
PSYCHOLOGY

9990/21

Paper 2 Research Methods

October/November 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.

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

Cambridge International is publishing the mark schemes for the October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **13** printed pages.

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

GENERIC MARKING PRINCIPLE 2:

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

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

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

GENERIC MARKING PRINCIPLE 4:

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

GENERIC MARKING PRINCIPLE 5:

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

GENERIC MARKING PRINCIPLE 6:

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

Question	Answer	Marks
1(a)	Explain what is meant by a ‘repeated measures design’. 1 mark for definition of repeated measures Every participant does all / both of the levels / conditions (of the IV) = 1 mark	1
1(b)	Suggest <u>one</u> advantage of using a repeated measures design, using any core study as an example. 1 mark for identifying advantage. 2nd mark for detail linked to core study • overcomes problems with individual differences; (1 for identification) • e.g. in Yamamoto, if one chimp was more helpful than another (this would confound an independent measures design); (1 for link)	2

Question	Answer	Marks
2	The study by Pepperberg (parrot learning) used an animal. Explain what is meant by ‘deprivation’ and ‘aversive stimuli’ in animal research. 1 mark for each definition, the two may be described together and may be defined by example. • deprivation is doing without something = 1 mark • deprivation is for example an animal not being given food / water = 1 mark • aversive stimuli are things (which are present) that the animal does not like / is afraid of / that hurt = 1 mark • aversive stimuli include electric shocks / aggressive animals / loud noises = 1 mark • water: deprivation is having none, being forced to swim in it is aversive = 2 marks • other animals (for a social species): none is deprivation, too many is aversive = 2 marks	2

Question	Answer	Marks
3(a)	Explain what is meant by ‘reliability’, using <u>one</u> example from the study by Bandura et al. (aggression). 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. Bandura et al. standardised the procedure, e.g. by always having the model display behaviour for the same length of time / in the same place, etc. = 1 mark for example - In Bandura et al., they made sure that both researchers scored aggression in a similar way (= link mark), i.e. were reliable, by using the same list of behaviours (= definition mark) = 2 marks	2
3(b)	Suggest <u>one</u> problem with reliability in any core study, other than the Bandura et al. study. Award 1 mark for identification of problem Award 1 mark for linked example (from any core study except Bandura et al.) - Dement and Kleitman may not have interpreted all the dream reports in the same way = 1 mark - If Schachter and Singer’s participants interpreted the scales differently, they could have appeared more happy/angry than other participants = 2 marks Note: These are only examples, there will be many other acceptable answers.	2

Question	Answer	Marks
4	In the study by Milgram (obedience), the results he recorded were the final voltage each participant gave to the learner.	
4(a)	State the range of these results. 1 mark for range of 300–450 (volts) / (450 – 300 =) 150 (volts)	1

Question	Answer	Marks
4(b)(i)	Milgram could have calculated the mean and the range of the final voltages given. Explain what information the range provides about a set of data, using Milgram's results as an example. 1 mark for identification of why the range is useful / what the range tells us (may be generic or linked) Award 1 mark for linking explanation to Milgram's results. - the range tells us how variable / spread the results are = 1 mark - there was a spread of voltages, which shows not everyone is equally obedient = 2 marks - some stopped at 300, which shows that some people are less obedient / more resistant = 2 marks - some participants gave the maximum, so we know that people / Americans can be very obedient = 2 marks	2
4(b)(ii)	Explain why it would have been better for Milgram to calculate the standard deviation rather than the range. relative advantage of standard deviation / disadvantage of the range 1 mark partial, 2 marks full - the range does not indicate how the results are distributed between the extremes / it does not provide information about the spread around the mean = 1 mark - so it does not indicate how many people were close to each end = 1 mark - e.g. you would not know how many people gave (closer to) 300 or gave 450 V with the range = 1 mark	2

Question	Answer	Marks
5	Explain why low validity would be a problem in experiments. 1 mark for saying why low validity is a problem 1 mark for linking to experiments. Note: these two points may be combined for 2 marks Validity is being sure you are investigating what you intended to; Validity is testing or measuring what you claim to test or measure = 1 mark If the study is valid your results are more credible = 1 mark Which means you can believe your findings = 1 mark So the results would be more useful = 1 mark You would not be able to draw a causal conclusion = 1 mark You would not be able to generalise your findings beyond the experimental situation = 1 mark You would not know whether the IV (or extraneous variables) were the cause of changes in the DV = 2 marks Validity means being accurate = 0	2

Question	Answer	Marks
6	Describe the similarities and differences between naturalistic and controlled observations, using any examples. 1 mark for each definition, up to a maximum of 2 in total if there is no explicit comparison. 1 mark for each identified point of comparison + 1 mark for elaboration with <i>both</i> types of observation. 1 mark for each example that is linked to one type of observation. Examples can include examples from studies using such observations, or of ways it <i>could</i> be used. 4 marks for each type of observation. Max 2 marks in total for all one side e.g. all about naturalistic observations, i.e. no correct comparisons. For example: Naturalistic observations are where the participants are being observed without interference (1 for definition) • such as if children's aggression was observed during school playtime (1 for detail) • for example in Dement and Kleitman the participants' eye movements were initially observed without interrupting their dreaming (1 for example) Controlled observation is when participants are in a situation which is set up for the observation (1 for definition) • such as if helping behaviour was watched when a stooge pretended to lose a contact lens (1 for detail) • for example in Bandura et al. the aggressive play situation was artificial/ in Schachter and Singer the happy/angry stooge created the situation / in Piliavin et al. the participants' reactions were observed to the ill/drunk victim (1 for example) Naturalistic observations: • Are in 'natural' / 'naturalistic' settings (taken to mean non-manipulated settings) • unlike <i>controlled observations</i> which are in controlled / artificial settings • can be overt or covert (i.e. role of the observer is hidden or not) • though usually hidden in naturalistic observations so also accept 'always covert' • like / unlike controlled observations where the observer may or may not be hidden • can be participant or non-participant (i.e. part of the social group being observed or not) • like controlled observations where the observer may or may not be part of group.	6

Question	Answer	Marks
7	Gavin is testing the hypothesis that ‘People are more likely to drop rubbish on the ground when there is already rubbish on the ground’. He is conducting a field experiment in a quiet street. His independent variable is whether the street already has rubbish on the ground or not. Gavin’s dependent variable is whether people drop a leaflet given to them by a stooge onto the ground or not.	
7(a)	State the type of hypothesis Gavin is testing. Include a reason for your answer. 1 mark for type of hypothesis. 1 mark for the reason (even if name is incorrect). This may or may not be linked. - directional hypothesis / one-tailed hypothesis = 1 mark - because he is saying the way the IV will affect the DV (not just that there will be a difference) = 1 mark - as Gavin says rubbish will make people litter more, not just that it will have an effect on littering = 1 mark	2
7(b)	Outline <u>one</u> way in which the participants in Gavin’s study are being deceived. 1 mark for a way in which they are deceived. - They are given a leaflet as part of the experiment; - They do not know that they are being observed; - They do not know they are in an experiment / study / that they are participants;	1
7(c)	Explain <u>one</u> reason why Gavin chose to conduct a field experiment rather than a laboratory experiment. 1 mark for a reason (can be generic) 1 further mark for detail (can be generic) 1 further mark for linking detail to Gavin’s study. (likely to be more) ecologically valid = 1 mark (generic) - as the participant is in the normal environment for the behaviour being studied = 2nd mark (generic) - and Gavin’s participants are on the street, which is where people throw litter = 3rd mark (linked) - participants (likely to be) unaware that they are in a study = 1 mark (generic) - so fewer demand characteristics = 2nd mark (generic) - so Gavin’s participants would not avoid littering because they knew they were being watched = 3rd mark (linked)	3

Question	Answer	Marks
7(d)	Explain <u>one</u> disadvantage of using a field experiment in Gavin's study. 1 mark for a disadvantage (can be generic) 2nd mark for disadvantage linked to Gavin's study. • (likely to be) few controls = 1 mark (generic) • so littering behaviour may vary because of other factors than the IV = 2nd mark (linked) • it might not work e.g. because of demand characteristics = 1 mark (generic) • because they might realise the litter-dropping stooge is not real = 2nd mark (linked)	2

Question	Answer	Marks
8	Lakha is planning to conduct a study to correlate helpfulness and intelligence. She is going to ask her participants to use an online IQ test and is going to measure helpfulness in the laboratory.	
8(a)	Suggest <u>one</u> way that Lakha could measure helpfulness for her correlation. 1 mark for suggestion that produces ordinal, interval or ratio data (i.e. that could be correlated) 2nd mark for detail e.g. operationalisation. • using a questionnaire = 1 mark • with questions like 'How likely would you be to assist an old person crossing the street? (on a scale of 0–10) = 2nd mark • by setting up a situation with a stooge = 1 mark • so the participant was asked to help clear up a mess to see how much effort they make (and rate it) = 2nd mark	2
8(b)	Suggest <u>one</u> advantage of the measure of helpfulness that you gave in part (a). 1 mark for suggested advantage 2nd mark for detail • reliable because objective = 1 mark • e.g. in the questionnaire they could only give a number, so the response does not need to be interpreted = 2nd mark • valid because few demand characteristics = 1 mark • e.g. because with the stooge they would not know helping was part of the study, so they would act normally = 2nd mark Note: These are only examples, there will be many other acceptable answers.	2
8(c)	Name the type of graph Lakha should use to plot her results. 1 mark for scatter graph	1

Question	Answer	Marks
8(d)	Describe the pattern Lakha will see in her results if she finds a negative correlation between the two variables. You may use a drawing in your answer.  1 mark for 'As one variable goes up the other goes down' OWTTE Accept diagram (does not have to be labelled):	1
8(e)	A problem with the participants doing an online IQ test at home is that they may cheat. Explain the effect this would have on the negative correlation if only the less helpful participants cheated. Both marks for explaining the effect on the correlation. - less helpful participants would score better than they should (so would look like they had higher IQs) - so the negative correlation would look steeper - because the most unhelpful people (the most intelligent ones) would appear (even) more intelligent - it would be less valid, because Lakha would be measuring cheating not IQ	2

Question	Answer	Marks
9	Kyle conducted an investigation into doodling during lessons by boys and girls. He counted the number of doodles and how much paper was used per hour when doodling. He had several concerns about uncontrolled variables in his study.	
9(a)	Define quantitative data, using Kyle's data as an example. 1 mark for quantitative data is numerical. 2nd mark for Kyle's data (count of doodles / area of doodles [in cm²]).	2

Question	Answer	Marks
9(b)	Kyle observed doodling in different lessons and was concerned that the science lessons may have been more interesting than other subjects. Name this type of uncontrolled variable <u>and</u> explain why it could be a problem. 1 mark for type of variable. 2 marks for explanation. • (how interesting the lesson is could be) a situational variable • because it is a feature of the experimental setting, i.e. the lesson • because students might doodle less in these lessons / might doodle more in other lessons • so it would look like boys doodled less / girls would seem to doodle more. • so there would be an apparent gender difference (that did not exist / that was due to an uncontrolled variable)	3
9(c)	On one of the days Kyle collected data, the girls had been on a school trip the day before, so may have been tired, but the boys had not. Name this type of uncontrolled variable <u>and</u> explain why it could be a problem. 1 mark for type of variable. 2 marks for explanation. • (tiredness could be) a participant variable • because it is internal to the individuals • it might make the girls doodle more / less than they would normally • so there would be an apparent gender difference (that did not exist / that was due to an uncontrolled variable)	3

Question	Answer	Marks				
10	Emma is planning to conduct an interview-based study about how well people think their pets/domesticated animals learn, for example whether cats learn to respond to their names.					
10(a)	Describe how Emma could conduct her interview-based study to discover what people think about how well their pets/domesticated animals learn. Three major omissions for an interview study are: What: – content of questions asked (i.e. topics, examples) How: – interview structure detail (e.g. structured / unstructured / semi-structured) – style of questions asked (e.g. open / closed) The minor omissions are: where – location of participants when being interviewed who – participants (pet/domesticated animal owners) Indicative content for an interview study: What: content of questions asked (i.e. topics, examples) How: open/closed questions about beliefs about pets interview structure detail (e.g. structured / unstructured / semi-structured) lie questions filler questions sampling technique sample size description of how closed questions will be scored description of how quantitative data from closed questions will be analysed description of how open questions will be interpreted ethical issues Other appropriate responses should also be credited.	10				
10(a)	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. - Response may have a minor omission. - 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). - 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. - 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.	
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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 - operationalisation - difficulty with lying / social desirability - difficulty with response biases Reliability - standardisation - intra-rater consistency (e.g. due to subjectivity of Emma’s interpretation – may also be validity) 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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Question	Answer	Marks
1(a)	Define what is meant by the ‘mean’. 1 mark for: A measure of central tendency/average that represents all the data points/scores. OWTTE	1
1(b)	Describe how a mean is calculated. 2 marks for description of calculation. All the scores in a set are added together; and divided by the number of scores = 2 marks (including any zero scores)	2

Question	Answer	Marks
2	In the study by Andrade, two groups were compared, a doodling condition and a control condition. Each participant produced a memory score.	
2(a)	Explain the purpose of a ‘control condition’, using an example from this study. 1 mark for explanation of the purpose of a control condition 1 mark for identification of the control condition in Andrade - A control condition is the absence of the IV, in this case the absence of (a cue for) doodling to compare to the experimental condition to look for a difference / to see if the IV is the cause of a difference = 1 mark (explanation) - The control condition was the ‘no doodling’ group (who were not given a special sheet or asked to ‘shade circles and squares’) = 1 mark (example) - Andrade used the control group as a baseline to compare the doodling group’s monitoring/recall scores = 1 mark (example)	2
2(b)	Name a suitable graph to display the mean memory scores for the doodling condition and the control condition. 1 mark for bar chart / bar graph	1

Question	Answer	Marks
3	The study of Saavedra and Silverman (button phobia) was a case study.	
3(a)	Outline what is meant by a ‘case study’. Both marks are for outlining the term, examples only gain marks if they are part of the definition. 1st mark for either detailed or one instance/person 2nd mark for any of: detailed one instance/person of a rare / unusual condition <i>may be</i> longitudinal (can use) several different data collection methods (can use) triangulation • an in-depth study of a single participant = 2 marks • a very descriptive study of one unit = 2 marks	2
3(b)	Suggest <u>one</u> disadvantage of using a case study. Both marks are for one disadvantage. Points may be linked but do not have to be. • one person is studied and they may be rare/unique/unusual = 1 mark • so researchers are less likely to be able to generalise to the wider population / less representative = 2nd mark • reliability may be a problem because the researcher may be subjective and vary their interpretation = 2 marks • the researcher may be get to know the participant well (making their interpretation / data collection) subjective = 1st mark • which would make the data invalid = 2nd mark	2

Question	Answer	Marks
4	In the study by Pepperberg (parrot learning), the data collected was the parrot's speech. Alternatively, the parrot's actions in response to instructions, such as 'peck yellow square' could have been observed.	
4(a)	Suggest why observing the parrot's actions might have been a better way to collect data than using the parrot's speech. Both marks are for the suggestion. 1 mark for identifying an advantage. 2nd mark for detail. • An action may be much more obvious / speech could be misheard/ misunderstood (=1 mark) • So the observers would make fewer errors (=1 mark for detail) • this would make observing actions a more valid/reliable measure (both are correct) (=1 mark for detail)	2
4(b)	Suggest why observing the parrot's actions might <u>not</u> have been a better way to collect data than using the parrot's speech. Both marks are for the suggestion. 1 mark for identifying a disadvantage. 2nd mark for detail. • An action requires an additional instruction / the instruction 'peck' (= 1 mark) • the parrot may not understand this instruction (= 1 mark for detail) • this would make the parrot appear not to understand the concept (= 1 mark for detail) • which would be incorrect / would lower validity (= 1 mark for detail)	2

Question	Answer	Marks
5	The procedure in the study by Canli et al. (brain scans and emotions) was standardised as each participant was treated in the same way. Explain <u>one</u> advantage of standardisation, using this study as an example. Both marks are for the advantage. 1 mark for identifying an advantage. 2nd mark for linked detail. • standardisation ensures every participant is treated the same way (= 1 mark for identification of advantage) [= rep of Q] • easy to replicate • increase reliability in Canli et al., the duration of presentation / duration of the interval / fixation cross / right hand to press button was always the same (= 1 mark for linked detail)	2

Question	Answer	Marks
6	Describe what researchers can and cannot learn from correlational studies, using any examples. Award 1 mark per idea. Up to max 4 marks for all one side, e.g. 'can tell us'. Award max 3 marks for examples. From correlations we <i>can</i> learn about: • relationships/links between variables (accept can be negative or positive if no definitions); (1 for definition) • whether the two variables are positively correlated i.e. both increase together • for example Piliavin et al. found that as group size increased the likelihood of helping also increased • or negatively correlated, i.e. as one increases the other decreases • for example, Piliavin et al. expected to find that as group size increased the likelihood of helping would decrease • so they can guide ideas for (future) experimental work • can study variables which cannot practically be manipulated, such as activity levels in dreams • can study variables which cannot ethically be manipulated, such as phobia strength From correlations we <i>cannot</i> learn about: • causal relationships between the variables being tested • i.e. whether one causes the other to change • or whether they are both dependent on a third factor • e.g. Dement and Kleitman could not be certain whether longer REM caused longer dreams or longer dreams caused longer REM periods.	6

Question	Answer	Marks
7	Dr Kwan plans to investigate whether any species other than chimpanzees will offer help. During testing, each animal will be with another animal but afterwards they will be kept in separate cages.	
7(a)	Explain <u>one</u> ethical issue Dr Kwan should consider in choosing which species to test. You may use an example in your answer. 1 mark for linking issue to animal species e.g. social / solitary 2nd mark for detail about potential ethical problems (this may include a relevant example) • He would have to choose a species that would cope with both social company; and isolation = 2 marks • A solitary animal would be unsuitable; as it would be distressed being in the experiment when it had to be with another one = 2 marks • Dogs are unsuitable because they are social; and could be distressed by the social isolation = 2 mark	2
7(b)	Dr Kwan has considered testing whether the animals can help each other to avoid pain. Explain why this might be an unethical procedure. 1 mark for a comment based on the experiment related to pain/distress. • The animal that needed help would have to be in pain, which is unethical = 1 mark • The animal that was supposed to help might be distressed if it could not stop the experimental animal's pain, which would be unethical = 1 mark	1
7(c)	Dr Kwan should use as few animals as possible, for ethical reasons. State why it would also be important that Dr Kwan uses a big enough sample. 1 mark for idea that small samples may not be representative • If the sample is too small the findings may not be representative of the species / the results may not generalise to the rest of the species = 1 mark	1

Question	Answer	Marks
7(d)	Dr Kwan has developed behavioural categories for observing the animals. However, he thinks that another researcher should conduct the observations rather than him. Explain why this is a good idea. 1 mark for correct use of subjective / objective 1 mark for explaining idea of avoiding subjectivity / being objective 1 mark for detail, e.g. for the consequences if Dr Kwan did /did not record the data himself Max 2 marks if explanation not linked to study • Dr Kwan believes that the animals will help, so is biased • so he may not observe/record data in an objective way / he may be subjective in his data collection • this would tend to make his results fit his expectations • making the results invalid	3

Question	Answer	Marks
8	Kieran is planning a self-report study about dream content, to find out whether people feel happier during the day if they have had pleasant dreams the night before. He is considering using either a structured questionnaire or an unstructured interview.	
8(a)	Suggest <u>two</u> closed questions that Kieran could ask in a structured questionnaire. 1 mark per relevant closed question with answer options X2 • Did you have a nice dream last night? yes/no (= 1 mark) • Rate how happy you felt today on a scale of 0-5 (0 = not happy, 5 = happy) (= 1 mark)	2
8(b)	Explain <u>one</u> advantage of using closed questions. Both marks are for the advantage. Award 1 mark for identifying an advantage. Award 2nd mark for detail. • They give objective data • so are reliable to interpret • They give numerical data / data that can be converted to numbers • so are easy to analyse	2

Question	Answer	Marks
8(c)	Outline what is meant by an ‘unstructured interview’. 1 mark for basic/partial explanation of term (e.g. of ‘interview’). 2nd mark for detail. • an interview is a real time / direct / face-to-face self report method (= 1 mark) • unstructured ones have no fixed questions (= 1 mark / 1 for detail) • so give the interviewer the freedom to adapt to what the participant says (= 1 mark / 1 for detail) • this means they can pursue interesting lines of questioning (= 1 mark for detail)	2
8(d)	Suggest <u>one</u> open question that Kieran could ask during an unstructured interview. 1 mark for a relevant open question • Describe how happy you have felt today. • If you had a dream last night, describe how nice it was.	1
8(e)	Explain <u>one</u> advantage of using open questions. Both marks are for the advantage. 1 mark for identifying an advantage. 2nd mark for detail. • They give participants freedom to express themselves • so are likely to be valid / more valid than closed questions (in this respect) • They give detailed / in-depth / qualitative data • so can reveal aspects in the results that could be overlooked if closed questions were used	2

Question	Answer	Marks
9	Marla is working in a centre for adults with autism. She is observing social behaviour and communication such as whether the residents seem to understand facial expressions.	
9(a)	Identify and operationalise <u>one</u> behaviour that Marla could record to measure whether the residents understand facial expressions. 1 mark for an example of a communication behaviour 1 mark for an operational definition • talking = 1 mark (behaviour) • saying any words that are directed to other people (as initiation or response) = 1 mark (definition) • eye contact = 1 mark (behaviour) • looking directly at other people (without instantly averting gaze) = 1 mark (definition)	2
9(b)	Explain what Marla should do to be a participant observer. 1 mark for participant observer strategy 1 mark for explanation/example • Become part of the group; (1 mark for strategy) • e.g. act as an activity leader / staff member / cleaner, etc.; (1 mark for example) • So that she is accepted by the adults with autism; (1 mark for explanation)	2
9(c)	Explain what Marla should do to be a non-participant observer. 1 mark for non-participant observer strategy 1 mark for explanation/example • Stay separate from the activities of the group / not be socially involved; (1 mark for strategy) • e.g. be a member of catering staff; (1 mark for example) • So that the adults with autism do not interact with her; (1 mark for explanation)	2

Question	Answer	Marks
9(d)	Explain whether Marla should choose a participant observation or a non-participant observation for her study. 1 mark for justification = (may be generic) 2nd mark for detail or different point (1 mark must be linked to get 2) <i>justification for participant observation:</i> • it allows for a relationship to build up between the observer and the participants (generic) • so Marla would be more likely to notice subtle things about the adults' communication (linked) • the observer is amongst the participants so can see/hear easily (generic) • e.g. Marla could specifically talk to individuals (linked) <i>justification for non-participant observation:</i> • reduces demand characteristics (generic) • otherwise the adults with autism might realise that Marla is watching them and change their behaviour (linked)	2

Question	Answer	Marks
10	Dr Fox is planning a field experiment to investigate obedience in school children. Her aim is to test whether they are more obedient to teachers who are dressed in informal or formal clothes.	
10(a)	Describe how Dr Fox could conduct a field experiment to test her aim. Three major omissions for a field experiment are: What: – will be recorded, i.e. DV How: – IV Where: – school The minor omissions are: how – controls who – participants (must be school children) Indicative content for a field experiment: • How – identification of the independent variable • operationalisation of the dependent 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 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.	10

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 - operationalisation (of obedience) - difficulty with demand characteristics/social desirability if overt - difficulty with remaining hidden if covert - dressing teachers differently may affect the teacher's own behaviour Reliability - intra-rater consistency (scoring obedience) 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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PSYCHOLOGY

9990/23

Paper 2 Research Methods

October/November 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.

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

Cambridge International is publishing the mark schemes for the October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **13** 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	Explain what is meant by the term ‘population’. 1 mark for ‘all the individuals of one type’	1

Question	Answer	Marks
2	There were many controlled variables in the study by Bandura et al. (aggression).	
2(a)(i)	Explain what is meant by ‘a controlled variable’. 1 mark for defining the term a controlled variable is a factor that is kept constant across different levels of the IV	1
2(a)(ii)	Identify an example of a controlled variable from the Bandura et al. study. 1 mark for example of a controlled variable from Bandura et al. - the duration of aggressive / non-aggressive behaviour of the adult model - the frustration episode - the toys available Any other appropriate answer to be credited	1
2(a)(iii)	Suggest <u>one</u> advantage of using the controlled variable you have identified in part (a)(ii). Both marks are for one advantage. At least one point must be linked to the study. <i>duration of aggressive / non-aggressive behaviour of the adult model</i> - all participants had the same exposure to modelled behaviour so were equally likely to be influenced (= 1 mark) <i>frustration episode</i> - all participants were likely to express aggression by the time they were observed (= 1 mark) - in case exposure to aggression reduced the likelihood of expression (so it would be hard to measure imitation) (= 2nd mark) <i>toys available</i> (aggressive and non-aggressive toys for all children) so that they had the same immediate exposure to cues; (= 1 mark) - so if the toys themselves rather than imitation were the cause they would be equally likely to aggress; (= 2nd mark)	2

Question	Answer	Marks
2(b)	State <u>one</u> way in which Bandura et al. helped observers to be reliable. Mark is for procedural information affecting reliability. • simple 5-point scale for initial rating of children (= 1 mark) • interval sampling (5 seconds) • recording of behaviours in (clearly defined) response categories	1

Question	Answer	Marks
3	In the study by Piliavin et al. (subway Samaritans), medians were calculated for ‘time taken to help’ in the Cane and Drunk conditions.	
3(a)	State whether the median is a ‘measure of central tendency’ or a ‘measure of spread’. Include a reason for your answer. 1 mark for: (measure of central tendency) <i>because</i> it: – finds the middle value – is an average – looks for a typical value not an extreme	1
3(b)	Describe how a median is calculated, using the Piliavin et al. study as an example. 1 mark for brief description of calculation 1 mark for identifying data used. All the scores in a set are put in order (smallest to largest) and the middle one is found (if there are two middle ones, these are added together and divided by 2) = 1 mark So in Piliavin et al.’s case they put all the times to respond / offer help in order for each group (e.g. for the ‘white cane 1–3 people’ group) (and found the middle one) = 2nd mark	2
3(c)	Name the type of graph that would be best used to show a comparison between the medians for ‘time taken to help’ in the Cane and Drunk conditions. 1 mark for bar chart	1

Question	Answer	Marks
4	From the study by Saavedra and Silverman (button phobia):	
4(a)	Identify <u>two</u> ethical guidelines followed in this study. 1 mark for identification of guideline from study × 2 • confidentiality • deception • consent • debrief • right to withdraw • protection from harm	2
4(b)	For <u>one</u> of the ethical guidelines you identified in part (a): Suggest <u>one</u> disadvantage of following this guideline in this study. Both marks are for one disadvantage. 1 mark for identification of disadvantage 2nd mark for link to study 1 mark <i>confidentiality</i> • no one else can follow up the same child (because they do not know who he is = 1 mark • so it would be hard to validate the original research / to see if the benefits last = 2nd mark <i>deception / consent</i> • if the boy had not known the reason for his meeting he might have responded differently = 1 mark • so the results may not generalise to case where the patient cannot be told what they are seeing a therapist for because they would be too scared = 2nd mark <i>right to withdraw</i> • although he did not withdraw, he or his mum might have done so the study would have stopped early = 1 mark • this would have been a problem because they may not have reached far enough into the treatment programme = 2nd mark	2

Question	Answer	Marks
5	Explain why low reliability would be a problem in experiments. 1 mark for identification of the problem with low reliability (inconsistency). 1 mark for detail explaining a reason why this is problematic. Examples can be useful as detail but are not required. • consistency is poor • so you cannot tell if differences are due to manipulations or are errors • this would also lower validity • e.g. (low consistency) between different researchers • e.g. (low consistency) for the same researcher over time • e.g. when the same behaviour is seen a different record might be made (if reliability is low)	2

Question	Answer	Marks
6	Describe ways in which an interview can differ from a questionnaire, using any examples. 1 mark for each definition, for each type of self report (maximum of 2 marks in total). 1 mark for each example that is linked to one type of self report (maximum of 2 marks in total). Examples can include examples from studies using such questionnaire / interviews, or of ways they <i>could</i> be used. Max 4 if only questionnaires or interviews. • interviews are (questions asked) face-to-face; (1 for definition) • questionnaires have (questions asked) in written form; (1 for definition) • e.g. Piliavin et al. asked people about their response to the victims when they were on the train • Baron-Cohen gave participants the AQ (Autism Quotient, a questionnaire) to complete themselves • (unstructured) interviews tend to use more open questions / ask for descriptions / detail / produce qualitative data than questionnaires • e.g. Schachter and Singer interviewed participants and asked 'how are you feeling?' • e.g. Dement and Kleitman asked participants to describe their dream • whereas the answers on the AQ are fixed-choice • unstructured interviews tend to follow the participant's lead and add new questions whereas questionnaires are much more structured • e.g. Dement and Kleitman sometimes went in to the participants to ask them more questions whereas in the questionnaires used by Laney et al. the responses were fixed choice, such as circling a number to say how likely they would be to order a food item.	6

Question	Answer	Marks
7	Mikko is conducting an experiment to find out whether people are more easily persuaded by advertisements that are in colour or in black and white. He has put advertisements up in one town library that are all in colour and the same advertisements in black and white in a library in another town.	
7(a)	Explain the importance of <u>one</u> control in Mikko's experiment. 1 mark for identifying the control 2 marks for explaining why it is important (one may be generic, one must be linked) • same location (= 1 mark for the control) • always a library (= 1 mark for the control) • this might matter because in different locations the type of people might be different (1st explanation mark, generic) • for example in an art shop people might prefer more coloured pictures (2nd explanation mark, linked) • same adverts (= 1 mark for the control) • adverts only differ in terms of colour (not content) (= 1 mark for the control) • this might matter because in different images might affect people differently (1st explanation mark, generic) • for example people might prefer adverts with animals to buildings (2nd explanation mark, linked)	3
7(b)	Suggest how Mikko could operationalise the <u>dependent</u> variable in his experiment. 1 mark for identifying way to operationalise. 1 mark for elaboration / justification e.g. how it would be quantified. • effectiveness of adverts could be operationalised as how much they like them; • e.g. by rating the advert on a scale of 0–10; • effectiveness of adverts could be operationalised by whether they choose the objects advertised; • e.g. by giving them a choice of free products and counting how many they choose;	2

Question	Answer	Marks
7(c)	Explain whether Mikko's study is a field experiment or a natural experiment. 1 mark for defining / describing a field experiment or a natural experiment 1 mark for identifying why Mikko's study <i>is</i> a field experiment or is <i>not</i> a natural experiment • a field experiment has a manipulated IV (= 1 mark definition) • a field experiment tests participants in the normal environment (for the behaviour being studied) (= 1 mark definition) • it is a field experiment because people would expect to see adverts in a library (= 2nd mark linked) • in a natural experiment the IV is <i>not</i> manipulated by the researcher / exists in the environment (= 1 mark definition) • it is not a natural experiment because the type of advert is being changed by Mikko (= 2nd mark linked)	2

Question	Answer	Marks
8	Dr Gopal is planning a study about learning and wants it to follow ethical guidelines for the use of animals. He is testing rats in a maze.	
8(a)	Describe how Dr Gopal should follow the ethical guideline of 'housing' in his study. 2 marks EITHER for a point with detail / an example OR for two simple points. • social company or not • space • food • water • warmth • exercise • security (somewhere to hide) • balance cleanliness and need for own smell Give them enough food and water = 2 marks He should not overcrowd them = 1 mark As they might fight and get distressed / hurt = 2nd mark He should house them in appropriate conditions in terms of isolation or company; as rats are social animals, this would be in a social group = 2 marks	2

Question	Answer	Marks
8(b)	Dr Gopal is deciding how to train the rats to learn. He could reward them when they make a correct turn in the maze or he could punish them when they make an incorrect turn. Explain why <u>one</u> of these training methods is the most ethical choice for Dr Gopal to make. 1 mark for reason why choice is more ethical 2nd mark for explanation • He should use food because it is nice (= 1 mark identification) • because noise is distressing / painful (and this is unethical) (= 2nd mark explanation linked to guideline = do not distress) • He should not use the noise (= 1 mark identification) • Because food is pleasant but noise is not (= 2nd mark explanation linked to guideline = no aversive stimuli) Using food is less distressing / harmful than the noise = 1 mark It is more ethical because this procedure improves the animal's experience rather than worsening it = 2nd mark He should not use the noise because animals find it frightening (= 1 mark); whereas food is pleasant (= 2nd mark explanation)	2
8(c)	Dr Gopal plans to count the number of correct or incorrect turns each rat makes. Explain <u>two</u> advantages of collecting data in this way. 1 mark for identifying an advantage 2nd mark for detail (may be linked to study but does not have to be) × 2 • it is numerical / quantitative so is objective • so does not need to be interpreted (detail: explanation) • it is numerical / quantitative so is easy to analyse • e.g. he could calculate means (detail: example) • it is easy / accurate to record (so is valid) • you would be unlikely to make a mistake about whether the rat turned or not (link to study)	4

Question	Answer	Marks
9	Lotty and Nazeem are aiming to observe emotional responses to different films at the cinema. They have different ideas for recording people's emotions. Lotty wants to do a structured observation, with fixed behaviours to record. However, Nazeem wants to do an unstructured observation, and record whatever behaviours are shown.	
9(a)	Suggest <u>one</u> way the aim of Lotty and Nazeem's observation is ethical. 1 mark for reason linked to study • people are often seen / heard crying or laughing in the cinema (privacy) • The participants know other people can see them so it is not intrusive to observe them (privacy) • It would not be necessary to know anything personal about the participants so their identity would be protected (confidentiality) • People have chosen to see the films, so if it is sad, it's not because of Lotty and Nazeem's study (protection)	1
9(b)	Suggest how behaviours could be recorded using Lotty's idea to do a structured observation. All for marks for suggestions relating to structured observation. Max 2 marks for examples (e.g. for behaviours, categories, the time intervals for time sampling) • a list of behaviours • e.g. crying / covering your eyes / laughing • these could be put into related categories • e.g. positive and negative emotions • using (a technique such as) time sampling or event sampling / tallying • e.g. ticking off each time a behaviour like screaming is observed	4
9(c)	Explain <u>one</u> advantage of Lotty's idea to do a structured observation. 1 mark for advantage (generic or linked) 1 mark for linked detail • objective (generic) • e.g. because less likely to choose to record particular emotional behaviours • e.g. because only those emotions on the list could be recorded • higher inter-rater reliability • so Nazeem and Lotty are more likely to be consistent • so they will tend to record the same behaviours when they see the same responses in people	2

Question	Answer	Marks
9(d)	Explain <u>one</u> advantage of Nazeem's idea to do an unstructured observation. 1 mark for advantage (generic or linked) 1 mark for linked detail • unlikely to miss important behaviours (generic) • e.g. because recording is not limited to the emotional behaviours that are on the decided list • e.g. because Nazeem could record anything he sees whereas Lotty could not • higher validity • e.g. because Nazeem can consider any responses that might be related to emotions	2

Question	Answer	Marks
10	Cael and Elsie are working at a sleep laboratory and have read about external stimuli becoming part of people’s dreams. Their aim is to test whether noises can more easily become part of a dream than smells.	
10(a)	Describe how Cael and Elsie could conduct a laboratory experiment to test their aim. 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 (e.g. sleep lab) • who – participants (sleepers) Indicative content for a laboratory experiment: How – identification of the independent variable • operationalisation of the dependent 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.	10
10(a)	Mark according to the levels of response criteria below: Level 3 (8–10 marks) • Response is described in sufficient detail to be replicable. • Response may have a minor omission. • Use of psychological terminology is accurate and comprehensive. Level 2 (5–7 marks) • Response is in some detail. • Response has minor omission(s). • Use of psychological terminology is accurate. Level 1 (1–4 marks) • Response is basic in detail. • Response has major omission(s). • If response is impossible to conduct max. 2. • Use of psychological terminology is mainly accurate. Level 0 (0 marks) No response worthy of credit.	

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 - operationalisation - difficulty with demand characteristics - difficulty with interpreting effect of stimuli on dreams Reliability - inter-rater consistency (re interpreting effect of stimuli on dreams) - 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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