Cambridge Assessment International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **March 2021**

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 March 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

[Turn over

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.

Question	Answer	Marks
1(a)	**Outline what is meant by a 'questionnaire'.** 1 mark per correct point ×**2** No marks for naming an example A type of self report / participants are asked questions; in written form / e.g. using pencil and paper or online;	**2**
1(b)	**Explain <u>one</u> advantage of using a questionnaire rather than an interview in research.** 1 mark for identifying advantage 1 mark for comparison Must have a reason for 2 marks Questionnaire **more** ethical / **less** social desirability bias / **less** demand characteristics; as an interview is face-to-face; A questionnaire can be done in the participants' own time; so they may put **more** thought into their answers / so **more** participants may be able to answer (than with interviews); Questionnaires can be sent out to **more** potential participants / participants can all perform simultaneously; which means the sample is likely to be **bigger** (than with interviews) / **more** generalisable; You can get a bigger sample with a questionnaire than with an interview = 1 (no reason) Questionnaires are more ethical as participants can stop = 1 (no comparison – why can't they in interviews?)	**2**

Question	Answer	Marks
2	**Outline what is meant by an 'aim'. Include an example from <u>one</u> core study from the cognitive approach in your answer.** 1 mark for outline 1 mark for example tells you the purpose of the investigation / what the study intends to find out or show; (outline) Baron-Cohen et al. intended to find out whether AQ was related to ToM; (example) Laney et al.'s study had the purpose of investigating whether false memories could be implanted; (example) Andrade wanted to know whether doodling helped memory; (example)	**2**

Question	Answer	Marks
3	**The study by Milgram (obedience) used volunteer sampling.**	
3(a)	**Explain what is meant by 'volunteer sampling', using this study as an example.** 1 mark for a (brief) generic description of how a volunteer sample is obtained 1 mark for reference to how this was done in this study, i.e. link a self-selecting sample = 1 mark (generic) a group of people who c*hoose* to join the study = 1 mark (generic) participants who *respond to a request* to be in the study from the researcher = 1 mark (generic) Milgram recruited participants using adverts in a (local/New Haven) newspaper / by direct mail; (link)	**2**
3(b)	**Suggest <u>two</u> ways Milgram could have obtained a volunteer sample with a wider variety of participants.** 1 mark for suggestion of a change to volunteer **sample** not to **sampling** } ×**2** 1 mark for detail (may or may not be linked, a link will count as detail, does not have to justify suggestion) } Using **adverts in different places**; (suggestion) e.g. in different newspapers / newspapers for different audiences / adverts in shops; (detail) Placing **adverts in wider geographical locations**; (suggestion) e.g. by advertising outside New Haven; (linked detail) By **specifying a wider selection of features** in the adverts; E.g. different ethnic groups / different hobbies / different political beliefs etc; (detail) Use **emails/the internet** = 1 (even though this could not have been done in the 1960s) '…so more people would read the advert' = 1 (only increases sample size but this implicitly increases variety)	**4**

Question	Answer	Marks
4	**In the study by Piliavin et al. (subway Samaritans), participant variables may have affected the results.** **Explain what is meant by 'participant variables', using this study as an example.** 1 mark for a (brief) generic description of participant variables } These two points may be combined 1 mark for link i.e. to helping } differences between individuals that could **affect** the **dependent variable / participant's responses** (in a study); individual differences that **hide** the effect of the **independent variable /** that act as **confounding variables**; e.g. some of the participants may have been **more helpful** anyway; e.g. some participants may have been grumpy so **been less helpful**; NB factors such as 'time of day' are situational and therefore incorrect Individual differences = 0 How individuals respond in the experiment = 0	**2**

Question	Answer	Marks
5	**Dement and Kleitman (sleep and dreams) used a sample of volunteers.** **Suggest why this sample may <u>not</u> have been representative of sleep and dreams in the general population.** 1 mark for a brief suggestion 1 mark for a detail / reason **why** (one point must be linked) Small sample / only 9 people / only 5 studied in detail; (1st) And their dreaming might have been **different** from other people's; (2nd) There are **individual differences** in dreaming; (2nd) so the sample might sleep better than average; (2nd) They were volunteers who chose to sleep in a lab; (1st) and bad sleepers wouldn't volunteer; (2nd) More males than females; (1st) There may be gender differences in sleep/dreams; (2nd)	**2**

Question	Answer	Marks
6	**Describe the ethical guidelines of 'numbers' and 'replacement' in relation to animals, 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 examples from any studies (core studies, other studies, candidate's own studies). minimum **number** of animals (for valid/reliable results); (definition) as minimum number reduces harm/distress to animals; (**animal guidelines only – only use point once**) (while still maintaining validity) through pilot studies; (detail) reliable measures of the dependent variable; (detail) good experimental design; (detail) appropriate data analysis; (detail) **replace** animal experiments with alternatives where possible; (definition) as replacement avoids harm/distress to animals; (**animal guidelines only – only use point once**) e.g. using videos from previous studies; computer simulations; Note: 'Replacement' is **not** about replacing one individual animal with another in a study **nor** about replacing one species with another that will suffer less (this relates to 'species and strain') *number* • Pepperberg only used 1 parrot, which is good • Yamamoto et al. only used 5 chimpanzees, which is good *replacement* • Technological advances have made some studies previously done on animals possible on humans; e.g. modern studies on brain function are less invasive / Canli et al.'s study of emotions using fMRI; • Human affective responses/behaviour/cognition more complex than in animals, e.g. the effects of doodling in Andrade's study couldn't be studied in animals;	**6**

Question	Answer	Marks
7	**Uma had a bird feeder in her garden. When she moved the bird feeder, some species of bird were faster to find it than others. Uma has moved the feeder a second time and is conducting an observational study to investigate which bird species are faster to learn the new location of the bird feeder.**	
7(a)	**Uma is going to use a structured observation.** **Suggest how she could record her data.** 3 marks for description of how to record data, max 1 for other aspects of a structured observation For full 3 marks, answer must be linked to Uma's study. decide on (a limited range of) behaviours to record/to checklist/to tally; and define them; e.g. hopping/searching in the old location; e.g. eating/looking/watching/searching in the new location; e.g. time to reach the new location; e.g. number reaching new location; (for each) bird species / first species to arrive;	**3**
7(b)	**Uma cannot decide how many different bird species to observe.**	
7(b)(i)	**Suggest <u>one</u> reason why it would be better to record a small number of different species.** 1 mark for advantage of recording **few** bird **species** 1 mark for explanation of why Some species may be easier to recognise than others; (= 2 linked) So she can pick some birds that are easy to distinguish; (= 2 linked) This makes recording easier; (= 1 generic); So she is likely to be more reliable; (= 1 generic) Possible to record data in more detail/depth/qualitative (to extend beyond structured observation) = 1 gen	**2**
7(b)(ii)	**Suggest <u>one</u> reason why it would be better to record a large number of different species.** 1 mark for advantage of recording **lots** of bird **species** 1 mark for explanation of why (may be bird-related) It is likely to be more valid/representative/generalisable; (generic) Because some species may be faster to learn than others; (linked) So results could be applied to species that weren't seen; (linked) If she picked only quick species it would seem as though all birds were fast; (linked) To differentiate between them / look for differences / make comparisons; (generic) To extrapolate to other bird species that were not seen;	**2**

Question	Answer	Marks
8	**Dr Malt is testing whether a new drug to improve attention in mental health patients is better than an old drug. In her experiment, she is measuring patients' attention to a stimulus.**	
8(a)	**Explain what is meant by an 'independent variable', using Dr Malt's study as an example.** 1 mark for generic definition 1 mark for link with **two levels** of IV The factor that is manipulated by the experimenter; (generic) A difference in conditions (that may be naturally occurring) that is compared; (generic) The variable that if expected to cause a change in the dependent variable; (generic) IV = **new and old** drug;	**2**
8(b)(i)	**Suggest how Dr Malt could operationalise her dependent variable.** 1 mark for a measure of (changes in ability to pay) attention **to a stimulus** e.g. **speed** to identify a target; e.g. **score** on a test **of how well** people concentrate/remember; e.g. **rating** from 0 (not attending) – 5 (full attention) on a scale; Accept any reasonable answer.	**1**
8(b)(ii)	**Explain <u>one</u> advantage of operationalising the dependent variable in this way.** 2 marks for advantage 1 mark advantage (generic) 2nd mark link to **8(b)(i)** (even if **8(b)(i)** did not earn credit). *speed to identify a target*: (score 1) can use an electronic timer built into a computer; to increase validity/ reliability of **speed identification**; *results on a test*: (score 0) can use a test **specific to the sample of mental health patients**; so that it is not too easy / difficult; (being quantitative) the data can be used for bar charts/histograms/ comparisons;	**2**

Question	Answer	Marks
8(c)	**Dr Malt decides she must use deception. She tells the participants in both the 'new drug group' and the 'old drug group' that they are receiving the new drug.**	
8(c)(i)	**Suggest <u>one</u> reason why it is important for Dr Malt to deceive her participants.** 1 mark reason (generic) 1 mark for link To reduce demand characteristics/changes in behaviour/results if participants know the aim; (generic) Because the control group might try harder so there would be no apparent benefit from the drug; (link) Because the control group may guess they are not receiving the new drug, so not try / withdraw; (link)	**2**
8(c)(ii)	**Suggest <u>one</u> reason why it is an ethical problem that Dr Malt is deceiving her participants.** 1 mark for **ethical** problem (generic) Does **not** have to have statement of guideline They may be at risk of **harm** (because they don't know they are not being treated); (problem) They may be upset when they find out; (problem) If they knew the whole truth they might want to **withdraw**; (problem) They cannot give (fully informed) **consent**; (problem)	**1**
8(c)(iii)	**Suggest how Dr Malt could reduce the problem you have identified in part (c)(ii).** 1 mark for solution The solution must **not invalidate the study**, e.g. participants cannot choose/ be told which drug they are taking *[They may be at risk of harm (because they don't know they are not being treated = problem]* She should monitor their wellbeing / use only borderline cases; (solution) *[They may be upset when they find out = problem]* Debrief them to explain the purpose of testing the new drug / offer them the new drug after; (solution)	**1**

Question	Answer	Marks
9	**Zhu is conducting a correlational study in a factory to investigate the relationship between two variables:** • **the number of hours an employee works** • **how happy that employee is.**	
9(a)	**Suggest <u>one</u> way that Zhu could record the number of hours an employee works.** 1 mark for identification of strategy (by name **or description**) 1 mark for **detail** Observation; (strategy) Zhu watches and records when they arrive and leave; (detail) Self report; (strategy) Zhu asks the employees to check in and out / write down their hours; (detail)	**2**
9(b)	**Suggest <u>one</u> way that Zhu could record how happy each employee is.** 1 mark for way 1 mark for detail On a (rating) scale (of 1-10); (way) e.g. 1 = unhappy, 10 = very happy; (detail) by interviewing people; (way) e.g. asking them about how positive they feel; (detail) observing them; (way) e.g. if they smile/laugh/frown/shout; (detail)	**2**
9(c)	**For her sample, Zhu is looking for a factory where there is a variety of jobs for the employees.** **Suggest <u>two</u> reasons why this is important.** 1 mark for reason (may be generic) + 1 mark for detail **x2** At least one point must be **linked** for 2 marks (To increase) generalisability / representative; (reason – generic) As different jobs may require different **hours of work**; (detail – linked) (To increase) validity; (reason – generic) **Jobs** with different salaries might make people more **happy**; (reason – linked) Because different **jobs** require different **hours**; (reason – linked) So she would need **different jobs to get a spread of time at work**; (detail – linked) Because different jobs may attract different types of people; (reason – linked) And different people may be more or less **happy**; (detail – linked) Because different jobs may be done by people of different ages; (reason – linked) And age may affect time **hours worked** / **happiness**; (detail – linked) Needs a spread/range of scores as it is a correlational study (and the measure must be a continuous variable);	**4**

Question	Answer	Marks
10	**Cari thinks that adults wearing brightly coloured clothing are more helpful to children than adults wearing clothing that is not brightly coloured. She is planning a field experiment to investigate which adults are more likely to return a ball to children who have kicked it out of reach.**	
10(a)	**Describe how Cari could conduct a field experiment to investigate whether adults who wear brightly coloured clothing are more helpful than those who do not.** Three **majors** for a **field experiment** are: **a How**: – **IV – bright or not bright clothes** (operationalisation of colours/patterns/which clothes) **b What**: – **DV (helpfulness)** (operationalisation of **how recorded** e.g. set up to allow opportunity for helping, observation how much helping, how quickly) **c Where –** location of participants when data is collected (e.g. in the street) / why they are there e.g. teachers to breaktime, people in park at lunchtime, parents waiting at school gate) The **minors** are: **how** – **controls** **who** – **participants** (must be **adults**) Other details for replication: • experimental design (probably has to be independent measures) • 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**

Question	Answer	Marks
10(a)	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.	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>10(b)</td><td>
Identify one 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>
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</td><td>4</td></tr>
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