study but does not have to be) **x2** Many questions are consistent between participants, making the data reliable / the study **replicable**; (strength) So James is sure that each participant's data will be comparable to other participants; (detail, generic) Many questions are consistent between participants, making the study **replicable**; (strength) So researchers other than James could repeat his study and use the same questions on anger / euphoria; (detail, linked) James can ask each participant both fixed and new/different questions, so they are **tailored to individuals**; (strength) So he can explore the particular sports / films / music / aspects of nature that make different people happy; (detail, generic)	**4**	Accept two strengths in one answer space. Many questions are consistent between participants = 0 (description) James can ask each participant both fixed and new/different questions = 0 (description)

Question	Answer	Marks	Guidance
7(c)	**James was planning to use opportunity sampling to obtain participants from his university but has decided random sampling would be better.**		
7(c)(i)	**Explain how James could use random sampling to obtain participants from his university.** 1 mark for explanation 1 mark for **link** (a) Start with a numbered list of everyone in the population (ALL), (b) select the sample using a random number; (how) (a) Start with a numbered list of **students (and staff) at the university**, (b) select the sample using a random number; (how) (a) Give the whole population numbers, (b) put them in a hat and choose numbers without looking, to select people; (how) (a) Give **all the university students** numbers, (b) put them in a hat and choose numbers without looking, to select people; (how) Make sure that all of the population have an equal chance of being chosen = 0 [not explaining how or linking]	**2**	2 components: (a) acquiring potential participants and (b) selecting sample. Marks: a or b but no link = 0 a or b plus link = 1 a plus b no link = 1 a and b plus link = 2
7(c)(ii)	**Explain <u>one</u> advantage for James of using random sampling compared to using opportunity sampling.** 1 mark for advantage 1 mark for link it is likely to be representative / **more** generalisable / is not biased; (advantage) so there are likely to be people with a range of levels of anger / euphoria; (link) so there will be people with different interests in sports / films / nature that could affect anger / euphoria; (link)	**2**	Comparison can be implicit

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Question	Answer	Marks	Guidance
8	**Olive and Durnaz are planning a questionnaire to use in their study, which aims to investigate forgetting in old people.**		
8(a)	**Olive thinks that they should include some irrelevant questions so that the participants are less likely to guess the aim of the study. Durnaz thinks this is unethical.**		
8(a)(i)	**Explain why Olive's plan to include irrelevant questions would be useful.** 1 mark for (explanation / term 'demand characteristics') 1 mark for linked detail To reduce demand characteristics; (term) So that they will not try harder than normal to **remember**; (explanation or detail) To stop them from changing their behaviour and hiding problems with **forgetting** due to age; (explanation or detail) To reduce social desirability = 0	**2**	
8(a)(ii)	**Explain why Durnaz thinks that Olive's plan would be unethical.** 1 mark for explanation 1 mark for identifying ethical guideline: protection from harm / deception / privacy / informed consent / debriefing. 0 marks: confidentiality / right to withdraw 1 mark for linked detail The **old** people would believe all the questions were part of the study; (detail) So it would mean they couldn't give fully informed consent / were being deceived; (guideline) It might break the guideline of protection from harm; (guideline) If doing extra questions might make the **old** people tired or distressed;	**2**	Allow deception **because** there are irrelevant questions so misleading the participants Accept protection from harm **because** old people might be upset if they forget a lot

Question	Answer	Marks	Guidance
8(b)	**Olive and Durnaz want to be able to generalisable their findings to all old people.**		
8(b)(i)	**Suggest <u>one</u> variable that could affect memory in old people, other than age.** 1 mark for relevant variable. Whether they live alone; How active they are; Medication;	**1**	Accept memory disorders Gender Mental health There will be a wide variety of *relevant* answers
8(b)(ii)	**Explain why the variable you suggested in (b)(i) could affect memory in old people.** 1 mark for explanation 1 mark for detail *Whether they live alone*: People who live alone have to remember more for themselves; (explanation) making their memory better (through practice); (detail) People who live alone have to remember more for themselves; (explanation) so their memory in the test may be worse (fatigue); (detail) People who live alone may have worse memories as they don't have the chance to talk to other people; (explanation) And talking to people may help younger people to keep their memories busy; (detail) *How active they are*: Active old people will use their memories more; (explanation) e.g. to remember bus times; (detail) *Medication:* May have a side effect on memory; May make them more sleepy / sleep deprived, so memory is impaired;	**2**	Gender: men's memory declines more than women's in old age

Question	Answer	Marks	Guidance
9	**Gagan has collected data about personality characteristics. Two of the questions he asked were:** • **Personality question:** **Which word best describes your personality? Angry / Confident / Kind / Worried.** • **Shyness question:** **How shy do you feel in new situations on a scale of 0–5? (0 = not at all, 5 = very).**		
9(a)	**Name the <u>most</u> appropriate measure of central tendency to use with the data from each question.** 1 mark for each correct measure of central tendency **Personality**: mode **Shyness**: median (accept the mean).	**2**	
9(b)	**Name the <u>most</u> appropriate type of graph for Gagan to use to display the results from the 'personality question'.** 1 mark for **bar chart** / bar graph (definitive)	**1**	Accept pie chart
9(c)	**When Gagan analyses the data from the 'shyness question', he finds that the scores are normally distributed.** **Sketch a graph using the axes below to show the pattern of Gagan's data for the 'shyness question'. You <u>must</u> label the axes.** 1 mark; y-axis label 'frequency' / number of responses' / people / participants 1 mark: x-axis label (score on) '**shyness**' (scale) 1 mark: x-axis scale (0–5) 1 mark: **symmetrical normal distribution shape** (accept as a line, bars or points) Must be a bell shape for full 3 marks 	**3**	

Question	Answer	Marks	Guidance
10	**Sara wants to test whether people with a higher intelligence quotient (IQ) are better at concentrating. She will conduct a laboratory experiment and already has a test for measuring the IQ of the participants.**		
10(a)	**Describe how Sara can conduct a laboratory experiment to test whether people with a higher IQ are better at concentrating than people with a lower IQ.** Three **majors** for a **laboratory experiment** are: **a)** **IV: intelligence** (operationalisation: how to use scores from the **IQ test** to make two groups) **b)** **DV: attention** (operationalisation: scoring) **c)** **controls** (e.g. limiting distractions, other factors that could affect attention / performance on IQ test) The **minors** are: • **where** – location of participants when data is collected (i.e. lab) • **who** – participants Other details for replication: • experimental design (any are appropriate here) • sampling technique • sample size • description of how data will analysed, e.g. use of measures of central tendency and spread, bar charts • ethical issues Other appropriate responses should also be credited.	**10**	Accept 'high' and 'low' IQ

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>10(a)</td><td>Mark according to the levels of response criteria below:
<table>
<tr><th></th><th>Additional guidance</th></tr>
<tr><td>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.</td><td>10 marks is reserved for:
• Response includes what, how, how: all three named elements with sufficient detail of each (e.g. operationalisation, description) for replication
• Some reference to ethical guidelines

For 8 marks:
• Response includes what, how, how: all three named elements with sufficient detail of each (e.g. operationalisation, description) for replication.
• Some reference to ethical issues</td></tr>
<tr><td>Level 2 (5–7 marks)
• Response is in some detail.
• Response has minor omission(s).
• Use of psychological terminology is accurate.</td><td>For 5–7 marks:
• Response includes all three major elements but may lack some details making it difficult to replicate</td></tr>
<tr><td>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.</td><td>If the study described is not an experiment, max 4</td></tr>
<tr><td>Level 0 (0 marks)
No response worthy of credit.</td><td></td></tr>
</table></td><td></td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
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. 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.	**4**	Note, the change must be a change to **'the procedure you have described',** it cannot be a different method (e.g. case study) but it could be a different sort of experiment (e.g. lab or field)

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>10(b)</td><td>
<table>
<tr><th>marks</th><th>comment</th><th>Additional guidance</th></tr>
<tr><td>3-4</td><td>Appropriate problem identified.
Appropriate solution is clearly described.</td><td>4 marks: specific problem and specific solution

3 marks: generic problem specific solution or specific problem generic solution</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><td>Appropriate problem (directly related to a specific aspect of suggested procedure) identified,
no solution.

OR

Generic problem with weak / generic solution.</td></tr>
<tr><td>1</td><td>Appropriate problem identified.
Little or no justification.</td><td>Specific or generic problem identified (e.g. even when they suggest a ‘problem’ that is nothing to do with the study they have designed)</td></tr>
<tr><td>0</td><td>No response worthy of credit</td><td></td></tr>
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</td><td></td><td></td></tr>
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