Cambridge International AS & A Level

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Cambridge International Advanced Subsidiary and Advanced Level

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **May/June 2019**

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.

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Generic Marking Principles

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

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

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

GENERIC MARKING PRINCIPLE 2:

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

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

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

GENERIC MARKING PRINCIPLE 4:

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

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Question	Answer	Marks
1	**Dement and Kleitman (sleep and dreams) found a positive correlation between REM duration and the number of words used to describe the dream.**	
1(a)	**Explain what is meant by a 'positive correlation', using this study as an example.** 1 mark for 'both variables go up together' OWTTE 1 mark for idea that longer REM durations was linked to more words Do not award each mark if the information suggests causality. when one variable increases the other one does too = 1 longer REM phases had more words to describe the dream = 1 An increase in one variable makes the other one rise = 0 Having longer in REM gave the P more chance to describe the dream in more words = 0	**2**
1(b)	**Suggest why REM duration was a <u>more</u> valid measure of dream duration than the number of words used to describe the dream.** 1 mark for identifying a reason 1 mark for explaining the reason in **comparison** to other measure. timing is a scientific measure / is more objective; whereas the number of words used might be affected by vocabulary; whereas the number of words used might be affected by how easily the individual wakes up; Participants may lie about dream details (to please the experimenter / so use more words);	**2**

Question	Answer	Marks
2	**The study by Bandura et al. (aggression) used a sample of children.**	
2(a)	**Identify <u>two</u> features of this sample of children.** 1+1 marks for any features: 36 boys; } 36 girls; } = 2 72 boys and girls = 2 OR '72 participants' = 1 Stanford / USA = 1 'boys and girls' = 1 '36 of each gender' = 1 'a nursery school' / 'university crèche' = 1 aged 3 to 5/6 (years) / aged 37 to 69 months = 1 Stanford + nursery = 2	**2**

Question	Answer	Marks
2(b)	**Suggest <u>one</u> reason why generalisations <u>can</u> be made from the sample in this study.** 1 mark for a reason there were children of each gender; there was quite a wide age range; 72 is quite a big sample;	**1**
2(c)	**Suggest <u>one</u> reason why generalisations <u>cannot</u> be made from the sample in this study.** 1 mark for a reason they were only from one nursery school; it was a university nursery school; there were no older children; the results might not apply to children aged 8–10 years/teenagers/adults = 1 there were only 6 children per condition = 1	**1**

Question	Answer	Marks
3	**In the study by Yamamoto et al. (chimpanzee helping), the researchers needed a reliable procedure for testing the tool choice made by the chimpanzee.**	
3(a)	**Explain what is meant by 'reliability', using this study as an example.** 1 mark for definition 1 mark for linked example • reliability is about consistency = 1 mark • to be reliable, measures must measure the phenomenon in the same way each time = 1 mark e.g. Yamatoto et al standardised the procedure, e.g. by always having the same 7 objects on the tray (as tools) at the start of a trial / trial always ended after 5 min if not appropriate tool transfer / maximum of 4, minimum of 2 trials per day / had 3 video cameras / only counted the first tool offered etc. = 1 mark for example They made sure researchers measured helping in a similar way, i.e. were reliable, by using the same rules such as only counting the first tool offered = 2 marks	**2**

Question	Answer	Marks
3(b)	**Suggest <u>one</u> problem with reliability in this study.** 1 mark for identifying problem. (This can also be linked but does not have to be) 2nd mark for linked detail There was a range of number of trials per day (maximum of 4, minimum of 2); (1 for identification) So some chimps may have been more familiar/ less willing as they had had more / less trials; (1 for link)	**2**

Question	Answer	Marks
4	**In a study about sharing, pairs of friends were given questionnaires. The questionnaire had only two questions: 'rate your own willingness to share' and 'rate your friend's willingness to share'.**	
4(a)(i)	**State what is meant by the term 'demand characteristics'.** 1 mark for definition of term <u>Features of the setting</u> which indicate the aim / change the participants' responses	**1**
4(a)(ii)	**State why demand characteristics are a problem in research.** 1 mark for explanation of problem (Changes in the participants' responses mean that) differences in the DV are not due to the IV; Because participants are not responding (only) to the IV the findings will lack validity; Because it means researchers cannot judge causation	**1**
4(b)	**Describe <u>one</u> way in which demand characteristics could be avoided in this study.** 1 mark for **linked** description of way to avoid demand characteristics Ensure participants do not know that **willingness to share is the aim** of the study; **Hide the questions about sharing** among others (to distract the participant / to disguise the aim); Add **filler** questions (to questionnaire); Deceive them by telling them it's a study about what makes a **good friend**	**1**

Question	Answer	Marks
5	**Sometimes it is more appropriate to use one measure of central tendency than another.**	
	Suggest <u>one</u> reason why it may be better to use the mean as a measure of central tendency than the mode. 1 mark for reason The mean takes (the value of) every score into account (so is more representative) = 1 There might be two modes (which could be different from most of the rest of the data set) = 1 There might not be a most common score (so no mode) = 1	**1**

Question	Answer	Marks
6	**Describe the ethical guidelines of 'right to withdraw' and 'deception' in research with human participants, using any examples.** 4 marks max per guideline for definition and detail 1 mark for each example that is linked to a guideline, up to a maximum of 2 per guideline. Examples can include examples from any research (core studies, other studies, candidate's own studies) For example: **Right to withdraw**: ensuring participants know they can leave if they want to; (1 for definition) **Deception**: misinforming participants; (1 for definition) *Right to withdraw* • letting participants go if they want to; (1 definition) • and allowing them to leave without reason; (+1 detail) • because they are upset / they think they might be harmed; (+1 detail) • and take their data with them/ remove their data from the study; (+1 detail) • for example Milgram did originally tell his participants they could leave (1 for example) • although Milgram really denied the participants the right to leave with the verbal prods; (+1 for example) • 1 (accept 11) participants withdrew from Schachter & Singer's study (due to the injection); (+1 for example) • Less possible in lab than field experiments because unaware of participation; (+1 detail) *Deception* • participants should not be lied to / is when participants are lied to (about the aim); (1 definition) • as this means they cannot give informed consent / may be distressed / might have wanted to withdraw; (+1 detail) • for example in Milgram the participants were told they were doing a study about memory/learning/punishment (when in fact is was about obedience) / were told the shocks were real; (1 for example) • but sometimes deception is essential to avoid demand characteristics; (+1 detail) • Milgram's participants would have obeyed to 450V if they knew that the shocks were not real; (+1 for example) • Piliavin et al's participants thought the victim was really drunk / ill; (+1 for example) • Laney et al's participants were misled about the 'generated profile' (from the FHI); (+1 for example) • Laney et al's participants were misled about the aim, told food preferences and personality; (+1 for example) • If participants are deceived they should be debriefed (although this may not be possible in field experiments)	**6**

Question	Answer	Marks
7	**Dr Bahl wants to know about the emotions of people who spend their leisure time in different ways. He intends to use a questionnaire to collect information from these different types of people, about their emotions.**	
7(a)	**Explain <u>one</u> way that Dr Bahl could ensure that he obtains a varied sample of participants.** 1 mark for identify a representative sampling technique 2 marks for describing how the technique works/ produces a varied sample. To earn all 3 marks, the technique must be linked to the context random sampling; (1 identification mark) varied sample because everyone (in the population) has equal chance of being picked; 1 mark (generic) description e.g. should include people who express emotions easily and those who do not; 1 mark (linked) description He could use a random number generator on the GP patients list; 1 mark (generic) description so should get people with a variety of lifestyles/leisure pursuits / interests; 1 mark (linked) description	**3**
7(b)	**Suggest <u>one</u> open question that Dr Bahl could ask about emotions.** 1 mark for open question e.g. 'Explain how do you feel when you play sport/ read a book.' E.g. 'Why does camping make you feel relaxed?' e.g. 'Describe the last time you talked to someone about feeling emotional.'	**1**
7(c)	**Suggest <u>one</u> disadvantage of using open questions about emotion in this study.** 1 mark for disadvantage 1 mark for linking to study of emotion interpretation (of responses to open questions) may be biased (1 mark) researchers may be subjective (in their recording / interpretation of answers to open questions) (1 mark) If people do not like to mention their emotions, they will not want to do it in a study; so answers from people who are happy to talk about their emotions will be longer; (2 marks) People may find their emotions embarrassing; and this would be worse for open questions (where they have to express themselves in detail) than for closed questions; (2 marks) emotions are subjective; it will therefore be difficult to interpret the answers to open questions objectively; (2 marks)	**2**

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Question	Answer	Marks
7(d)	**Dr Bahl is considering using an fMRI (functional magnetic resonance imaging) scanner to investigate emotions.**	
7(d)(i)	**Suggest <u>one</u> advantage of using an fMRI scanner to investigate emotions.** At least one point must be linked to investigating emotions. • it produces functional information (= 1 mark) • so you can see which parts of the brain are active **for different emotions** (= 2nd mark linked) • it produces very detailed information (about location of activity) (= 1 mark) • so you could look at brains of **emotional and non-emotional people** (for differences) (= 2nd mark linked)	**2**
7(d)(ii)	**Suggest <u>one</u> disadvantage of using an fMRI scanner to investigate emotions.** At least one point must be linked to investigating emotions. • the scanner is very small / claustrophobic (= 1 mark) • so you could not readily tell which **emotions** related to test and which to fear of situation (= 2nd mark linked) • the scanner is very noisy (= 1 mark) • this could distract / frighten the participant making the test of **emotions** less valid (= 2nd mark linked) The question is about fMRI, so answers saying 'no qualitative data' / disadvantages of quantitative data are irrelevant. However, answers that link the idea that quantitative data from scans of specific brain areas / activity is difficult to relate to the (subjective) experience of emotions are creditworthy	**2**

Question	Answer	Marks
8	**Martha wants to conduct a naturalistic observation of children playing. She is planning to observe the children in her local school.**	
8(a)	**State what is meant by a 'naturalistic observation'** 1 mark for meaning. Watching the behaviour of participants without interference from the researcher = 1 mark Recording activities without manipulation of the environment / no controlled variables	**1**

Question	Answer	Marks
8(b)	**Suggest <u>one</u> disadvantage of using naturalistic observation in Martha's study.** Both marks are for one disadvantage At least one point must be linked to the study e.g. children's behaviour. The behaviours the children do cannot be controlled/produced; (generic disadvantage) So Martha might not see any play behaviour at all; (link) For example the children might just sit and read all the time; (link) The children's play may be affected by (extraneous / uncontrolled) variable e.g. temperature; (link) Responses making appropriate reference to ethics (e.g. deception, children) may earn credit	**2**
8(c)	**Suggest how Martha should follow the ethical guideline of informed consent in her study.** All marks are for way(s) to follow consent At least one point must be linked to the study i.e. children. There may be more than one suggestion. She should ask the parents (because the participants are children); she should also ask the teachers/school; and the children themselves; the request to the children must be simple enough for them to understand; the request to parents/school must tell them enough about the study for them to decide whether the child/children should participate; for example Martha should tell them her aim is to study play/that they will be observed whilst playing	**3**
8(d)	**Suggest how Martha could operationalise <u>one</u> play behaviour that she could observe.** 1 mark for identifying a play behaviour 2nd mark for operationalising it. skipping (= 1 mark) swinging a rope and jumping over it/ each jump could be counted (= 2nd mark, operationalisation) playing ball (= 1 mark) throwing and catching a ball / each throw or catch could be counted (= 2nd mark, operationalisation) playing tag (= 1 mark) running after another child to 'catch' them (= 2nd mark, operationalisation)	**2**

Question	Answer	Marks
8(e)	**Suggest what Martha would do if she were a covert observer.** Both marks are for describing what a covert observer does. At least one point must be linked to the study (other than simply saying 'she'/'Martha'). Martha must ensure the participants cannot see her/ do not know she is observing them/ are unaware she is an observer (= 1 generic) for example, she could disguise herself as a dinner lady / playground attendant / she could watch out of a classroom window (= 2nd mark, linked)	**2**

Question	Answer	Marks
9	**Otto's aim is to investigate which age groups of internet users are most likely to play internet-based games.**	
9(a)	**Suggest an operationalised directional (one-tailed) hypothesis that Otto could test.** 2 marks for a one-tailed hypothesis with both variables if correlational, 2 levels of IV and a DV if experimental with at least one operationalised variable 1 mark for a one-tailed hypothesis with 2 levels of IV and a DV 0 marks for a non-directional (two-tailed) hypothesis 0 marks for a null hypothesis Hypothesis may be experimental or correlational **Adults** are more likely to play internet-based games than **younger peopl**e = 1 (experimental not operationalised) The **older** you are the more likely you are to play internet games = 1 mark (correlational not operationalised) Older people/adults are more likely to play internet based games for **more than 2 hours** per day **than younger people / children. =** 2 marks **12 year olds** are more likely to play internet based games than **people over 40** = 2 marks The **older** you are in years the more likely you are to play an internet game. = 2 marks The **older** you are the less likely you are to play an internet game for **more than 8 hours** a day. = 2 marks	**2**
9(b)	**Describe the population that Otto will need to use for his investigation.** 1 mark for identifying a suitable population (by description or example) 2nd mark for detail (e.g. stated age range) OR second feature of the population internet users with a wide are range / all the internet users in one town / all social media/Snapchat/Twitter users; for example 10–70 years old	**2**

Question	Answer	Marks
10	**Cecile has ten parrots that can answer questions about shapes. She is interested in whether there is a difference between the ability of parrots to learn to answer questions about sounds, such as from bells or buzzers, compared to shapes.**	
10(a)	Describe how Cecile could conduct a laboratory experiment to test whether there is a difference in the ability of parrots to learn to answer questions about sounds compared to shapes. Three **major** omissions for a **laboratory experiment** are: **What** - will be recorded, i.e. **DV** (ability of parrots to answer questions) **How** - **IV** (sounds & shapes) - **controls** The minor omissions are: • **where** – location of participants when data is collected (i.e. lab) • **who** - participants (**parrots**) Indicative content for a **laboratory experiment**: • **How** – identification of the **independent variable** (sounds and shapes) • **How** operationalisation of the dependent variable (ability of parrots to answer questions) • **What** – identification of the **dependent variable** • operationalisation of the dependent variable • including examples of ways to measure the variable • **How – controls** • experimental design (any are appropriate here) • sampling technique • sample size (10) • description of how data will analysed, e.g. use of measures of central tendency and spread, bar charts • ethical issues	**10**

Question	Answer	Marks
10(a)	Other appropriate responses should also be credited. **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. Mark according to the levels of response criteria below:	

<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 not refer to ethics or sampling in your answer.
Answer will depend on problem identified.

Problems may, for example, be matters of:

Validity
• operationalisation e.g. deciding if learning has occurred
• parrot factors e.g. auditory range, choices of reinforcers, parrot imitating sound rather than learning the task

Reliability
• inter-rater consistency (re decision about whether parrot’s response is ‘correct’)
• intra-rater consistency.

This list is not exhaustive and other appropriate responses should also be credited.
<table>
<tr><th>Level</th><th>Marks</th><th>Comment</th></tr>
<tr><td>3</td><td>3–4</td><td>Appropriate problem identified.
Appropriate solution is clearly described.</td></tr>
<tr><td>2</td><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>1</td><td>Appropriate problem identified.
Little or no justification.</td></tr>
<tr><td>0</td><td>0</td><td>No response worthy of credit</td></tr>
</table>
</td><td>4</td></tr>
</table>

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