



Cambridge International AS & A Level

PSYCHOLOGY

9990/21

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.

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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.

This document consists of **15** printed pages.

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:

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GENERIC MARKING PRINCIPLE 6:

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Question	Answer	Marks
1	In the study by Baron-Cohen et al., one variable was the score on the Eyes Test.	
1(a)	State whether this was an independent variable or a dependent variable. Include a reason for your answer. 1 mark for DV and reason. Dependent variable because it was being measured = 1 Dependent variable because it differed according to whether the participant was autistic or not = 1 Dependent variable because it varied with the level of the IV/condition = 1 Dependent variable because eyes test score differed between the controls and autistics = 1 Dependent variable = 0 Independent variable because it was being measured = 0 Independent variable because it varied with the level of the IV/condition = 0	1
1(b)	One problem with the original version of the Eyes Test was that the results produced a ‘ceiling effect’. This is where most participants obtain high scores on the test. Explain why a ceiling effect is a problem. 1 mark for reason. It limits the variance / spread = 1 It becomes hard to distinguish between different scores = 1 It wouldn’t have been possible to distinguish the controls and autistics even if there was a difference = 1	1

Question	Answer	Marks
2	A psychologist is investigating whether a person's happiness depends on whether people around them are happy.	
2(a)	Suggest how you could operationalise 'happiness' when using observations. 1 mark for any plausible measure. Count number of smiles = 1 Time length of time smiling = 1 Score laughter from 1–5 = 1 Observe the participant in social contexts to watch their family / friends / work colleagues = 0	1
2(b)	Suggest how you could measure 'happiness' when using a self-report. 1 mark for any plausible measure. Ask the participant / family / friends / work colleagues to answer questions about their happiness = 1 Ask them to fill in a questionnaire about behaviours suggesting happiness = 1 Interview them about their emotions = 1	1
2(c)	Write a directional (one-tailed) hypothesis for this investigation. You do not have to operationalise your hypothesis. 1 mark for correct directional hypothesis (does not have to be operationalised). Accept experimental or correlational hypotheses. People feel happier when people around them are happy rather than unhappy = 1 [experimental] People feel happier when people around them are happy than if other people are not = 1 [experimental] People are happier when people around them are happier = 1 [correlational] 0 marks for a null hypothesis.	1

Question	Answer	Marks
3	One part of the investigation by Dement and Kleitman (sleep and dreams) involved a correlational study measuring a range of times spent in REM sleep and the number of words in the participant's dream narrative.	
3(a)	Explain why this part of the investigation was a correlational study rather than an experiment. 1 mark for explanation (generic or linked) Because they were looking for the relationship between two variables = 1 Because they were looking for the relationship between time spent in REM and length of the narrative = 1	1
3(b)	Explain <u>one</u> disadvantage of using a correlation in this study. 1 mark for disadvantage 1 mark for link correlations cannot find causal relationships = 1 (disadvantage) so they couldn't tell if REM sleep <i>caused</i> dreams / e.g. between REM and dreaming = 1 (link) the correlation was difficult to see = 1 (disadvantage) because there were only a few long REM phases = 1 (link) a correlation that was found may have been flawed = 1 (disadvantage) because the number of words in the dream narrative could depend on expressiveness = 1 (link)	2

Question	Answer	Marks
4	In a study about helping, participants were told the study was about visual tracking. They played a computer game in which they could help other players. They were given fake eye-movement tracking spectacles to wear.	
4(a)	Explain the ethical issue of deception, using this study as an example. 1 mark for explanation of deception 1 mark for link deception involves misleading / lying to participants = 1 (explanation) the participants were told the study was about visual tracking but really it was about helping = 1 (link) the participants were given spectacles to wear but they were not real = 1 (link)	2
4(b)	Some participants were upset at debriefing because they had not helped other players. Explain the ethical guideline of protection, using this study as an example. 1 mark for explanation of protection 1 mark for link Protection from harm means not (physically or) mentally distressing participants = 1 (explanation) Protection from harm means if a participant's state has changed they should be returned to their original state = 1 (explanation) Participants were upset so they should be reassured / made happy again / told the helping wasn't real so it was okay = 1 (link)	2

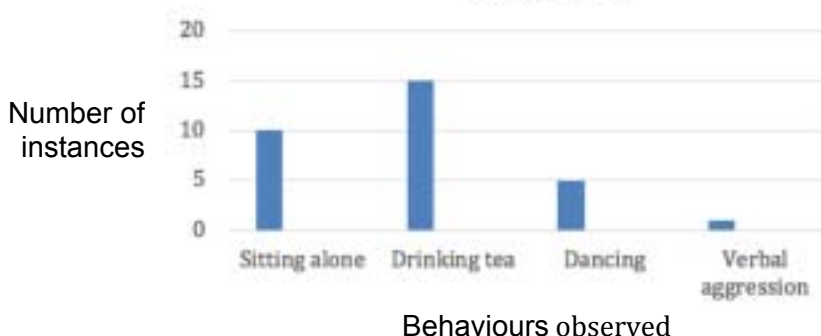
Question	Answer	Marks
5	Before the study by Pepperberg (parrot learning), most research on animal learning had been conducted on primates, such as chimpanzees.	
5(a)	Explain <u>one</u> ethical reason why a parrot is a better choice of animal than a chimpanzee for a study in a laboratory. 1 mark for related animal guideline or logical ethical reason 1 mark for relating idea to parrot and/or chimp ‘species and strain’ says you should use the species that will suffer the least = 1 (guideline) and parrots cope best in a test setting because they are used to being kept in cages = 1 (link) chimps are much more intelligent than parrots = 1 (logical reason) so chimps would be more distressed by strange procedures like being expected to learn about coloured shapes = 1 (link)	2
5(b)	Explain <u>one</u> practical or methodological reason why the parrot was a better choice of animal than a chimpanzee for this study. 1 mark for practical reason 1 mark for relating idea to parrot and/or chimp smaller animals are easier to keep = 1 (reason) and parrots are smaller than chimps = 1 (link) chimpanzees can become aggressive = 1 (reason) so parrots are safer = 1 link	2

Question	Answer	Marks
6	Describe what is meant by ‘experimental conditions’ and ‘control conditions’ in research, using any examples. 1 mark for basic definition of ‘experimental condition’. 1 mark for basic definition of ‘control condition’. Up to 5 further marks for detail / examples. The experimental condition is the condition / level with the IV present = 1 (definition) The control condition is the condition / level with the IV absent = 1 (definition) Two experimental conditions can be tested against each other / without a control; e.g. if two drugs are being tested for their efficacy = 1 (relevant example) The control condition is used as a baseline to compare the experimental condition(s) against; e.g. if the efficacy of one drug is compared to that of a placebo = 1 (relevant example) e.g. Bandura et al. used two experimental conditions of aggressive and non-aggressive model = 1 (core study example) e.g. Bandura et al. used a control condition of no model = 1 (core study example) e.g. Yamamoto et al. compared experimental conditions ‘can see’ with control condition ‘cannot see’ e.g. Schachter and Singer used two experimental conditions of angry and euphoric stooge = 1 (core study example) e.g. Schachter and Singer compared a control condition of ‘ignorant’ to experimental conditions (Mis/Inf) = 1 (core study example)	6

Question	Answer	Marks
7	Maria is conducting a self-report study into obedience using school children as participants. Her questions are: Question 1 How many times this week have you disobeyed a teacher? Never / once / 2–3 times / 4 times or more Question 2 Describe why you last disobeyed a teacher.	
7(a)(i)	State which question collects quantitative data. Include a reason for your answer. 1 mark for identifying question 1 and explaining that it collects numerical data ‘Question 1’ + ‘numerical’ = 1 ‘1’ + ‘comes from the scale Never / once / 2-3 times /4 or more times’ = 1	1
7(a)(ii)	State why this type of data is useful. 1 mark for explanation of usefulness Because it can be analysed / compared = 1 Because it is (usually) objective = 1	1
7(b)	Suggest <u>one other</u> question which could be used in Maria’s study that would collect quantitative data. 1 mark for closed question related to study Would you disobey a teacher who asked you to clean the board? Y/N = 1 How likely would you be to obey the teacher if he told you to sweep the floor? 1 (very) – 5 (not at all) = 1	1
7(c)	Identify the <u>most</u> appropriate measure of central tendency for Maria to use with the responses to her first question. Include a reason for your answer. Mode = 1 it finds the most common response = 1	2

Question	Answer	Marks
8	Richard is conducting an experiment to investigate whether daydreams are affected by the type of background noise. He has two groups who are both given a boring task in a room. For one group there are children laughing outside the open window. For the other group there are adults talking loudly in the corridor. Different participants are used in each group.	
8(a)(i)	Identify Richard's experimental design. Include a reason for your answer. 1 mark for independent measures design (accept independent groups / between subjects, do NOT accept just 'independent') Independent measures design = 1 because the child group and adult group are separate = 1 because different participants are used in each group = 1	2
8(a)(ii)	Suggest <u>one</u> advantage of this experimental design in this study. 1 mark for advantage 1 mark for link overcomes order effects = 1 (advantage) the boring task would be even more boring the second time = 1 (link) daydreaming might increase/decrease the second time = 1 (link) reduces effects of demand characteristics = 1 (advantage) as participants only experience the boring task once so are less likely to think about what the aim is = 1 (link)	2
8(b)	Suggest <u>one</u> reason for using a boring task in this study. 1 mark for reason to make people daydream = 1 to make all participants equally likely to daydream = 1	1
8(c)	Suggest <u>one</u> practical or methodological problem with studying daydreams. 1 mark for practical/methodological problem 1 mark for explanation (may or may not be linked) they may not happen = 1 (identification of problem – 'they' is referring to daydreams) so you would not collect any data = 1 (explanation) they are vague/easily forgotten = 1 (identification of problem – happens to be linked 'they' [the daydreams]) so may not be reported accurately by the participants = 1 (explanation) the content of daydreams has to be interpreted = 1 (identification of problem) so the researcher will need to interpret them / may be subjective = 1 (explanation)	2

Question	Answer	Marks
8(d)	Suggest <u>one</u> ethical problem with studying daydreams. 1 mark for ethical problem 1 mark for explanation (may or may not be linked) they are personal = 1 (identification of problem – happens to be linked ‘they’ [the daydreams]) so asking about them could break privacy = 1 (explanation) when you have been daydreaming you are a bit fuzzy = 1 (identification of problem) so your decision to consent/withdraw may be invalid = 1 (explanation)	2

Question	Answer	Marks														
9	Jasper conducted an observational study of children’s behaviours in their school common room. Jasper’s data is shown in Table 1. Table 1 <table><tr><th rowspan="2"></th><th colspan="4">Behaviours observed</th></tr><tr><th>Sitting alone</th><th>Drinking tea</th><th>Dancing</th><th>Verbal aggression</th></tr><tr><th>Number of instances</th><td>10</td><td>15</td><td>5</td><td>1</td></tr></table>		Behaviours observed				Sitting alone	Drinking tea	Dancing	Verbal aggression	Number of instances	10	15	5	1	
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9(a)	Draw a bar chart of Jasper’s results. Children’s behaviours observed in the school common room  Behaviours observed 1 mark for title 1 mark for x-axis label 1 mark for x-axis categories 1 mark for y-axis label 1 mark for y-axis units 1 mark for it being a bar chart [essential for 4 marks] 1 mark for correct plotting [essential for 4 marks]	4														
9(b)	Jasper observed the children with the permission of the school principal and the children’s parents.															
9(b)(i)	Explain why it was necessary to obtain permission in this study. 1 mark for reason/guideline 1 mark for link (only needs to relate to parents OR school principal) consent = 1 (guideline) as (some of the students) will be under 16, parents’ permission is essential = 1 (link) because the children may not understand that they were in a study = 1 (link) some children may be too young to understand = 1 (reason) so a responsible adult such as the school principal needs to agree = 1 (link)	2														

Question	Answer	Marks
9(b)(ii)	Explain whether there could have been an issue with privacy in this study. 1 mark for reason 1 mark for link the students did not know they were being observed = 1 (link) so may have behaved in ways they would not have wanted to other people to have seen = 1 (reason) children would expect to be unobserved in their common room = 1 (link) so if they found out they were being observed they could be upset = 1 (reason)	2
9(c)	Jasper was a non-participant observer. Explain what is meant by a non-participant observer, using this study as an example. 1 mark for explanation of 'non-participant' 1 mark for link a non-participant observer doesn't join in with what they are observing = 1 (explanation) is not part of the social group who are observed = 1 (explanation) Jasper could be disguised as a technician = 1 (link)	2

Question	Answer	Marks
10	Jason is a university lecturer and is interested in doodling behaviour. One day, Jason sees one of his students, Karen, doodling. Jason is especially interested because Karen has a visual impairment that means she cannot see. Jason decides to conduct a case study on her.	

Question	Answer	Marks				
10(a)	Describe how Jason could conduct a case study on Karen to find out about her doodling behaviour. Three major omissions for a case study are: How: technique used to collect data asked (e.g. interview, questionnaire, observations) What: content e.g. questions (open etc.), qualitative data, multiple sessions (questions about doodling, observe doodling in different situation) How: use of data e.g. interpretation, triangulation etc. (how open questions will be interpreted, how doodles will be analysed) The minor omissions are: where: location of participants when completing the questionnaire / how it is distributed who: Karen Also: ethical issues Other appropriate responses should also be credited. 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>	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.	10
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10(b)	Identify <u>one</u> 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 • difficulty with lying / social desirability Reliability • researcher bias 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. <i>plus</i> 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>	marks	comment	3–4	Appropriate problem identified. Appropriate solution is clearly described.	2	Appropriate problem identified. <i>plus</i> EITHER Explanation of why it is a problem OR Ineffectual but possible solution described.	1	Appropriate problem identified. Little or no justification.	0	No response worthy of credit	
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Question	Answer	Marks
1(a)	State what is meant by the ethical guideline of ‘replacement’ in relation to animals. 1 mark for simple statement 1 mark for detail choosing not to use animals / to use a species that will suffer less = 1 mark 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. 1 mark for any practical point It may be harder to interpret the effects of your experiment on a different species; 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. 1 mark for identifying DV 1 mark for operationalisation DV = rating of pictures / emotional intensity / valence (identification) Rated 0–3 (Operationalisation)	2
2(b)	Explain <u>one</u> reason why the results of this study may not generalise to everyday life. 1 mark for identifying reason 1 mark for link all female = 1 (identification) and males might experience emotions differently = 1 (link) all right-handed = 1 (identification) and left-handers’ brains may have different activation patterns = 1 (link) the study was conducted in a lab so low ecological validity / task lacks mundane realism = 1 (identification) 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. Name or description of a method of data collection ×2 Interview; observation; Questionnaire; tests/tasks;	2
3(b)	For <u>one</u> of your answers in 3(a): Explain <u>one</u> advantage of this way of collecting data in this case study. 1 mark for advantage 1 mark link Interview: can ask specific questions = 1 generic So can explore that individual's doodling in detail = 1 linked Questionnaire: can use closed questions = 1 generic So can explore a range of ideas about the person's doodling = 1 linked can ask open questions = 1 generic So can collect qualitative data about that individuals doodling = 1 linked Observation: Can watch the individual in action (doodling) = 1 generic 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. Any two of: Covert; Overt; Participant; Non-participant; Controlled; Naturalistic;	2

Question	Answer	Marks
4(b)	For <u>one</u> of your answers in 4(a): Explain why this type of observation is a valid way of observing participants. 1 mark for identification of why it is valid 1 mark detail of explanation of why it is valid <i>Covert:</i> Because the participants are unaware that they are being observed; • So are less likely to show socially desirable behaviour (than in overt observations); • So are less likely to be aware of the aim / will be affected less by demand characteristics; <i>Overt:</i> Valid observations may be impossible with a hidden observer; • e.g. in a natural group outdoors, overt observations must be used (otherwise the situation would become artificial); <i>Participant:</i> The observer is well placed to observe behaviour clearly / to experience the intensity of a social event; • So observations are unlikely to be confounded by poor access; • So observations are more likely to represent the situation in a more complete / complex way; <i>Non-participant:</i> The observer is unlikely to become biased by individuals or events; • So observations are likely to be more objective than in participant observation; • So observations are more likely to represent the situation in a more complete / complex way; <i>Controlled:</i> Situation is guaranteed to elicit the target behaviour in a specific way; • So observations are likely to be more objective than in participant observation; • So observations are more likely to represent the situation in a more complete / complex way; <i>Naturalistic:</i> Situation is (like) everyday life so will elicit genuine target behaviour; • 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. 1 mark for advantage 1 mark detail (linked or not) objective = 1 (advantage) the researchers could be confident about the aggression categories = 1 link could be analysed statistically = 1 (advantage) 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. 2 marks max in total for 2 definitions. 5 further marks for detail / examples. Participant variable – confounding variable due to individual differences; • (can be temporary) e.g. hunger in a study on motivation to eat; • (or permanent) e.g. culture in a study on attitudes to different animals; • e.g. personality in a study on risk taking; • e.g. participant variable in Andrade could have been how much the individual normally doodled; • these matter because different participants in different levels of the IV / used independent measures design; • also matter in repeated measures designs, overcome by counterbalancing; • e.g. participant variable in Milgram was experience with electricity (made them disobey earlier); Situational variables – confounding variable due to the influence to the environment; • e.g. whether you had been helped recently in a study on helping; • e.g. situational variable in Piliavin et al. was the behaviour / comments of passengers; • 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. 1 mark for explanation 1 mark for link the IV could not be manipulated = 1 (explanation) the noise was due to the trains or not = 1 (link) mark could not control when the repairs happened / noise stopped and started = 1 link 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. 2 marks for method of measurement (e.g. 1 for 'way', 1 for 'data' or detail) 1 mark for link (to effects of noise / concentration) use a questionnaire = 1 'way' asking them if they had been concentrating well = 1 link e.g. using a question like 'How well did you work today?' 1 = well, 5 = badly = 1 detail by giving them a test in class = 1 'way' e.g. testing them on lesson content = 1 detail to measure whether they had paid attention = 1 link	3
7(c)	Identify <u>two</u> extraneous variables that Mark could control. 1 mark of a potential confounding variable x2 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. 1 mark for a directional hypothesis (not or partly operationalised) 1 mark for operationalisation of both variables Children will perform better without the trains running = 1 (directional, no operationalisation) Children's performance will be better when the trains are not running than when they are = 1 (one variable operationalised) 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 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. 1 mark for identifying a way to measure helping that could be correlated 1 mark for operationalisation using that measure that could be correlated E.g. Asking to join the front of a lunch queue and see how people react = 1 (identify) 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): Suggest <u>one</u> advantage and <u>one</u> disadvantage of this way of measuring helping behaviour. 1 mark for advantage 1 mark detail (linked or not) E.g. It can be easily observed from a distance = 1 (advantage) E.g. So this won't disturb the helpfulness = 1 (link) 1 mark for disadvantage 1 mark detail (linked or not) E.g. Difficult to judge reasons for behaviour = 1 (advantage) 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. 1 mark for outline of positive correlational relationship As helpfulness increases, communication skills will increase too = 1 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. 1 mark for identification / brief description of any sampling method 1 mark detail (linked or not) Volunteer sample = 1 (identification or detail to benefit of candidate) People respond to the researcher's advert = 1 (detail) It is a self-selected sample = 1 (identification or detail to benefit of candidate) Opportunity sample = 1 (identification) The researcher uses people who are readily available = 1 (identification or detail to benefit of candidate) Random sample = 1 (identification) Participants are selected from the population each with an equal chance of becoming a participant = 1 (detail) 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. Draw a graph of the likely results of the IQ scores using the axes below. IQ You must label the axes of your graph. 1 mark for (roughly) symmetrical, bell shaped line 1 mark for x-axis label 'IQ' (scores) 1 mark for y-axis label 'frequency' 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. 1 mark for name: mean 1 mark for reason: because IQ is interval data 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). 1 mark for label and centre point of bell (e.g. vertical line, cross or arrow)	1



Cambridge International AS & A Level

PSYCHOLOGY

9990/23

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.

This document consists of **12** printed pages.

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	Describe the difference between qualitative and quantitative data. 1 mark for qualitative 1 mark for quantitative qualitative data = descriptive / detailed / in depth quantitative = numerical (difference is implicit here)	2

Question	Answer	Marks
2	The study by Piliavin et al. (subway Samaritans) was conducted in a subway train.	
2(a)	Suggest <u>one</u> advantage of conducting a study in this location. 1 mark for advantage 1 mark for link the participants were unaware that they were being observed so behaved normally = 1 advantage because people do get ill on trains = 1 link the passengers were (relatively) confined to the carriage = 1 link so they had to make a decision about helping or ignoring/leaving = 1 advantage so it was easy to judge whether they helped or not = 1 advantage	2
2(b)	Suggest <u>one</u> disadvantage of conducting a study in this location. 1 mark for disadvantage 1 mark for link it is possible that the participants had seen the situation travelling in the other direction = 1 link so this might have been a source of demand characteristics = 1 disadvantage there might have been differences between the participants = 1 disadvantage e.g. if the people travelling in one direction might have been cross after work = 1 link	2

Question	Answer	Marks
3	The study by Saavedra and Silverman (button phobia) was a case study. Explain the <u>two</u> reasons that the case study method was chosen, using examples from this study. Do <u>not</u> refer to 'longitudinal' in your answer. 1 mark for reason (can be generic), 1 mark for example (will necessarily be linked) ×2 one participant / a (9-year-old) boy / rare case = 1 reason e.g. interesting because a button phobia is rare / the phobia was very narrow / he had volunteered for treatment = 1 reason in-depth data (about the history / symptoms / therapy) = 1 reason e.g. collected detailed data about his experience with the bowl of buttons in school = 1 reason	4

Question	Answer	Marks
4	Baron-Cohen et al. (eyes test) collected data from several standardised tests	
4(a)	Explain what is meant by 'standardisation'. 1 mark for definition removing differences between the experience of participants within the same level of the IV = 2	1
4(b)	Give <u>two</u> ways that the Eyes Test was standardised. 1 mark for a feature of standardisation x 2 All participants had access to a glossary = 1 Images all the same size = 1 Always 4 emotions = 1 3 foils = 1 Only 1 is ever correct = 1 All photos black and white = 1 The test always had the same number of questions = 0 (it would be a different test otherwise) Participants all took the same IQ test = 0 (not standardisation of Eyes test)	2

Question	Answer	Marks
5	Descriptive statistics used in studies can include the range and the standard deviation.	
5(a)	State what these descriptive statistics measure. 1 mark for: dispersion; spread; how much variation there is;	1
5(b)	Explain <u>one</u> advantage of the standard deviation compared to the range. 1 mark for explanation 1 mark for detail the SD takes all scores into account (and the range does not) = 1 explanation so the SD is more representative / informative = 1 detail	2

Question	Answer	Marks
6	Describe the use of the ethical guidelines of ‘numbers’ and ‘housing’ in relation to animals in research, using any examples. 1 mark for basic definition. 5 further marks for detail / examples. Numbers of animals must be minimised / smallest number should be used; That will produce a valid result; E.g. Pepperberg only used 1; Housing must be suitable e.g. in terms of: • space; • e.g. for exercise; • social grouping / solitariness as appropriate; • clean; • but not too clean so as to distress the animal; E.g. Pepperberg allowed Alex out of his cage to fly around; Housing must be like their natural habitat = 0	6

Question	Answer	Marks
7	Jodie is investigating attitudes to doodling in class. She wants to obtain a sample that includes students and teachers.	
7(a)	Name <u>one</u> sampling technique Jodie could use to obtain her sample. Most likely: opportunity = 1 mark Volunteer = 1 mark	1
7(b)	Suggest how Jodie could use this sampling technique to obtain her sample. 1 mark for description of use 1 mark for link to Jodie's study (including teachers and students) Opportunity: use people who are available = 1 mark description e.g. the students and teachers in her classes = 1 link Volunteer: allow people to self select = 1 mark description put up adverts for participants to respond to = 1 mark description e.g. put up notices in school asking for teachers and students to respond = 1 link	2
7(c)	Suggest <u>one</u> advantage to using this sampling technique in Jodie's study. 1 mark for simple linked advantage Opportunity samples are easy to collect so Jodie should be able to find a big sample of students and teachers (making her results valid/generalisable) Lots of students doodle so she can get a big sample Volunteers are likely to be willing e.g. to talk about doodling Students often have free time so are likely to volunteer	1

Question	Answer	Marks
7(d)	Explain <u>one</u> problem with using this sampling technique in Jodie's study, compared to <u>one</u> other sampling technique. 1 mark for identifying a problem (must be implicitly or explicitly linked to Jodie's study) 1 mark for explaining it OR for explaining why the other technique is better 1 mark for identifying an alternative sampling technique Opportunity: (limited to available people) so likely to be similar / lack variety = 1 mark identification of problem e.g. the students and teachers might not be typical of those in all subjects/schools = 1 explanation use volunteer sampling instead = 1 alternative e.g. a volunteer sample from school could include students and teachers of all ages Volunteer: (limited to people who respond) may all be very willing / educated = 1 mark identification of problem e.g. they might not be typical of those in other schools = 1 explanation use random sampling instead = 1 alternative e.g. a random sample from school would include students and teachers of all ages	3

Question	Answer	Marks
8	Todd is using a questionnaire to investigate personality, such as being a calm or anxious person.	
8(a)	Describe what is meant by a 'questionnaire'. 1st mark: written questions 2nd mark: detail Data collection method using written / online / not face to face questions; (1st mark) Participant give information about themselves / is a self report; (2nd mark)	2
8(b)(i)	Suggest <u>one</u> open and one closed question about personality that Todd could use in his questionnaire. Open question = 1 mark, Closed question with answer options = 1 mark Open question e.g.: Describe your personality; Explain whether you believe you are calm or anxious; Are you calm or anxious, explain why; Closed question e.g.: Would you describe yourself as being: very outgoing, somewhat calm, somewhat anxious, very anxious?; To what extent do you agree with the statement 'I am a clam person'? strongly agree / agree / don't know / disagree / strongly disagree;	2

Question	Answer	Marks
8(b)(ii)	Explain whether the open or the closed question that you suggested in part (b) (i) would be more informative about personality. 1 mark for 'open' and reason why 1 mark for detail Open question because it provides more detail; (reason) e.g. because the participant can say why; (detail) Open because the participant can say what they really mean; (reason) Because they are not restricted by forced choices; (detail)	2
8(c)	Describe how Todd could obtain informed consent from the participants in his study. 1 mark for 'provide information about the study' (about personality) 1 mark for 'evidence of consent' Either information or consent must be linked for 2 marks Give them a brief = 1 (information generic) Then ask them if they are willing to participate in a study about personality = 2nd = 1 linked consent Tell them that there will be questions about introversion and extraversion = 1 link Ask them for written permission = 1 consent generic	2

Question	Answer	Marks
9	Arjun and Mary have collected data about aggression in adults using an observation.	
9(a)	They want to know if they have good inter-rater reliability. Describe how they would test this for their study. 1 mark per valid point made. Must have correlate/compare results for 3 marks Both Arjun and Mary would score the same episode/video of behaviour; And compare/correlate their results; If they are similar they have high inter-rater reliability;	3
9(b)	Explain why it is important that Arjun and Mary have good inter-rater reliability in their study. 1 mark for explanation (generic) 1 mark for link So that they can be confident that they are consistent in their recordings = 1 generic Therefore their judgements of the same aggressive behaviours will be consistent = 1 link Because reliability is important to validity = 1 generic If they are not consistent in scoring aggression they cannot make credible decisions based on their findings = 1 link	2
9(c)	Suggest <u>one</u> advantage of using participant observation in Arjun and Mary's study. 1 mark for advantage 1 mark for link The observer can become absorbed in the social situation = 1 advantage E.g. to understand why the adults were being aggressive = 1 link	2

Question	Answer	Marks
9(d)	Suggest <u>one</u> disadvantage of using participant observation in Arjun and Mary's study. 1 mark for disadvantage 1 mark for link The observer can become too absorbed in the social situation = 1 disadvantage So they are unable to be objective about / are subjective about the adults' aggression (as they know them) = 1 link There are physical risks to the researchers = 1 disadvantage Arjun / Mary may get hurt in the aggression = 1 link There are physical risks for the participants / (it is unethical because) it could break the guideline of protection = 1 disadvantage Arjun / Mary / other people may hurt a participant in the aggression = 1 link	2
10	Kenley is studying whether manipulating participants' mood (to 'good' or 'bad') will make them better at identifying positive facial expressions such as 'friendly' and 'happy'.	

Question	Answer	Marks				
10(a)	Describe how Kenley could conduct a laboratory experiment to test whether manipulating a participant’s mood will make them better at identifying positive facial expressions. Three major omissions for a laboratory experiment are: What: will be recorded, i.e. DV (+ operationalisation) How: IV (+ operationalisation) controls The minor omissions are: where – location of participants when data is collected (e.g. sleep lab) who – participants Also: • 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. 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>	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.	10
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Question	Answer	Marks										
10(b)	Identify <u>one</u> 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 • 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. <i>plus</i> 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>	marks	comment	3–4	Appropriate problem identified. Appropriate solution is clearly described.	2	Appropriate problem identified. <i>plus</i> EITHER Explanation of why it is a problem OR Ineffectual but possible solution described.	1	Appropriate problem identified. Little or no justification.	0	No response worthy of credit	4
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