Cambridge International AS & A Level

Cambridge Assessment International Education
Cambridge International Advanced Subsidiary and Advanced Level

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **March 2018**

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.

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This document consists of **14** 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.

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	**One of the aims of the study by Schachter and Singer (two factors in emotion) was to find out whether the mood of a stooge affected the way participants interpreted their arousal level.**	
1(a)	**Write an operationalised directional (one-tailed) hypothesis using this aim.** 1 mark for a correct hypothesis that is not operationalised OR has only **one** operationalised variable 2 marks for a correct hypothesis with both IV and DV operationalised. For example: • Emotion will depend on the behaviour of the stooge. (1) • Emotion will match the mood of the stooge. (1) • There will be a difference between emotions with the happy and angry stooge. (0) • The rating of emotion by the participant will match the emotion of the stooge. (1) • Emotions will be rated as more positive with the happy stooge than with the angry stooge. (2) • There will be a difference between emotions and the stooge. (0)	**2**
1(b)	**Write a null hypothesis using this aim.** 1 mark for a correct null hypothesis. For example: • There will be no difference in emotion between participants with an angry or a happy stooge. (1) • Any difference in emotion between participants with an angry or a happy stooge is due to chance. (1) • Any difference between emotion and angry or a happy stooge is due to chance. (0)	**1**
2(a)	**State the difference between a 'population' and 'sample'.** Both marks are for the difference. 1 mark for an implicit difference (e.g. two accurate definitions). 2 marks for an explicit difference (i.e. a contrast). • Population = all the people who could be used in the study; • Sample = the participants / people who are used in the study / a selection of the population (from whom the results will be generalised and should represent the population) A population is all the people of one type, a sample is the people in a study = 1 mark. A population is all the people of one type, a sample is just those who become participants = 2 marks.	**2**

Question	Answer	Marks
2(b)	**State <u>one</u> feature of the population in the study by Milgram (obedience).** 1 mark for the population, i.e. the general category • American; • male; • New Haven residents; • newspaper readers; • aged 20–50 years; • a range of occupations;	**1**

Question	Answer	Marks
3(a)	**Name <u>one</u> sampling technique.** 1 mark for volunteer / self selected / opportunity / random sampling **Note:** If more than one sampling technique is named, accept only the first answer. • Newspaper sample = 0 marks	**1**
3(b)	**Explain <u>one</u> advantage of using this sampling technique.** Award 1 mark for partial explanation (e.g. identification of advantage). Award 2 marks for full explanation. Volunteer sampling: • obtain a range of different occupations/ages/both genders (accept any); • so findings would be generalisable; • can be specific about participant characteristics; • e.g. selecting only females for a study about premenstrual syndrome; • e.g. avoiding participants who would be likely to guess the aim of the study; Opportunity sampling: • easy/quick to obtain participants because they are readily available; • e.g. if they are students at the researcher's institution; Random sampling: • likely to obtain a range of different occupations/ages etc.; • so findings would be generalisable (as the variety in the population is represented);	**2**

Question	Answer	Marks
4	**Saavedra and Silverman studied a boy with a phobia of buttons and measured his distress using a 'feelings thermometer'.**	
4(a)(i)	**Name the type of data produced by the feelings thermometer.** 1 mark for quantitative Qualitative (= 0 marks)	**1**
4(a)(ii)	**How did the feelings thermometer measure distress?** scale (of 0–9); rating;	**1**
4(b)	**Suggest <u>one</u> disadvantage of using the feelings thermometer to measure distress.** Both marks for one disadvantage. Points may be linked but do not have to be (this is in the question). Expression of distress is limited to a number on a scale = 1 mark so it might not have captured how the boy in the study felt = 1 mark this would lower validity = 1 mark (only as elaboration) it might be subjective (0 marks) it might be subjective because another child might interpret the scale differently (2 marks)	**2**

Question	Answer	Marks
5	**In the study by Baron-Cohen et al. (eyes test), there was more than one control condition.**	
5(a)	**Identify <u>one</u> of the control conditions.** Award 1 mark for a clear identification • students (at Cambridge): males and females / (assumed) high IQ • normal adults: library users/adult community and education classes, from the general population / of Exeter and Cambridge • IQ matched group: randomly selected adults / known IQ matched to autistic group.	**1**
5(b)	**Explain <u>one</u> reason for having a control condition, using this study as an example.** 1 mark for explanation 2nd mark for linked detail. • controls for absence of IV; (generic) • i.e. performance (on eyes test) without autism; (link) • to eliminate the confounding influence of other variables; (generic) • e.g. the effect of IQ on theory of mind; (link) • allows comparison for what would happen without intervention; (generic)	**2**

Question	Answer	Marks
6	**Describe the differences between a field experiment and a natural experiment, using any examples.** 1 mark for each definition, for each type of experiment (maximum of 2 marks in total). 1 mark for each difference. 1 mark for each example that is linked to one type of experiment (maximum of 2 marks in total). Examples can include examples from studies using such experiments, or of ways they *could* be used. Definition: a field experiment has a manipulated IV and a measured DV and happens in the normal environment for the activity being investigated; (1 for basic definition) Definition: a natural experiment has an IV which occurs spontaneously and a measured DV and often happens in the normal environment for the activity being investigated; (1 for basic definition) Difference: so in field experiments the experimenter deliberately alters the DV Example: like Piliavin et al. did by changing the stooge (victim) Difference: whereas in natural experiments the IV just happens (so the researcher has to use existing differences in variables rather than deliberately changing them Example: e.g. instead of Bandura et al. manipulating an aggressive stooge, they could have compared children in violent and in non-violent settings. Difference: so natural experiments might be more ethical because there is no deliberate interference with the participants' existence	**6**

Question	Answer	Marks
7	**Dipa is studying memory using a brain scanner. She is testing the hypothesis that 'There will be a positive correlation between level of brain activity and how much a person can recall'. Each participant is asked to describe an event that happened more than one year ago.**	
7(a)	**Name <u>one</u> brain scan that Dipa could use.** 1 mark for identifying a type of brain scan • PET / Positron Emission Tomography • (f)MRI / (functional) Magnetic Resonance Imaging	**1**
7(b)	**Suggest why data from brain scans is likely to be reliable.** 1 mark for suggestion about reliability. 2nd mark for detail. • the data is numerical/quantitative • so it does not have to be interpreted • the data is recorded by a machine • so it will be objective / not be subjective	**2**
7(c)	**Suggest how Dipa could convert each participant's description into a memory score.** 1 mark for suggestion (i.e. operationalisation of 'memory score') • count the number of words in their description • time how long the description takes them	**1**
7(d)	**Explain whether Dipa will be able to conclude that greater recall causes more brain activity.** 1 mark for '(No) because it is a correlation' (it is not possible to conclude that greater recall causes more brain activity). 2nd mark for explanation. • (no) the study is a correlation • so it is not possible to draw a causal conclusion (2nd mark) • it could be that an increase in brain activity causes the better recall (2nd mark) • the increase in brain activity and the better recall could be caused by a third factor (2nd mark)	**2**

Question	Answer	Marks
7(e)	**Dipa considered asking her participants to recall a specific event, such as their last birthday, but decided that this could be unethical, so gave them a choice about which event to recall.** **Explain <u>one</u> reason why this was a better procedure in terms of ethics.** 1 mark for identifying a relevant guideline (privacy, protection from harm) 1 mark for generic or linked explanation or 1 mark for linked explanation/detail. privacy (1 identification) because the participants might not have wanted to talk about that particular event to other people (1 link) so should not be put in a position where they feel they have to (1 generic) protection from harm (1 identification) because the event Dipa chose might have been upsetting for them (1 link) so they should not feel obliged to describe it (1 generic)	**3**

Question	Answer	Marks
8	**Hugo is using a questionnaire to find out about helping behaviour in the daytime and at night.**	
8(a)	**What is meant by 'open questions' and 'closed questions'?** 1 mark for definition of open questions. 1 mark for definition of closed questions. • open questions ask for descriptions/detail; • closed questions ask for answers from specific options;	**2**
8(b)	**Suggest <u>one</u> open question that Hugo could ask.** 1 mark for open question. • e.g. 'Describe an example of when you have helped someone and describe the time of day.' • e.g. 'Tell me how confident you would feel helping someone in the daylight or in the dark.'	**1**
8(c)	**Suggest <u>one</u> advantage of using open questions in Hugo's study.** 1 mark for advantage. 2nd mark for linked detail. • detailed responses (are an advantage) • because this would give a better description of how/why people help (in the day/night) • responses are in the participant's own words (which is an advantage) • because this would enable participants to be precise about their helping rather than being limited to the choices in a closed question (which might not represent their actual view/behaviour, lowering validity)	**2**
8(d)	**Explain <u>one</u> problem that Hugo might have with the validity of the responses to his questionnaire.** 1 mark for identifying problem with validity. 2nd mark for detail. 3rd mark for link. • social desirability • people want to appear more helpful than they really are • so they will exaggerate/lie about how much they help • there may be fewer examples of helping at night • simply because people go out less at night (so have less opportunity to help) • so it will appear that they are less helpful at night • If people suspect that it is a study about helping they might be more/less helpful than normal • as they are responding to demand characteristics	**3**

Question	Answer	Marks
9	**Keelan has collected data about children's aggression. He has several different types of data.**	
9(a)	**In one experiment, Keelan has recorded the total number of aggressive acts per hour in children of each age between 3 and 18 years old.** **Name the type of graph that would be <u>most</u> suitable to display this frequency data.** 1 mark for identification of histogram.	**1**
9(b)	**Label the axes for the graph that Keelan should use.** 1 mark for each of the following, up to max. 3 1 mark for 'frequency of aggression/acts' <u>on y-axis</u>; per hour; 1 mark for 'age' <u>on x-axis</u>; in years; 1 mark for 3–18 marked on x-axis;	**3**
9(c)	**Name <u>one</u> measure of spread that Keelan could calculate from his data.** 1 mark for range or standard deviation.	**1**
9(d)(i)	**Keelan also counted the total number of aggressive acts in several categories: bite, kick, slap and pinch.** **Name the measure of central tendency that Keelan should use for this data.** 1 mark for naming mode.	**1**
9(d)(ii)	**State how Keelan would calculate this measure of central tendency.** 1 mark for stating 'most frequent' / 'most common'.	**1**

Question	Answer	Marks
10	**Peter is studying psychology at university and has decided to conduct an experiment about positive emotions and pulse rate because he believes that people's pulse rate changes with mood.**	
10(a)	**Describe how Peter could conduct a laboratory experiment to test whether pulse rate differs when people experience positive and negative emotions.** Indicative content for a **laboratory experiment**: • **How** – identification of the **independent variable** • operationalisation of the independent variable • **What** – identification of the **dependent variable** • operationalisation of the dependent variable • including examples of ways to measure the variable such as questions/tests used • **How** – **controls** • experimental design (any are appropriate here) • sampling technique • sample size • description of how data will analysed, e.g. use of measures of central tendency and spread, bar charts • ethical issues Other appropriate responses should also be credited. Three **major** omissions for a **laboratory experiment** are: **What** – will be recorded, i.e. **DV** **How**: – **IV** – **controls** The minor omissions are: • **where** – location of participants when data is collected (laboratory setting) • **who** – participants	**10**
	Mark according to the levels of response criteria below: **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. **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. **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.	

Question	Answer	Marks
10(b)	**Identify <u>one</u> 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.** Answer will depend on problem identified. Problems may, for example, be matters of: Validity • difficulty with creating emotional manipulation ethically • difficulty with being sure that manipulation has affected emotions (operationalisation) • controls • demand characteristics Reliability • the manipulation might affect some people more than others emotionally • consistency of pulse measure. • standardisation • sample size. This list is not exhaustive and other appropriate responses should also be credited. **Marks** — **comment** 3–4 — Appropriate problem identified. Appropriate solution is clearly described. 2 — Appropriate problem identified. *plus* EITHER Explanation of why it is a problem OR Solution is possible but ineffectual. 1 — Appropriate problem identified. Little or no justification. 0 — No response worthy of credit	**4**