Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/21**

Paper 2 Research Methods **May/June 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 May/June 2022 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This document consists of **20** printed pages.

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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.

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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)	**From the study by Bandura et al. (aggression):** **Describe how the quantitative data was collected in this study.** 1 mark for observation 1 mark for how quantitative data was collected (frequency/number) linked to study e.g., Observation of number of times a child copied the model = 2 e.g., 'Observers scored the total number of aggressive and non-aggressive response categories' = 2 Aggressive acts were counted = 1 mark (accept as frequency) Aggression scored prior to testing on (four) five-point rating scales = 1	**2**
1(b)	**Suggest <u>one</u> advantage of using quantitative data in this study.** 1 mark advantage 1 mark link It can be analysed mathematically / statistically = 1 (advantage) So they could calculate the percentage of children copying aggressive / non aggressive models = 1 (link) They could compare mean aggression of boys and girls = 1 (link) Number of times child hits bobo = 1 (link) It is objective = 1 advantage So objective + statement of more/less / compare in relation to Bandura's data = 2	**2**

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Question	Answer	Marks
2	**A study has the experimental hypothesis 'Older people will forget more often than younger people'. This is a 'directional hypothesis' rather than a 'non-directional hypothesis'.** **Explain what makes this a 'directional hypothesis'.** 1st mark for definition of directional and/or non-directional hypotheses 2nd mark for explaining that it says which age group will forget more (explanation in context) Because it says which way the difference (but not direction) will go / that one group will forget more = 1 (definition) Because it says older people will forget more = 1 (explanation in context)(ORA) It would say one age group would forget more than the other if it were non-directional = 2 (explanation in context) Because it states the direction of the difference = 0 (repetition of stem 'direction')	**2**

Question	Answer	Marks
3(a)	**A problem in experimental studies is the presence of uncontrolled variables. One uncontrolled variable in the study by Andrade (doodling) was how likely each participant was to daydream.** **Describe what is meant by an 'uncontrolled variable'.** 1 mark for meaning (problem) variables that have not been / cannot be successfully eliminated = 1 variables that (lower validity because they) affect one level of the IV (more than the other) = 1	**1**
3(b)	**Explain why the uncontrolled variable of daydreaming was a problem in this study.** 1 mark for why it was a problem (can be generic) 1 mark for link Daydreaming could affect the DV making it hard to see the effect of the IV / could lower validity = 1 (generic) Daydreaming affects concentration making it hard to see the effect of the IV = 2 (linked problem) The DV could be affected so the IV of doodling would be hidden = 2 (linked problem) Doodling may reduce daydreaming so increases attention rather than directly helping recall = 2 (problem + link)	**2**

Question	Answer	Marks
4(a)(i)	**A correlational study tested the idea that the amount of time spent using a phone is linked to quality of sleep.** **State the relationship between the variables measured in this study, if a positive correlation was found.** 1 mark for linked statement of relationship When people spend more time using their phone they have better quality sleep = 1 (OWTTE) When people spend less time using their phone they have worse quality sleep = 1 (OWTTE) People who use their phone have poor/better sleep quality = 0 (describing a difference not a correlation)	**1**
4(a)(ii)	**State the relationship between the variables measured in this study, if a negative correlation was found.** 1 mark for linked statement of relationship People who more time using their phone they have poorer quality sleep = 1 (OWTTE) People who spend less time using their phone they have better quality sleep = 1 (OWTTE) As the number of hours spent on the phone goes up (down) the quality of sleep goes up (down) = 1 (OWTTE) People who use their phone have poor/better sleep quality = 0 (describing a difference not a correlation) There is no correlation between (more/less) phone use and (poor/good) sleep = 0 (null hypothesis)	**1**

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Question	Answer	Marks
4(b)	**Suggest <u>one</u> reason why it was more appropriate to conduct a correlational study rather than an experiment to test this idea.** 1 mark for reason (may be practical or ethical) 1 mark for linked detail Because it may be unethical to manipulate one/both variables; (generic suggestion) Telling people to use their phone more or less might annoy/upset them; (suggestion) This would break the guideline of 'protection from harm'; (linked detail) It might worsen their sleep because they are annoyed at having been told (not phone use); (linked detail) It would be less distressing if level of phone use and sleep quality were measured (and correlated); (linked detail) Because it may be impractical to manipulate one/both variables; (generic suggestion) For the study to work the aim would have to be hidden from them; (suggestion) Otherwise they would expect to change their sleep, causing demand characteristics; (linked detail) Which would be hard to do because people are very attached to their phones; (linked detail) No need for deception / no difficulty if phone use and sleep quality were measured (and correlated); (linked detail) Because the study is looking for a relationship (between two variables) not a causation; (generic suggestion)	**2**

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Question	Answer	Marks
5(a)	**In the study by Piliavin et al. (subway Samaritans), one way that data was collected was by listening to the comments made by subway passengers. Differences were reported in relation to the type of victim the comments referred to.** **Describe <u>one</u> of these differences.** 1st mark for identifying the difference 2nd mark for correct direction of difference There was a difference in comments made in relation to black and white victims = 1 More comments were made when the victim was white than when they were black = 2 Accept: There was a difference in comments made in relation to 'drunk' and 'cane' victims = 1 Accept: More comments were made when the victim was 'drunk' than when they had a cane = 2 Accept: There was a difference in comments made in relation to white cane/drunk then black cane/drunk =1 Accept: More comments were made when the victim was white cane/drunk then black cane/drunk = 2	**2**
5(b)	**Suggest <u>one</u> problem the observers could have had when listening to the comments made by subway passengers.** 1 mark for problem They might have been noticed (so stopped the people talking) = 1 Because they said nothing themselves they may have inhibited others / made others say more) = 1 By not recording the comments, they may have mis-remembered what was said = 1 By trying not to be noticed it might have been difficult to hear what was said properly = 1 Speaking in a different language = 1	**1**

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Question	Answer	Marks
6	**Describe what is meant by a 'semi-structured interview' and an 'unstructured interview', using any examples.** 1 mark for each point of detail 1 mark for each example that is linked to one type of interview (maximum of 2 marks in total). Examples can include examples from studies using such questionnaire/interviews, or of ways they could be used. Max 4 if only semi-structured or only unstructured interviews. Max 4 if no examples semi-structured: interviews follow some set questions the interviewer can add some questions in response to the participant's responses; e.g. Schachter and Singer interviewed participants and asked 'How are you feeling?'; unstructured: interviews are much more flexible; the interviewer can add questions in response to the participant's responses; tend to use more open questions / ask for descriptions / detail / produce more qualitative data; e.g., Piliavin et al. the observers spoke to the person next to them on the train after the incident / the observers tried to elicit comments from passengers sitting next to them on the train; e.g., Dement and Kleitman sometimes went to the participants to ask them more questions about each dream;	**6**

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Question	Answer	Marks
7(a)	**Rhiain is investigating how much time babies spend in REM sleep. She thinks that bigger babies will spend more time in REM sleep than smaller babies.** **State the aim of Rhiain's study.** 1 mark for aim To investigate how much time different size babies spend in dream sleep; To test whether big babies spend more time in REM sleep than small babies; (ORA) To investigate whether there is a correlation between baby weight/size and time in REM; To investigate how much time babies spend in REM sleep = 0 [incomplete – no comparison]	1
7(b)	**One technique that Rhiain could use to measure REM sleep duration is an EEG (electroencephalograph).**	
7(b)(i)	**Suggest <u>one</u> disadvantage of using this technique in Rhiain's study.** 1 mark for suggestion (may be named guideline or linked idea, practical or ethical) 1 mark for link Electrodes may not fit a baby's head well; (suggestion: practical) Babies' heads are smaller than adults so the wires/electrodes may come unstuck more easily; (link) Low ecological validity; (suggestion: practical) Because lab is not a baby's normal sleeping environment; (suggestion OR link) Potential for harm; (suggestion: ethical) the ponytail could be distressing; (suggestion OR link) Electrodes uncomfortable for the baby; (suggestion OR link) No right to withdraw; (suggestion: ethical) If the baby found the electrodes / the ponytail uncomfortable it could only cry; (link)	2

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Question	Answer	Marks
7(b)(ii)	**Suggest why using <u>one</u> other technique to measure REM sleep duration would be more appropriate in this study.** 2 marks for suggestion (suggestion + detail) 1 mark for why it is better Or 1 mark for suggestion 2 marks for why it is better (reason why + detail) By observing the baby's eye movements (behind its eyelids) once it is asleep; (suggestion) This would not cause distress / much need to withdraw / problems with recording; (why better) So the data more valid reflecting real sleep patterns rather than disturbed/inaccurate ones; (why better) Use CCTV to record the baby's eye movements (behind its eyelids); (suggestion) This would not cause distress / much need to withdraw / problems with recording; (why better) So data more valid as reflecting real sleep patterns / could be rewatched to improve reliability; (why better) It would be better to use a technique that did not involve attaching something to the baby's head; (suggestion) Because putting something on a baby's head might affect sleep duration; (why better) Small babies might be more affected by things stuck on their heads than big babies; (why better)	**3**
7(c)	**Rhiain also wants to know whether babies who are in REM sleep are having dreams but the babies cannot answer questions about the content of their dreams.** **Suggest how Rhiain could observe the babies during REM sleep to investigate the content of their dreams.** 1 mark for suggestion 1 mark for detail By recording/observing the direction (not just the duration) of their eye movements; (suggestion) If their eyes move in different directions this would suggest they are tracking things in their dreams; (detail) By recording any noises they make; (suggestion) The noises may be linked to their dream content; (detail) By recording any facial expressions they make; (suggestion) The expressions, such as smiling, may be linked to their dream content; (detail)	**2**

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Question	Answer	Marks
8(a)	**Kylo is planning a case study to investigate the importance of a pet / domesticated animal in the life of an elderly person.** **When choosing his sample of one elderly person he has several decisions to make.** **Suggest who Kylo should look for as a participant, including:** • **the pet / domesticated animal they have and why the elderly person has this animal** • **one other decision he must make when choosing his participant.** **Do not refer to sampling techniques in your answer.** Animal and why it is there: Accept any animal species. 2 marks for explanation of why the animal is there: 1 mark for suggestion 1 mark for detail A cat because it is a pet; (suggestion) It is there to keep the old person company / the purring is relaxing; (detail) A cow because they want milk; (suggestion) This is a source of food; (detail) A dog because it is a pet / as a guard dog; (suggestion) to get them out of the house / to keep them fit / to protect them; (detail) Other decision about the participant (not pet related): 2 marks for explanation of a decision about the person / participant: 1 mark for suggestion 1 mark for detail Accept any reasonable suggestion. Most likely: How old they are / what counts as 'elderly'; (suggestion) Must be over 40 (years old); (detail) Whether they are male or female; (suggestion) The sexes may differ in their reasons for having a domestic animal; (detail) Whether they live alone; (suggestion) Like 'family'; (detail)	**4**

Question	Answer	Marks
8(b)(i)	**Suggest <u>one</u> technique Kylo could use to collect data from his participant in his case study.** 1 mark for suggestion 1 mark for link 1 mark for detail (of suggestion OR link) Observation; (suggestion) Use a structured observation of the participant and his pet with behavioural categories; (link) Such as whether he pats it / milks it / talks to it; (detail/link) (covert) Observation; (suggestion) where the observer is hidden; (detail) E.g. by watching the participant and their animal through a window; (link) Use a non-participant observation; (suggestion) of the participant and his pet so Kylo doesn't touch with the pet; (link) because this might disrupt the participant's interactions with the pet; (detail) Interview; (suggestion) Use an unstructured interview of the participant and his pet with varied questions; (detail) Such as 'Describe how important your animal is to you'; (link) Questionnaire; (suggestion) Type of question; (detail) About the animal and person; (link)	3

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Question	Answer	Marks
8(b)(ii)	**Explain <u>one</u> advantage of the technique you suggested in (b)(i).** 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) Covert observation: Being unseen means you get more natural behaviour; (advantage) For example, the participant might be embarrassed by their behaviour and stop if they can see you; (detail) Non-participant: Not being part of the pair means you won't distract the owner / the animal; (advantage) For example, you might disturb the animal you are near them; (detail) Questionnaire/Interview: You would be able to ask for the reasons behind their interactions with the animal; (advantage) Such as why they pat them; (detail)	**2**

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Question	Answer	Marks
8(b)(iii)	**Explain <u>one</u> disadvantage of the technique you suggested in (b)(i).** 1 mark for suggested disadvantage 1 mark for detail (link) Observation: Can only access information about the relationship which can be seen; (disadvantage) So the underlying reasons for patting the animal / talking to it cannot be investigated; (detail) Covert / Non-participant observation: Being unseen / away from the participants may mean you cannot see/hear clearly; (disadvantage) So you may miss important features of the interaction with the animal such as eye contact; (detail) Questionnaire/Interview: The participant may give socially desirable answers about their interactions with the animal; (disadvantage) Such as lying because they are embarrassed about how often they talk to the animal; (detail)	**2**

Question	Answer	Marks
9(a)	**Rory is investigating factors that affect feeding behaviour in animals.** **Rory has chosen to observe the feeding behaviour of some fish.** **Suggest <u>one</u> problem Rory could have when observing these fish.** 1 mark for linked suggestion The fish might be stressed by human presence / Rory / Seeing movement / hearing noises = 1 The fish might change their behaviour because of human presence / Rory / movement / noises = 1 They might swim behind things / very quickly / around each other making it hard for Rory to see them = 1	**1**

Question	Answer	Marks
9(b)	**Rory will keep these fish in a container filled with water.** **Suggest <u>one</u> other feature related to 'housing' that Rory should consider.** **Do <u>not</u> refer to feeding in your answer.** 1 mark for suggestion 1 mark for detail Amount of space/water / tank big enough; (suggestion) to avoid causing them pain or distress; (detail) Somewhere to hide / rocks/plants; (suggestion) Because they could be distressed if there was nowhere to escape to; (detail) Water depth / freshness/temperature/salinity/depth/freshness/oxygenation; (suggestion) Because different fish species have different needs / as this avoids causing them pain or distress; (detail)	**2**
9(c)	**Explain why using fish will limit the generalisability of Rory's findings**. 1 mark for explanation 1 mark for detail Because fish differ from other (animal) species / humans in intelligence/feelings/learning/habitat; (explanation) So the findings wouldn't generalise to other species that are more intelligent / that don't live in water; (detail)	**2**

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Question	Answer	Marks
10(a)	**Gareth wants to investigate whether people are more friendly to one another after a positive public event, for example, a festival or a celebrity wedding.** **Design a natural experiment to test whether a positive public event makes people more friendly to one another. You may use any positive public event.** Three majors for a natural experiment are: **(a)** IV: before and after big positive public event (must not be manipulated) (detail = e.g., how long before/after) **(b)** DV: friendliness e.g., by observation, questionnaire, interview (detail = 'friendly' measures: e.g., of Qs, behavioural categories) **(c)** Where: the event and its location, so where the data is collected (detail e.g., location of observers/interviewers) The minors are: controls who: participants attending positive event / not attending or before/after positive event Also: • sampling technique • sample size • description of how data will analysed, e.g. use of averages/bar chart • ethical issues Other appropriate responses should also be credited.	**10**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>10(a)</td><td>Mark according to the levels of response criteria below:

<table>
<tr><td>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.</td></tr>
<tr><td>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.</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></tr>
<tr><td>Level 0 (0 marks)
No response worthy of credit.</td></tr>
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</td><td></td></tr>
</table>

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<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. 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.
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>

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