Cambridge Assessment International Education

# Cambridge International AS & A Level

**PSYCHOLOGY** **9990/22**

Paper 2 Research Methods **May/June 2020**

MARK SCHEME

Maximum Mark: 60

**Published**

Students did not sit exam papers in the June 2020 series due to the Covid-19 global pandemic.

This mark scheme is published to support teachers and students and should be read together with the question paper. It shows the requirements of the exam. The answer column of the mark scheme shows the proposed basis on which Examiners would award marks for this exam. Where appropriate, this column also provides the most likely acceptable alternative responses expected from students. Examiners usually review the mark scheme after they have seen student responses and update the mark scheme if appropriate. In the June series, Examiners were unable to consider the acceptability of alternative responses, as there were no student responses to consider.

Mark schemes should usually be read together with the Principal Examiner Report for Teachers. However, because students did not sit exam papers, there is no Principal Examiner Report for Teachers for the June 2020 series.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the June 2020 series for most Cambridge IGCSE™ and Cambridge International A & AS Level components, and some Cambridge O Level components.



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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(a) | **State what is meant by the ethical guideline of 'replacement' in relation to animals.**<br><br>1 mark for simple statement<br>1 mark for detail<br><br>choosing not to use animals / to use a species that will suffer less = 1 mark<br>e.g. using humans / a simulation / a culture = 1 detail | **1** |
| 1(b) | **Suggest <u>one</u> practical problem with following the ethical guideline of replacement in relation to animals.**<br><br>1 mark for any practical point<br><br>It may be harder to interpret the effects of your experiment on a different species;<br>The new choice of animal may suffer less but be a worse model for human behaviour/cognition; | **1** |

| Question | Answer | Marks |
|---|---|---|
| 2 | **In the study by Canli et al. (brain scans and emotions), participants watched scenes presented to them on a screen. They responded to these scenes by pressing buttons. Their response was one dependent variable.** | |
| 2(a) | **Describe how this dependent variable was operationalised in this study.**<br><br>1 mark for identifying DV<br>1 mark for operationalisation<br><br>DV = rating of pictures / emotional intensity / valence (identification)<br>Rated 0–3 (Operationalisation) | **2** |
| 2(b) | **Explain <u>one</u> reason why the results of this study may not generalise to everyday life.**<br><br>1 mark for identifying reason<br>1 mark for link<br><br>all female = 1 (identification)<br>and males might experience emotions differently = 1 (link)<br>all right-handed = 1 (identification)<br>and left-handers' brains may have different activation patterns = 1 (link)<br>the study was conducted in a lab so low ecological validity / task lacks mundane realism = 1 (identification)<br>having brain scanned may make participants behave differently from normal = 1 (link) | **2** |

| Question | Answer | Marks |
|---|---|---|
| 3 | **Andrade conducted an experiment on doodling. Alternatively, she could have conducted a case study.** | |
| 3(a) | **Identify <u>two</u> ways that data could be collected in this case study.**<br><br>Name or description of a method of data collection ×**2**<br><br>Interview; observation;<br>Questionnaire; tests/tasks; | **2** |
| 3(b) | **For <u>one</u> of your answers in 3(a):**<br><br>**Explain <u>one</u> advantage of this way of collecting data in this case study.**<br><br>1 mark for advantage<br>1 mark link<br><br>Interview:<br>can ask specific questions = 1 generic<br>So can explore that individual's doodling in detail = 1 linked<br><br>Questionnaire:<br>can use closed questions = 1 generic<br>So can explore a range of ideas about the person's doodling = 1 linked<br><br>can ask open questions = 1 generic<br>So can collect qualitative data about that individuals doodling = 1 linked<br><br>Observation:<br>Can watch the individual in action (doodling) = 1 generic<br>So can record different types of doodles / when they doodle / how long they doodle for = 1 linked | **2** |

| Question | Answer | Marks |
|---|---|---|
| 4(a) | **Name <u>two</u> types of observations.**<br><br>Any two of:<br><br>Covert; Overt;<br>Participant; Non-participant;<br>Controlled; Naturalistic; | **2** |

| Question | Answer | Marks |
|---|---|---|
| 4(b) | **For <u>one</u> of your answers in 4(a):**<br>**Explain why this type of observation is a valid way of observing participants.**<br><br>1 mark for **identification** of why it is valid<br>1 mark detail of **explanation** of why it is valid<br><br>*Covert*: Because the participants are unaware that they are being observed;<br>• So are less likely to show socially desirable behaviour (than in overt observations);<br>• So are less likely to be aware of the aim / will be affected less by demand characteristics;<br><br>*Overt*: Valid observations may be impossible with a hidden observer;<br>• e.g. in a natural group outdoors, overt observations must be used (otherwise the situation would become artificial);<br><br>*Participant*: The observer is well placed to observe behaviour clearly / to experience the intensity of a social event;<br>• So observations are unlikely to be confounded by poor access;<br>• So observations are more likely to represent the situation in a more complete / complex way;<br><br>*Non-participant*: The observer is unlikely to become biased by individuals or events;<br>• So observations are likely to be more objective than in participant observation;<br>• So observations are more likely to represent the situation in a more complete / complex way;<br><br>*Controlled*: Situation is guaranteed to elicit the target behaviour is a specific way;<br>• So observations are likely to be more objective than in participant observation;<br>• So observations are more likely to represent the situation in a more complete / complex way;<br><br>*Naturalistic:* Situation is (like) everyday life so will elicit genuine target behaviour;<br>• So observations are more likely to represent behaviours of people who are not in a study (than a controlled situation); | **2** |

| Question | Answer | Marks |
|---|---|---|
| 5 | **At the start of the study by Bandura et al. (aggression), the children were scored numerically on their behaviour in the nursery school. Explain <u>one</u> advantage of scoring behavioural data in this way.**<br><br>1 mark for advantage<br>1 mark detail (linked or not)<br><br>objective = 1 (advantage)<br>the researchers could be confident about the aggression categories = 1 link<br><br>could be analysed statistically = 1 (advantage)<br>the data could be used to calculate mean numbers of aggressive acts in each category = 1 link | **2** |

| Question | Answer | Marks |
|---|---|---|
| 6 | **Describe 'participant variables' and 'situational variables' in research, using any examples.**<br><br>2 marks max in total for 2 definitions.<br>5 further marks for detail / examples.<br><br>Participant variable – confounding variable due to individual differences;<br>• (can be temporary) e.g. hunger in a study on motivation to eat;<br>• (or permanent) e.g. culture in a study on attitudes to different animals;<br>• e.g. personality in a study on risk taking;<br>• e.g. participant variable in Andrade could have been how much the individual normally doodled;<br>• these matter because different participants in different levels of the IV / used independent measures design;<br>• also matter in repeated measures designs, overcome by counterbalancing;<br>• e.g. participant variable in Milgram was experience with electricity (made them disobey earlier);<br><br>Situational variables – confounding variable due to the influence to the environment;<br>• e.g. whether you had been helped recently in a study on helping;<br>• e.g. situational variable in Piliavin et al. was the behaviour / comments of passengers;<br>• Situational variables are reduced through controls on the environment where possible; | **6** |

| Question | Answer | Marks |
|---|---|---|
| 7 | **Mark is planning a natural experiment to investigate the short-term effect of noise on classroom performance of school children. He has found a school next to a noisy railway. He is going to compare the children before and during a temporary closure of the railway which will stop all trains for two weeks.** | |
| 7(a) | **Explain what makes this study a natural experiment.**<br><br>1 mark for explanation<br>1 mark for link<br><br>the IV could not be manipulated = 1 (explanation)<br>the noise was due to the trains or not = 1 (link)<br><br>mark could not control when the repairs happened / noise stopped and started = 1 link<br>so the two conditions of the experiment could not be controlled, they had to be chosen = 1 (explanation) | **2** |
| 7(b) | **Suggest <u>one</u> way that Mark could measure the effect of noise on the children.**<br><br>2 marks for method of measurement (e.g. 1 for 'way', 1 for 'data' or detail)<br>1 mark for link (to effects of noise / concentration)<br><br>use a questionnaire = 1 'way'<br>asking them if they had been concentrating well = 1 link<br>e.g. using a question like 'How well did you work today? 1 = well, 5 = badly = 1 detail<br><br>by giving them a test in class = 1 'way'<br>e.g. testing them on lesson content = 1 detail<br>to measure whether they had paid attention = 1 link | **3** |
| 7(c) | **Identify <u>two</u> extraneous variables that Mark could control.**<br><br>1 mark of a potential confounding variable x2<br><br>brightness; interest of lesson; time of day; how hungry the children are; the number of children in the class; | **2** |

| Question | Answer | Marks |
|---|---|---|
| 7(d) | **Write an operationalised directional (one-tailed) hypothesis for Mark's experiment.**<br><br>1 mark for a directional hypothesis (not or partly operationalised)<br>1 mark for operationalisation of both variables<br><br>Children will perform better without the trains running = 1 (directional, no operationalisation)<br>Children's performance will be better when the trains are not running than when they are = 1 (one variable operationalised)<br>Children will score more marks on a test during a week with no trains so less noise than in a week with trains and noise = 2<br><br>Children's performance will be affected by the noise of the trains = 0 (non-directional) | **2** |

| Question | Answer | Marks |
|---|---|---|
| 8 | **Rachel is correlating two variables: helping behaviour and communication skills.** | |
| 8(a)(i) | **Suggest <u>one</u> way that Rachel could measure helping behaviour for this study.**<br><br>1 mark for identifying a way to measure helping that could be correlated<br>1 mark for operationalisation using that measure that could be correlated<br><br>E.g. Asking to join the front of a lunch queue and see how people react = 1 (identify)<br>Score if they let you in or not / score how long it takes them to decide to let you in = 1 (operationalisation) | **2** |
| 8(a)(ii) | **For the way you have suggested in (a)(i):**<br><br>**Suggest <u>one</u> advantage and <u>one</u> disadvantage of this way of measuring helping behaviour.**<br><br>1 mark for advantage<br>1 mark detail (linked or not)<br><br>E.g. It can be easily observed from a distance = 1 (advantage)<br>E.g. So this won't disturb the helpfulness = 1 (link)<br><br>1 mark for disadvantage<br>1 mark detail (linked or not)<br><br>E.g. Difficult to judge reasons for behaviour = 1 (advantage)<br>E.g. Letting someone into a queue might be because of friendships not helpfulness = 1 (link) | **4** |
| 8(b) | **Outline the relationship that Rachel will find if her results indicate a positive correlation.**<br><br>1 mark for outline of positive correlational relationship<br><br>As helpfulness increases, communication skills will increase too = 1<br><br>Do **not** credit statements with a causal element | **1** |

| Question | Answer | Marks |
|---|---|---|
| 9 | **Perry has collected data about intelligence. He has measured the IQ (Intelligence Quotient) of a large sample of participants.** | |
| 9(a) | **Describe <u>one</u> way that Perry could obtain a large sample of participants.**<br><br>1 mark for identification / brief description of any sampling method<br>1 mark detail (linked or not)<br><br>Volunteer sample = 1 (identification or detail to benefit of candidate)<br>People respond to the researcher's advert = 1 (detail)<br>It is a self-selected sample = 1 (identification or detail to benefit of candidate)<br><br>Opportunity sample = 1 (identification)<br>The researcher uses people who are readily available = 1 (identification or detail to benefit of candidate)<br><br>Random sample = 1 (identification)<br>Participants are selected from the population each with an equal chance of becoming a participant = 1 (detail)<br>e.g. participants chosen by giving members of a population numbers and pulling these from a hat = 1 (detail) | **2** |
| 9(b)(i) | **When Perry plots the IQ results, they show a normal distribution.**<br>**Draw a graph of the likely results of the IQ scores using the axes below.**<br><br>IQ<br>You must label the axes of your graph.<br>1 mark for (roughly) symmetrical, bell shaped line<br>1 mark for x-axis label 'IQ' (scores)<br>1 mark for y-axis label 'frequency'<br>1 mark for x-axis units 100 in the middle | **3** |
| 9(b)(ii) | **Name the <u>most</u> appropriate measure of central tendency for Perry to use with the IQ data. Include a reason for your answer.**<br><br>1 mark for name: mean<br>1 mark for reason: because IQ is interval data<br>because it is more informative than the median/mode | **2** |
| 9(b)(iii) | **Label your graph to show the position of the measure of central tendency that you have named in (b)(ii).**<br><br>1 mark for label and centre point of bell (e.g. vertical line, cross or arrow) | **1** |