Cambridge International AS & A Level

SUBJECT **9990/23**

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.

Generic Marking Principles

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

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

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

GENERIC MARKING PRINCIPLE 2:

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

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

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

GENERIC MARKING PRINCIPLE 4:

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

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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

1 Components using point-based marking:

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

From this it follows that we:

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

2 Presentation of mark scheme:

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

3 Annotation:

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

Question	Answer	Marks
1	**In the study by Andrade (doodling), parts of the procedure helped to reduce demand characteristics.** **Describe <u>two</u> parts of the procedure that helped to reduce demand characteristics in this study.** 1 mark for part of procedure } ×2 1 mark for reduction of demand characteristics } Independent measures (to reduce exposure) / participants only saw one condition; (part of procedure) So participants only saw either doodling or non-doodling conditions; (reduction of demand characteristics) Deception (so unaware therefore reduction of demand characteristics); They were told to remember the names (but they had to recall the places too); (part of procedure) They were told it was a study about memory not doodling; (part of procedure) They were told it didn't matter how many shapes they shaded; (part of procedure)	**4**

Question	Answer	Marks
2(a)	**State the difference between an 'aim' and a 'hypothesis'.** 1 mark for difference A hypothesis is testable, an aim is not (necessarily)	**1**
2(b)	**A non-directional hypothesis for a study states that 'Boys and girls differ in how aggressive they are' but the researcher has decided to use a directional hypothesis instead.** **Suggest a directional hypothesis for this study.** 1 mark for directional hypothesis. Boys will be more aggressive than girls = 1 (ORA) Boys are more aggressive than girls = 1 (ORA)	**1**

Question	Answer	Marks
3	**The study by Milgram (obedience) was not an experiment because there was no independent variable. Milgram later compared the results of this study to the findings of the same procedure carried out in an old office block. This comparison was an experiment.**	
3(a)	**State the independent variable in this experiment.** 1 mark for IV : Location / lab versus office;	**1**
3(b)	**State the dependent variable in this experiment.** 1 mark for DV: Shock level / voltage reached / level of obedience / whether they exceeded X volts;	**1**

Question	Answer	Marks
4(a)	**Explain what is meant by the ethical guideline of 'species and strain' in relation to animals in psychological research.** 1 mark for each relevant point of explanation Use a species/strain that will be least distressed; (note: 'protection from harm' = 0 (human guideline), unless means 'pain') Use a species that will feel less pain; Use a species that will serve the purpose of the experiment (so this is a compromise); Least number of species = 0 Housing/food/water = 0	**2**

Question	Answer	Marks
4(b)	**Describe how the ethical guideline of 'housing' affects what psychologists should and should not do when studying animals** 3 marks for what psychologist should/should not do (this will encompass any definition of the guideline) Should house to provide essential needs for species/age/sex/ reproductive stage / activity level; E.g. warmth/cover; sufficient space for exercise/'roaming'; sufficient space to avoid overcrowding / individual housing for solitary species; small enough nest sites to feel safe; to provide (suitable) food/water; clean infrequently (change of smell could be upsetting); locate animals away from where they could become distressed (e.g. near natural predators); create a safe and healthy environment rather than trying to recreate the wild environment beyond what is necessary;	**3**

Question	Answer	Marks
5	**In the study by Schachter and Singer (two factors in emotion), the placebo condition was a control condition.**	
5(a)	**Outline what is meant by a 'control condition'.** Meaning = 1 mark [must not be only an e.g. from Schachter and Singer e.g. saline / no epi, but ignore link if otherwise correct] Participants in a group in an experiment where the independent variable is missing / a placebo group = 1 Participants that provide a baseline for comparison to an experimental group = 1	**1**

Question	Answer	Marks
5(b)	**Explain the purpose of this control condition in this study.** Identification of control condition = 1 mark } must have a link for 2 marks Purpose of control condition = 1 mark } No adrenalin/epinephrine / (only) saline = 1 (identification) Baseline/comparison = 1 (purpose) Shows how the participants would behave towards the stooge without adrenalin = 1 (purpose) E.g. “Shows how participants would behave towards the stooge without adrenalin compared to with = 2 (identification + purpose)	**2**

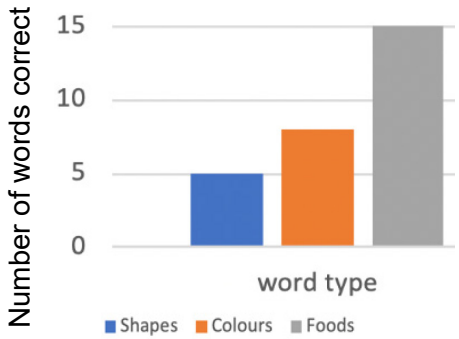
Question	Answer	Marks
6	**Describe 'random sampling' and 'volunteer sampling', using any examples.** 1 mark for each definition, up to a maximum of 2, for each technique. 1 mark for each linked example, from any studies (core, other, candidate's own). Max 2 for each sampling technique. Max 4 if no examples. Max 4 if only random or only volunteer sampling. For example: Random sampling: Each individual in the population has an equal chance of being selected; getting a numbered list of people and putting the numbers in a hat / using a random number generator to select the sample by choosing out of a hat/the ones generated; a study might use the list of all students in a school and select 30 from them; Volunteer sampling: Using a request asking people to join in; by advert/email/post/online; Baron-Cohen et al. took volunteers from Autistic Society magazine / support group; Schachter and Singer used volunteers from the psychology course / University of Minnesota; Laney et al. used volunteers from a participant pool (at University of Washington); Milgram volunteers responding to advert; Canli 10 Right handed women were volunteers;	**6**

Question	Answer	Marks
7	**Mrs Colling is a headteacher/principal of a school and is planning an experiment to investigate whether rewards or punishments are best for improving students' learning. The independent variable is whether students receive rewards or punishments.**	
7(a)(i)	**Suggest <u>two</u> ways that Mrs Colling could ask teachers to reward students in their classes.** 1 mark per suggested way to reward ×2 Give food; Give gift vouchers; Giving merit marks; Giving praise; Writing positive comments on their work; Telling the class to clap; These are only suggestions, there will be many possible answers	**2**
7(a)(ii)	**Explain which of the ways you suggested in <u>(a)(i)</u> would be a more valid manipulation of the independent variable in this experiment.** 1 mark for why chosen way is more valid [note: no mark for just stating the better way] 1 mark for detail OR 2 marks for two brief ways Giving merit marks: is better than praise as praise is variable (can be subtle or fulsome); (why better) but the effect of each merit mark would be equivalent; (detail) Writing positive comments on their work: is better than telling the class to clap, because this might be embarrassing; (why better) so it would act as punishment (instead of a reward); (detail)	**2**

Question	Answer	Marks
7(b)	**Mrs Colling is talking to teachers about what punishment to use. Two suggested punishments are:** • **missing breaktime every day for a week while standing outside the staffroom** • **making the student write a public letter of apology to the school.** **Both suggested punishments are rejected by the teachers for ethical and practical reasons.**	
7(b)(i)	**Suggest <u>one</u> ethical problem with <u>one</u> of these punishments.** 1 mark for identification of an ethical problem 1 mark for detail Missing breaktime could do psychological harm; (identification) For example, the student could get lonely; (detail) The students wouldn't have the right to withdraw from the study; (identification) Because they would have to miss their breaktimes; (detail) The public apology letter would break confidentiality; (identification) Because everyone would know which student had been punished; (detail) The public apology letter would break privacy; (identification) Because the student's misdemeanour might have been embarrassing; (detail) A public apology letter could do psychological harm; (identification) For example, the student could get upset; (detail) A public apology letter could do physical harm; (identification) For example, the student could lose sleep with worry; (detail)	**2**
7(b)(ii)	**Suggest <u>one</u> practical problem with <u>one</u> of these punishments.** 1 mark for identification of a practical problem 1 mark for detail Missing breaktime make them late for lessons; (identification) Then they would get more punishments; (detail) A public apology letter could be written by someone else (not the student); (identification) So they would have avoided receiving any punishment; (detail)	**2**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>8</td><td>Ruby has conducted an experiment about language learning in animals using an animal called Delphine. Delphine has learned to make noises with different meanings. Ruby has tested Delphine's understanding of word types, including:
• shapes
• colours
• food types

Table 8.1.
<table><tr><td>Word type</td><td>shapes</td><td>colours</td><td>foods</td></tr><tr><td>Number of words understood</td><td>5</td><td>8</td><td>15</td></tr></table></td><td></td></tr>
<tr><td>8(a)</td><td>Ruby's results for the three word types are given in Table 8.1.</td><td></td></tr>
<tr><td>8(a)(i)</td><td>Draw a bar chart of these results. You <u>must</u> label the axes.

Max 3 marks if not a bar chart (with separate bars)
 

1 mark: axis label 'number of correct words' on y-axis
1 mark: units (for frequency) on y-axis
1 mark: axis label 'word type' on x-axis
1 mark: shapes, colours, foods as categories on x-axis
1 mark: correct plotting of numbers as above</td><td>4</td></tr>
</table>

Question	Answer	Marks
8(a)(ii)	**State which measure of central tendency would be <u>most</u> appropriate for Ruby to use with this data.** 1 mark for mode (definitive)	**1**
8(b)	**Ruby plans to include two more word categories.** **Explain why this would improve Ruby's results.** 1 mark for explanation Because it would show that the learning applies to a range of categories (so more valid/generalisable); With more categories correct responses are less likely to arise by chance (making it more valid); If this meant there were more results overall, it would make the findings more reliable;	**1**
8(c)	**Ruby is concerned that sometimes she will not hear Delphine's noises so wants to use a second observer to help her.**	
8(c)(i)	**Outline <u>two</u> disadvantages of having a second observer.** 1 mark for outline of a disadvantage ×2 They will be new so less skilled at understanding the meaning of the noises; The second observer may make different observations from Ruby / the results may lack inter-observer reliability; The second observer would be unfamiliar and may disturb Delphine;	**2**

Question	Answer	Marks
9	**Dr Felix is conducting a natural experiment to test whether seeing television advertisements for a charity for older people makes participants behave more positively towards them. He measures this by giving a questionnaire about behaviour towards older people to a group of students. He gives the students the questionnaire one week before the advertisements appear on television and again the week after.**	

Question	Answer	Marks
9(a)	**Explain what is meant by a 'natural experiment', using this study as an example.** 1 mark for explanation , 1 mark for link the IV cannot be manipulated = 1 (explanation) this was before or after exposure to the adverts = 1 (link) Dr Felix could not control exposure to the adverts = 1 (link) so the two conditions of the experiment could not be controlled, they / the time had to be chosen = 1 (explanation)	**2**
9(b)	**Suggest <u>one</u> problem with natural experiments, using this study as an example.** 1 mark for problem, 1 mark for link Fewer controls are possible than in a laboratory experiment / cannot be sure (that only the) IV is affecting DV; (problem) May be more positive as had nice old lecturer (not ads) / unhelpful as didn't see adverts / not sure if adverts are cause; (link)	**2**
9(c)	**Dr Felix thinks it could be better to use covert observations rather than questionnaires to measure positive behaviour towards older people. He could have several older people as stooges, pretending to struggle with their shopping, and he could observe how the students behave.**	
9(c)(i)	**Suggest <u>one</u> advantage of using covert observation rather than questionnaires in this study.** 1 mark for advantage, 1 mark for link The observer is hidden so they do not cause social desirability; (advantage) So the students won't say they would behave positively to old people just to be acceptable; (link) A covert observer wouldn't cause demand characteristics; (advantage) So the students won't say positive things about old people just because they knew the aim; (link)	**2**

Question	Answer	Marks
9(c)(ii)	**Suggest <u>one</u> disadvantage of using covert observation rather than questionnaires in this study.** 1 mark for disadvantage, 1 mark for link It would be harder to gain consent; (disadvantage) Because you wouldn't ask to observe people but can ask to fill in a questionnaire; (link) It would be impossible for participants to withdraw; (disadvantage) Because they wouldn't know about an observation but could refuse a questionnaire; (link)	**2**

Question	Answer	Marks
10	**Jimmy wants to investigate individual differences in dreams. He is interested in many differences between participants, such as whether each individual:** • **has consistent dream content** • **has meaningful dreams** • **dreams in colour.**	
10(a)	**Describe how Jimmy could conduct a study using an interview to investigate at least <u>two</u> individual differences in dreams.** Three majors for an interview are: (a) content of questions asked (detail: topics, examples about at least two individual differences) (b) interview structure detail (detail: evidence of structured/semi/unstructured, also face-to-face/online/telephone) (c) style of questions asked e.g. open and closed (detail: accurate examples of open and closed) The minors are: where – location of participants when being interviewed who – participants (people who recall their dreams) Other details for replication: • lie questions • filler questions • sampling technique • sample size • description of how data will analysed, e.g. use of averages/bar charts • 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>
</table>
</td><td></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 <u>(a)</u> 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>