



Cambridge International AS & A Level

PSYCHOLOGY

9990/21

Paper 2 Research Methods

October/November 2023

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.

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Generic Marking Principles

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

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Marks must be awarded in line with:

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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.

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

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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
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(for point-based marking)****1 Components using point-based marking:**

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From this it follows that we:

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- Slashes (/) or the word 'or' separate alternative ways of making the same point.
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Guide to marking annotations

BOD	benefit of doubt		correct point (do not use more than one tick per mark)		incorrect point	_a	Each point of description for a major
NBOD	no benefit of doubt	G	indicates a point is a Generic mark	CONT	continued (use 'link' icon)	_b	
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REP	repetition (of stem / within response)		wiggly underline e.g. use to bring attention to a key part			_a 	Award when description of a major is in <i>detail</i> (see MS)
E	ethical point in Q 10a		'something is missing'	SEEN	Acknowledge blank pages	_b 	
L1	Level 1 in Q10a	L2	Level 2 in Q10a	L3	Level 3 in Q10a	_c 	

Question	Answer	Marks
1(a)	Explain what is meant by ‘covert’ observation. 1 mark for partial explanation + 1 mark for full explanation (e.g. explicit / detailed / relevant example) A covert observer is hidden (from the participants); 1 (partial) e.g. when an observer uses a camera; 1 (detail) e.g. (Bandura et al. watched through) a one-way mirror; (example) When the role of the observer is hidden from the participants; 2 (full)	2
1(b)	Explain <u>one</u> strength of a covert observation. 1 mark strength 1 mark detail The participants will not know the observer is there / will act more naturally / less risk of changing their behaviour; less risk of demand characteristics / less risk social desirability / more valid;	2
1(c)	Explain <u>one</u> weakness of a covert observation. 1 mark weakness 1 mark detail Observer less likely to be close to participants / have direct contact with them / be able to speak to them; So their observations may be less detailed / clear / valid; They may be discovered and influence the participants’ behaviour; So the results would be less valid; They may be discovered and upset the participants; So the study would cause the participants harm / break the guideline of protection; They are being watched without their permission; breaks the ethical guideline of consent; (weakness or detail) denied participants the right to withdraw; (weakness or detail)	2

Question	Answer	Marks
2	A hypothesis is ‘There will be a difference in helpfulness between obedient and disobedient people’.	
2(a)	State whether this is a directional (one-tailed) hypothesis or a non-directional (two-tailed) hypothesis. Include a reason for your answer. 1 mark for reason (note there is no mark for stating that it is non-directional) Non-directional because it does not say whether the helpfulness of obedient and disobedient people will be greater; Non-directional because it does not say whether obedient and disobedient people will more helpful; Non-directional because it does not say how obedience will affect helpfulness; Non-directional because it does not say which level of the IV produce a greater score on the DV; (generic) Non-directional because it does not say the direction of the effect = 0 Non-directional because it does not say the direction of the effect of obedience and disobedience = 0 Non-directional because it does not say the direction of the effect on helpfulness = 0 Directional because... = 0	1
2(b)	Write a null hypothesis for this study. 1 mark for null hypothesis (does not have to be operationalised) There will be no difference between helpfulness in obedient and disobedient people = 1 There will be no difference between how helpful obedient and disobedient people are = 1 Any difference between helpfulness in obedient and disobedient people is due to chance = 1 The level of obedience will not affect helpfulness = 1 There will be no difference between helpfulness and obedient and disobedient people = 0 There will not be a difference between helpfulness and obedience = 0 Any difference between helpfulness and obedience is due to chance = 0	1

Question	Answer	Marks											
3	The study by Pepperberg (parrot learning) tested a parrot's understanding of the concepts of 'same' and 'different'. Table 3.1 shows the total results for correct responses and incorrect responses for two categories of objects. Table 3.1 <table border="1"> <tr> <th rowspan="2">Category of objects</th><th colspan="2">Total responses to 'same?' and 'different?' questions</th></tr> <tr> <th>correct</th><th>incorrect</th></tr> <tr> <td>objects used in training</td><td>99</td><td>30</td></tr> <tr> <td>objects not used in training</td><td>96</td><td>17</td></tr> </table>	Category of objects	Total responses to 'same?' and 'different?' questions		correct	incorrect	objects used in training	99	30	objects not used in training	96	17	
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objects used in training	99	30											
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3(a)(i)	Describe the results in Table 3.1. for correct responses. 1 mark for description of 'correct responses' results The number / proportion of correct responses was (very) similar for the two categories of objects;	1											
3(a)(ii)	Describe the results in Table 3.1. for incorrect responses. 1 mark for description of 'incorrect responses' results The number / proportion of incorrect responses was higher for the objects used in training (than those not used); 30 for familiar / training objects and 17 for unfamiliar / non-training ones = 0 [NAQ]	1											
3b	Whether or not the objects had been used in training affected the accuracy of the parrot's responses. Describe how Pepperberg explained this effect. 1 mark description [definitive reasons] + 1 mark detail Alex received the objects themselves as his primary reward; the new items were (potentially more) interesting / motivating; so paid more attention to them; e.g. chew apart / to try to eat / to use for preening;	2											

Question	Answer	Marks
4	In the study by Canli et al. (brain scans and emotions), all the participants were female. State the <u>two</u> reasons that Canli et al. gave for using only female participants in this study. 1 mark for each reason x2 because females show stronger physiological reactivity (than men); because females are more likely to report intense emotional experiences (than men);	2

Question	Answer	Marks
5	In Experiment 1 of the study by Laney et al. (false memory), participants were randomly allocated to one of two conditions (levels of the independent variable).	
5(a)	State what is meant by ‘random allocation’. 1 mark Each participant has an equal chance of being assigned to each group / condition / level of the IV; random sampling = 0 [incorrect]	1
5(b)	State why one of the two groups was called a ‘control condition’. 1 mark Because the IV was absent (from this level of the IV); Because they were not exposed to the IV (of having loved asparagus);	1

Question	Answer	Marks
6	Describe the ethical guidelines of ‘right to withdraw’ and ‘confidentiality’, using any examples. Definitions / detail: up to a maximum of 4 marks for each guideline Examples: maximum of 2 marks for each guideline. Examples can include ones from any studies (core studies, other studies, candidate’s own studies). Right to withdraw: ensuring participants know they can leave if they want to / without reason; (1 for definition) • and take their data with them / remove their data from the study; (+ 1 detail) • Milgram denied the participants the right to leave with the verbal prods (but they were told they could); (+ 1 for example) • E.g. Piliavin / in a covert observation participants did / would not know they were being observed so they could not withdraw; • Schachter and Singer participants could leave if they did not want the injection; (+ 1 for example) Confidentiality: participants’ information is anonymous / not individually identifiable / not made public; (1 for definition) • (anonymity achieved by) remove names; (+ 1 detail) • (anonymity achieved by) participants given codes; (+ 1 detail) • e.g. the participants in Dement and Kleitman were identified by their initials; (+ 1 for example) • Saavedra and Silverman’s details known e.g. boy / Hispanic / age, it’s not enough to identify him; (+ 1 for example) • number of researchers with access to this should be limited; (+ 1 detail) • records should be stored safe / securely; (+ 1 detail)	6

Question	Answer	Marks
7	Two female researchers, Meilin and Nina, are preparing a structured interview about dreams. Each researcher will interview 10 participants.	
7(a)	Suggest <u>three</u> ways that Meilin and Nina could standardise their structured interview, other than using the same questions. 1 mark for a way to standardise × 3 Questions in the same order; (Meilin and Nina should wear the) same clothes; Same tone of voice; Same length of time to complete the interview; Same (sort of) location / setting / environment; Just one of them interview all participants;	3
7(b)	Explain <u>one</u> reason why a structured interview should be standardised. 1st mark explanation of reason 2nd mark detail / term To ensure that each participant is treated in the same way; (explanation) So that the results are reliable; (term) If participants were treated differently, variations in their data might not be real / might be due to the interview(er); (explanation) So the results would be invalid; (term)	2
7(c)	Explain <u>one</u> reason why it may be better for Meilin and Nina to use an unstructured interview. 1 mark explanation + 1 mark link Because they could ask individual participants different questions; (explanation) This means they would be able to find out details about each individual's dream; (link)	2
7(d)	Outline <u>one</u> ethical problem with interviewing participants about their dreams. 1 mark problem (stating a guideline is not outlining a problem) participants may be embarrassed about the content; (problem) participants might not want to reveal them; (problem) They think the topic was private; (problem) They might worry that they interviewer would laugh / might tell someone else; (problem)	1

Question	Answer	Marks
8	Alf conducted an experiment comparing the range of television programmes that old and young people watch. He collected his data by questionnaire and found that young people watch a wider range of television programmes than old people.	
8(a)(i)	Suggest <u>one</u> extraneous variable that could affect the range of television programmes that old people watch, other than their age. 1 mark for identifying an extraneous variable (variables such as age, gender = 0 [NAQ]) 1 mark for link to old people The variety of channels they can access or choose from / whether they have streaming services; (extraneous variable) Old people might only have terrestrial channels / not have access to the internet / satellite TV; (link) Old people might not have much money; (extraneous variable) So they might not be able to afford lots of channels / paid TV channels / broadband; (link) They might only like / prefer old-fashioned programmes; (link but no reason) Because modern programmes seem offensive / boring to them; (extraneous variable) How well the old people can hear; (extraneous variable) Because lots of old people are deaf so prefer programmes that are loud / with subtitles; (link)	2

Question	Answer	Marks
8(a)(ii)	Explain how Alf could investigate whether the extraneous variable that you suggested in 8(a)(i) was the cause of the difference he found. 1 mark for idea for how to investigate, e.g. add questions to questionnaire / interview / observe 1 mark for detail <i>Access to channels:</i> Add a question to the questionnaire; (idea) about how many channels they have; (detail) Only use participants who have access to about the same number of channels; (detail control) <i>Broadband:</i> Ask the young and old people if they have broadband; (idea) Only use (young and) old people who have broadband; (detail of control) <i>Streaming services:</i> Ask about technology and streaming services; (idea) By using questions such as 'Do you have more than just terrestrial TV? Y/N'; (detail of how) <i>How well people can hear:</i> Send young and old people for a hearing test; (idea) To see whether it is volume or background noise that matters; (detail of how)	2
8(b)	Alf used opportunity sampling to obtain participants but would have preferred to use volunteer sampling.	
8(b)(i)	Outline what is meant by 'volunteer sampling'. 1 mark for outline Self-selecting (participants); 1 mark (generic) Choosing a group of people who <i>choose</i> to join the study = 1 mark (generic) participants who <i>respond to a request</i> to be in the study from the researcher = 1 mark (generic)	1

Question	Answer	Marks
8(b)(ii)	Suggest <u>one</u> way that Alf could have used volunteer sampling to obtain both old and young participants. 1 mark for one way to collect a volunteer sample 2nd mark if one way would give good access to both young and old people Putting an advert in a newspaper; 1st mark That is read by everyone in the locality; 2nd mark Putting an advert up at the local swimming baths; 1st mark That has sessions for young and old people; 2nd mark Stopping both young and old people as they leave a shop / surgery; 2nd mark (reverse credit) To give out cards asking them to join his study; 1st mark Using emails asking people to join his study; 1st mark using people aged 10–80 = 0 marks (this is the sample, not how to obtain volunteers) Ask (old and young) people he sees / people nearby = 0 [NAQ, opportunity sample]	2
8(c)	Explain the experimental design that Alf used. 1 mark for identification of independent measures 1 mark for explanation linked to Alf's study Independent measures / independent groups / between subjects; young and old people cannot be in the same group / he cannot wait for the young people to grow old (and retest them); young and old in two / different groups; 'Independent' = 0, 'individual measures' = 0	2

Question	Answer	Marks
9	Calle is planning a correlational study. He is measuring two variables: happiness and confidence. Calle's friend Violet is helping him to plan his questions. Calle has written two questions: • For happiness: Are you happy? Answer 1 for yes and 0 for no • For confidence: How certain do you feel that you will succeed when you begin a new task? 0 = not at all, 5 = very.	
9(a)	Violet says that the data Calle would get from his question on happiness would <u>not</u> be suitable to use in a correlation. Explain why Violet is correct. 1 mark for idea that correlational data must be on a scale It is only two points / not a scale / nominal data / categorical data / discrete data; Note that whether it is quantitative or qualitative data is irrelevant to this question = 0 marks [NAQ]	1
9(b)	Suggest <u>one</u> problem with the validity of Calle's question on confidence. 1 mark for partial explanation (can be generic) 2 marks for full and linked explanation Calle is not testing what he claims to be testing; (generic explanation) both happiness and confidence may also be linked to how likely someone is to succeed on a new task; (full and linked) because confidence not just about 'tasks'; (full and linked) because 'task' is vague, it would depend on what (exactly) it was participants had to do; e.g. I'd be confident doing a handstand but not baking a cake;	2
9(c)(i)	Calle changes his question for happiness and uses his original question for confidence. He finds a positive correlation. Draw a line to show the pattern of Calle's data, using the axes below. 1 mark for positive correlation (points or line of 'best fit') 	1

Question	Answer	Marks
9(c)(ii)	Explain why Calle <u>cannot</u> conclude that greater happiness leads to higher confidence. 1 mark per generic point of explanation 1 mark per link (must be one link for full marks) <i>Answer must be about:</i> absence of conclusion about <i>causality</i> or absence of conclusion about <i>direction</i> of causality Because a correlation (only shows a relationship and) cannot demonstrate causality; (generic) A positive correlation could be caused by either of the variables; (generic) It could be that greater confidence causes greater happiness; (linked = 2) Because a third factor could affect both variables; (generic) i.e., a third factor could affect both happiness and confidence; (linked = 2) for example having lots of friends could increase both happiness and confidence; (linked) for example being tired could decrease both happiness and confidence; (linked)	3

Question	Answer	Marks				
10	Sophie is planning a natural experiment to investigate the effects of closing a road on anger in drivers. One road into a town will be closed for three weeks and the traffic will have to take a longer route. Sophie wants to investigate whether having to take the longer route makes drivers angry.					
10(a)	Describe how Sophie can conduct a natural experiment to investigate whether having to take the longer route makes drivers angry. Three majors for a natural experiment are: a) IV – before and during road closure (clearly not under Sophie’s control, independent measures unless recontacting participants) b) DV – anger (e.g. heart rate, questions, beeping horn – focus is on data does not necessarily need technique details) c) location: near a road (e.g. car park, at home, at destination, e.g. work) The minors are: who: drivers (so adults only) how: controls (same time of day e.g. arriving at work) Other details for replication: sampling technique sample size ethical issues description of how data will analysed, e.g. use of averages / bar charts 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. • 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.	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 - situational / participant variables factors 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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L1	Level 1 in Q10a	L2	Level 2 in Q10a	L3	Level 3 in Q10a		

Question	Answer	Marks	Guidance
1	From the study by Pepperberg (parrot learning).		
1(a)	State the aim of this study. 1 mark for aim To test whether a parrot could understand / learn the concepts of ‘same’ and ‘different’; To test whether a parrot could understand / learn the concepts of shape / colour / matter;	1	DEFINITIVE
1(b)	Explain why it was necessary to present the parrot with questions in a random order. 1 mark for generic idea – of avoiding bias / order effects 1 mark for linked detail, e.g. type or consequences of order effects in this study. e.g. Alex may have given the wrong answer because he was bored at the end. If all one type of questions, e.g. ‘matter’, were at the end, he could do badly on these; e.g. questions were in a systematic order, e.g. all ‘shape’ questions together, he may have been more likely to guess correctly by chance / he would only have guessed a shape;	2	Accept ‘control’ for standardisation Accept increase validity

Question	Answer	Marks	Guidance
2	Explain the importance of the ethical guidelines of anaesthesia, analgesia and euthanasia in relation to the use of animals in research. 1 mark for each relevant point. Each point (e.g. ‘pain’ or ‘distress’) can only be used once. Max 2 for examples. They help to reduce animal suffering / make sure safe (are well treated); as analgesia reduces pain; e.g. after an operation; as anaesthesia reduces pain and distress; e.g. during an operation; as euthanasia prevents endurance of suffering / pain / distress; by killing the animal; e.g. if they have been injured in a fight with another animal / by an experimental procedure; it makes the study more ethical = 0 [REP]	3	A full mark answer could cover one, two or three aspects of the guideline. If two marks for examples they must offer detail.

Question	Answer	Marks	Guidance
3	Participants in the study by Laney et al. (false memory) completed a ‘Restaurant Questionnaire’, which was formatted to look like a menu.		
3(a)	Describe the Restaurant Questionnaire. 1 mark for each descriptive point Had five categories; e.g. appetizers, soups and salads, entrees, sides, desserts; (any two) Assessed the desire to eat different dishes; 32 different dishes; Based on imagining they were ‘out for a special meal’; Asked to rate how likely they were to order each item (regardless of price); 1 = ‘definitely no’, ‘8’ = definitely yes’ (circled);	2	Looked like a menu = 0 [REP] Asparagus was just one of the 32 <u>choices to order</u> They were NOT asked if they <u>liked</u> asparagus on this questionnaire
3(b)	Explain why it was important that the Restaurant Questionnaire looked like a menu. 1 mark for explanation 1 mark for link To make it more realistic / to increase mundane realism; (generic) To distract the participants from the aim / to reduce demand characteristics; (generic) So that they were less likely to spot that the study was really about memory; (link) So the participants did not know that the asparagus information was critical / notice the sautéed asparagus spears; (link)	2	Accept ‘to increase ecological validity’

Question	Answer	Marks	Guidance
4	The study by Yamamoto et al. (chimpanzee helping) used a repeated measures experimental design.		
4(a)	Outline what is meant by a ‘repeated measures design’. Include an example from the study by Yamamoto et al. in your answer. 1 mark outline 1 mark link This is where all participants do all/both levels/conditions of the independent variable; (outline) In Yamamoto et al. each chimp did both the ‘can see’ and ‘cannot see’ condition; (link)	2	
4(b)	Explain <u>one</u> advantage of using a repeated measures design for this study, compared to using an independent measures design. 1 mark explanation 1 mark link Yamamoto et al. had young and old chimps, and age might affect helpfulness; (link) so if they were in different groups, this would affect the DV; (explanation) Individual differences can confound an independent measures design; (generic explanation) e.g. if some chimps may be more helpful than others; (link)	2	Comparison can be implicit

Question	Answer	Marks	Guidance
5	In a study that measured two variables, a relationship between the variables was found. As one variable increased, the other decreased.		
5(a)	Name this relationship. 1 mark for 'negative correlation' (accept 'inverse correlation') Positive correlation = 0 (for correlation) 'Negative' = 0 'Negative relationship' = 0 A relationship = 0 A link = 0 A causal / non-causal relationship = 0 (NAQ)	1	
5(b)	Suggest <u>two</u> variables, from any core study, that show this relationship. 1 mark for both variables from a correlation in a core study (ignore direction of correlation) Baron Cohen (inverse / negative correlation between) AQ and eyes test score (in male HFA/AS); Canli et al. (negative correlation -0.66) intensity ratings and normative valence ; Any experimental variables = 0 (NAQ) Dement and Kleitman = 0 Piliavin 'amount of helping' = 0 Piliavin et al. negative correlation <u>EXPECTED</u> between number of bystanders and latency to help = 1 Piliavin et al. negative correlation between latency to help and receiving help less = 1 Canli et al. negative correlation between increase in emotional intensity and number of pictures forgotten = 1	1	'negative relationship' = 0 Dement & Kleitman (<i>positive</i> correlation) duration of time in REM and number of words in / length of dream narrative = 0 Canli et al found a <i>positive</i> correlation between intensity ratings and arousal Piliavin et al. <i>positive</i> correlation <u>FOUND</u> between number of bystanders and latency to help = 0

Question	Answer	Marks	Guidance
6	Describe natural experiments and naturalistic observations, using any examples. Definitions / detail: up to a maximum of 4 marks for each method. (So 4 marks max if only 1 method) Examples: maximum of 2 marks for each method. Examples can include ones from any studies (core studies, other studies, candidate's own studies). Natural experiment: IV which occurs spontaneously and a measured DV; (definition) the researcher has to use existing differences in variables rather than deliberately changing them; (detail) e.g. instead of Bandura et al. manipulating aggressive stooge, could compare children in violent and in non-violent settings; e.g. instead of Piliavin et al. using the 'victims', they could have waited for situations needing help on the subway; Naturalistic observation: participants are observed without interference from researchers / no variables are manipulated; (definition) and no controls; (detail) setting is normal / like normal for the behaviour being observed; (detail) e.g. if children's aggression was observed during school playtime; (detail) e.g. in Dement & Kleitman participants' eye movements initially observed without interrupting dreaming;	6	Only 1 example is needed to access full 6 marks. Allow evaluative points, e.g.: natural experiments more ethical (than lab / field) as no interference with participants' existence natural experiments less ethical as participants unlikely to know they are in a study Natural experiment done in the natural environment / real world = 0

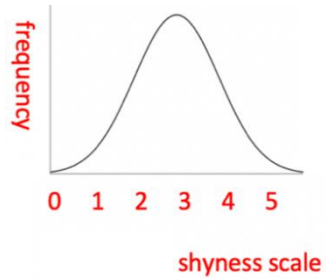
Question	Answer	Marks	Guidance
7	James is conducting an interview to investigate topics that could influence anger and euphoria. He has already written his questions about anger. James needs to write questions which cover three topics that could increase euphoria. These topics are: • sports or games • films or music • the natural world (e.g. animals and plants, being outside or good weather).		
7(a)	Suggest <u>one</u> closed question and <u>one</u> open question that James could use to investigate <u>one</u> of his three topics about euphoria. Do <u>not</u> use a rating scale in your answer. 2 marks for closed question: 1 mark for question and 1 mark for answer options 1 mark for open question <i>e.g. sports or games:</i> <i>Closed:</i> Does playing football make you euphoric?; (question) Yes / no; (answer options) <i>Open:</i> When you are playing a game, explain what emotions you experience; <i>e.g. natural world:</i> <i>Closed:</i> Choose how euphoric you are when you are outdoors; (question) Bored / normal / euphoric / confused / scared; (answer options) <i>Open:</i> Why does patting an animal make you happy?;	3	

Question	Answer	Marks	Guidance
7(b)	James has chosen to conduct a semi-structured interview. Explain <u>two</u> strengths of a semi-structured interview. 1 mark for strength + 1 mark for detail (can be a link to James's study but does not have to be) x2 Many questions are consistent between participants, making the data reliable / the study replicable; (strength) So James is sure that each participant's data will be comparable to other participants; (detail, generic) Many questions are consistent between participants, making the study replicable; (strength) So researchers other than James could repeat his study and use the same questions on anger / euphoria; (detail, linked) James can ask each participant both fixed and new/different questions, so they are tailored to individuals; (strength) So he can explore the particular sports / films / music / aspects of nature that make different people happy; (detail, generic)	4	Accept two strengths in one answer space. Many questions are consistent between participants = 0 (description) James can ask each participant both fixed and new/different questions = 0 (description)

Question	Answer	Marks	Guidance
7(c)	James was planning to use opportunity sampling to obtain participants from his university but has decided random sampling would be better.		
7(c)(i)	Explain how James could use random sampling to obtain participants from his university. 1 mark for explanation 1 mark for link (a) Start with a numbered list of everyone in the population (ALL), (b) select the sample using a random number; (how) (a) Start with a numbered list of students (and staff) at the university, (b) select the sample using a random number; (how) (a) Give the whole population numbers, (b) put them in a hat and choose numbers without looking, to select people; (how) (a) Give all the university students numbers, (b) put them in a hat and choose numbers without looking, to select people; (how) Make sure that all of the population have an equal chance of being chosen = 0 [not explaining how or linking]	2	2 components: (a) acquiring potential participants and (b) selecting sample. Marks: a or b but no link = 0 a or b plus link = 1 a plus b no link = 1 a and b plus link = 2
7(c)(ii)	Explain <u>one</u> advantage for James of using random sampling compared to using opportunity sampling. 1 mark for advantage 1 mark for link it is likely to be representative / more generalisable / is not biased; (advantage) so there are likely to be people with a range of levels of anger / euphoria; (link) so there will be people with different interests in sports / films / nature that could affect anger / euphoria; (link)	2	Comparison can be implicit

Question	Answer	Marks	Guidance
8	Olive and Durnaz are planning a questionnaire to use in their study, which aims to investigate forgetting in old people.		
8(a)	Olive thinks that they should include some irrelevant questions so that the participants are less likely to guess the aim of the study. Durnaz thinks this is unethical.		
8(a)(i)	Explain why Olive’s plan to include irrelevant questions would be useful. 1 mark for (explanation / term ‘demand characteristics’) 1 mark for linked detail To reduce demand characteristics; (term) So that they will not try harder than normal to remember; (explanation or detail) To stop them from changing their behaviour and hiding problems with forgetting due to age; (explanation or detail) To reduce social desirability = 0	2	
8(a)(ii)	Explain why Durnaz thinks that Olive’s plan would be unethical. 1 mark for explanation 1 mark for identifying ethical guideline: protection from harm / deception / privacy / informed consent / debriefing. 0 marks: confidentiality / right to withdraw 1 mark for linked detail The old people would believe all the questions were part of the study; (detail) So it would mean they couldn’t give fully informed consent / were being deceived; (guideline) It might break the guideline of protection from harm; (guideline) If doing extra questions might make the old people tired or distressed;	2	Allow deception because there are irrelevant questions so misleading the participants Accept protection from harm because old people might be upset if they forget a lot

Question	Answer	Marks	Guidance
8(b)	Olive and Durnaz want to be able to generalisable their findings to all old people.		
8(b)(i)	Suggest <u>one</u> variable that could affect memory in old people, other than age. 1 mark for relevant variable. Whether they live alone; How active they are; Medication;	1	Accept memory disorders Gender Mental health There will be a wide variety of <i>relevant</i> answers
8(b)(ii)	Explain why the variable you suggested in (b)(i) could affect memory in old people. 1 mark for explanation 1 mark for detail <i>Whether they live alone:</i> People who live alone have to remember more for themselves; (explanation) making their memory better (through practice); (detail) People who live alone have to remember more for themselves; (explanation) so their memory in the test may be worse (fatigue); (detail) People who live alone may have worse memories as they don't have the chance to talk to other people; (explanation) And talking to people may help younger people to keep their memories busy; (detail) <i>How active they are:</i> Active old people will use their memories more; (explanation) e.g. to remember bus times; (detail) <i>Medication:</i> May have a side effect on memory; May make them more sleepy / sleep deprived, so memory is impaired;	2	Gender: men's memory declines more than women's in old age

Question	Answer	Marks	Guidance
9	Gagan has collected data about personality characteristics. Two of the questions he asked were: • Personality question: Which word best describes your personality? Angry / Confident / Kind / Worried. • Shyness question: How shy do you feel in new situations on a scale of 0–5? (0 = not at all, 5 = very).		
9(a)	Name the <u>most</u> appropriate measure of central tendency to use with the data from each question. 1 mark for each correct measure of central tendency Personality: mode Shyness: median (accept the mean).	2	
9(b)	Name the <u>most</u> appropriate type of graph for Gagan to use to display the results from the ‘personality question’. 1 mark for bar chart / bar graph (definitive)	1	Accept pie chart
9(c)	When Gagan analyses the data from the ‘shyness question’, he finds that the scores are normally distributed. Sketch a graph using the axes below to show the pattern of Gagan’s data for the ‘shyness question’. You <u>must</u> label the axes. 1 mark; y-axis label ‘frequency’ / number of responses’ / people / participants 1 mark: x-axis label (score on) ‘shyness’ (scale) 1 mark: x-axis scale (0–5) 1 mark: symmetrical normal distribution shape (accept as a line, bars or points) Must be a bell shape for full 3 marks 	3	

Question	Answer	Marks	Guidance
10	Sara wants to test whether people with a higher intelligence quotient (IQ) are better at concentrating. She will conduct a laboratory experiment and already has a test for measuring the IQ of the participants.		
10(a)	Describe how Sara can conduct a laboratory experiment to test whether people with a higher IQ are better at concentrating than people with a lower IQ. Three majors for a laboratory experiment are: a) IV: intelligence (operationalisation: how to use scores from the IQ test to make two groups) b) DV: attention (operationalisation: scoring) c) controls (e.g. limiting distractions, other factors that could affect attention / performance on IQ test) The minors are: • where – location of participants when data is collected (i.e. lab) • who – participants Other details for replication: • 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	Accept 'high' and 'low' IQ

Question	Answer	Marks	Guidance
10(a)	Mark according to the levels of response criteria below:		
		Additional guidance	
	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.	10 marks is reserved for: - Response includes what, how, how: all three named elements with sufficient detail of each (e.g. operationalisation, description) for replication - Some reference to ethical guidelines For 8 marks: - Response includes what, how, how: all three named elements with sufficient detail of each (e.g. operationalisation, description) for replication. - Some reference to ethical issues	
	Level 2 (5–7 marks) - Response is in some detail. - Response has minor omission(s). - Use of psychological terminology is accurate.	For 5–7 marks: Response includes all three major elements but may lack some details making it difficult to replicate	
	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.	If the study described is not an experiment, max 4	
Level 0 (0 marks) No response worthy of credit.			

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Question	Answer	Marks	Guidance
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 • situational / participant variables factors Reliability • inter-rater consistency • intra-rater consistency This list is not exhaustive and other appropriate responses should also be credited.	4	Note, the change must be a change to ‘the procedure you have described’, it cannot be a different method (e.g. case study) but it could be a different sort of experiment (e.g. lab or field)

Question	Answer			Marks	Guidance
10(b)	marks	comment	Additional guidance		
	3-4	Appropriate problem identified. Appropriate solution is clearly described.	4 marks: specific problem and specific solution 3 marks: generic problem specific solution or specific problem generic solution		
	2	Appropriate problem identified. <i>plus</i> EITHER Explanation of why it is a problem OR Ineffectual but possible solution described.	Appropriate problem (directly related to a specific aspect of suggested procedure) identified, no solution. OR Generic problem with weak / generic solution.		
	1	Appropriate problem identified. Little or no justification.	Specific or generic problem identified (e.g. even when they suggest a 'problem' that is nothing to do with the study they have designed)		
	0	No response worthy of credit			



Cambridge International AS & A Level

PSYCHOLOGY

9990/23

Paper 2 Research Methods

October/November 2023

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 2023 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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.

**Social Science-Specific Marking Principles
(for point-based marking)****1 Components using point-based marking:**

- Point marking is often used to reward knowledge, understanding and application of skills. We give credit where the candidate's answer shows relevant knowledge, understanding and application of skills in answering the question. We do not give credit where the answer shows confusion.

From this it follows that we:

- a** DO credit answers which are worded differently from the mark scheme if they clearly convey the same meaning (unless the mark scheme requires a specific term)
- b** DO credit alternative answers/examples which are not written in the mark scheme if they are correct
- c** DO credit answers where candidates give more than one correct answer in one prompt/numbered/scaffolded space where extended writing is required rather than list-type answers. For example, questions that require *n* reasons (e.g. State two reasons ...).
- d** DO NOT credit answers simply for using a 'key term' unless that is all that is required. (Check for evidence it is understood and not used wrongly.)
- e** DO NOT credit answers which are obviously self-contradicting or trying to cover all possibilities
- f** DO NOT give further credit for what is effectively repetition of a correct point already credited unless the language itself is being tested. This applies equally to 'mirror statements' (i.e. polluted/not polluted).
- g** DO NOT require spellings to be correct, unless this is part of the test. However spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. Corrasion/Corrosion)

2 Presentation of mark scheme:

- Slashes (/) or the word 'or' separate alternative ways of making the same point.
- Semi colons (;) bullet points (•) or figures in brackets (1) separate different points.
- Content in the answer column in brackets is for examiner information/context to clarify the marking but is not required to earn the mark (except Accounting syllabuses where they indicate negative numbers).

3 Annotation:

- For point marking, ticks can be used to indicate correct answers and crosses can be used to indicate wrong answers. There is no direct relationship between ticks and marks. Ticks have no defined meaning for levels of response marking.
- For levels of response marking, the level awarded should be annotated on the script.
- Other annotations will be used by examiners as agreed during standardisation, and the meaning will be understood by all examiners who marked that paper.

IMPORTANT NOTICE

Guide to marking annotations

BOD	benefit of doubt		correct point (do not use more than one tick per mark)		incorrect point		Each point of description for a major
NBOD	no benefit of doubt	G	indicates a point is a Generic mark (for 'in this study' Qs)	CONT	continued (Note: use 'link' icon)		
IRRL	irrelevant	?	Unclear point	NAQ	not answering question		
REP	repetition (of stem or within response)		wiggly underline e.g. use to bring attention to a key part				Award when description of a major is in <i>detail</i> (see MS)
E	ethical point in Q 10a		'something is missing'	SEEN	To say you have seen blank pages		
L1	Level 1 in Q10a	L2	Level 2 in Q10a	L3	Level 3 in Q10a		

Question	Answer	Marks
1	A matched pairs design is an experimental design that can be used in studies comparing two conditions, or levels, of an independent variable.	
1(a)	Explain what is meant by a ‘matched pairs design’. 1 mark for full explanation Participants are arranged (accept ‘matched / ‘put into pairs’) so that two similar individuals (with shared characteristics important to the study) go into different conditions /levels of the IV; (Accept: one of each matched pair goes into each condition);	1
1(b)	Explain <u>one</u> advantage of using a matched pairs design compared to using a repeated measures design. 1 mark for advantage 1 mark for detail It reduces the risk of order/fatigue/practice effects; As in repeated measures they are tested twice so might get worse (or better); It reduces the risk of demand characteristics / participants are less likely to guess the aim (of the study); participants only see one condition / only participate in one level of the IV / (accept: they only do the experiment once);	2

Question	Answer	Marks
2	A range can be calculated when numerical scores are collected from participants in a study.	
2(a)	Define the term ‘range’. 1 mark for definition How spread out / widely distributed / dispersed the scores are;	1
2(b)	Describe how the range of ‘hours spent asleep’ could have been calculated in the study by Dement and Kleitman (sleep and dreams). 1st mark for description of how 2nd mark for relating this to hours of sleep Take the smallest score from the largest score / the difference between the smallest and largest values = 1 Take the smallest score from the largest score and add one = 1 Take the shortest number of hours slept from the longest number of hours = 2 Take the difference between the shortest number of hours slept and the longest = 2 Take the shortest number of hours slept from the longest (and add one) = 2	2

Question	Answer	Marks
3	The reliability of a study is affected by the measures (scales or tasks) chosen by the researcher and the way that these are used when conducting the study.	
3(a)	One way to check reliability is the test-retest technique. Describe how this technique checks reliability. 1 mark for description of what test-retest is + 1 mark for detail 1 mark for description of what test-retest shows The test-retest technique compares two sets of data; (what test-retest is) e.g. by the same researchers / using the same measures, / with the same (or a similar) group of people; (detail) if the first and second sets of data are the same, the measure is reliable; (what it shows) if people get similar / the same scores each time, the measure has test-retest reliability; (what it shows) inter-rater reliability = 0 (NAQ)	3
3(b)	Another type of reliability is inter-rater reliability. Explain how the inter-rater reliability of studies can be improved. 1 mark for partial explanation + 1 mark for detail For full 2 marks the response must improve reliability Raters can be given operational definitions / instructions to help them to agree; (explanation) Raters can be asked to work together / view the same (videoed) behaviour / responses; (explanation) And do this until they produce the same records (from the same raw data / interview transcript / video); (improvement)	2

Question	Answer	Marks
4	In each of the core studies, the researchers report their conclusions.	
4(a)	Explain what is meant by the term ‘conclusions’, using an example from a core study from the social approach. 1 mark for explanation 1 mark for social core study example e.g. conclusions are the generalisations that can be made from the results of a study; (definition) e.g. a generalisations from Piliavin et al. is that people are more likely to help same-race victims; (link) e.g. the outcome of accepting a hypothesis, such as whether differences or correlation exists; (definition) e.g. Milgram concluded that the Germans weren’t different in terms of obedience; (link)	2
4(b)	In the study by Baron-Cohen et al. (eyes test), two main conclusions were drawn. Outline <u>one</u> of these conclusions. 1 mark for a conclusion There is a sex difference in autistic traits / females are better than males at detecting emotion in eyes; People with AS/HFA / autistic spectrum disorders have an underdeveloped theory of mind / do not identify emotions well;	1

Question	Answer	Marks
5	In the study by Saavedra and Silverman (button phobia), a boy was repeatedly asked to use the Feelings Thermometer. Other questions investigated his phobia further and showed that he disliked buttons touching his body. Explain the type of interview used in this study. 1 mark for identifying semi-structured interview 1 mark for explanation of what made the interview semi-structured semi-structured interview (accept: an interview with structured and unstructured parts); because there were some standardised questions and some flexible ones (accept: questions were repeated or different);	2

Question	Answer	Marks
6	Describe the ethical guidelines of ‘housing’ and ‘rewards’ in relation to animals, using any examples. Definitions/detail: up to a maximum of 4 marks for each guideline. Examples: maximum of 2 marks for each guideline. Examples can include ones from any studies (core studies, other studies, candidate’s own studies). Housing: Good housing should avoid pain/distress for the animals; by providing for essential needs for species / age / sex / reproductive stage / activity level; e.g. warmth/cover; (suitable) food/water; nest sites to feel safe; sufficient space for exercise/‘roaming’; So that social animals have company (and are not distressed by being alone / isolated); So that solitary animals do not experience trauma from not being able to get away from other individuals; So that there is no overcrowding which could cause aggression; by not cleaning too frequently (change of smell could be upsetting); by not locating animals where they could become distressed e.g. near natural predators; e.g. Yamamoto et al. housed the chimpanzees, which are social animals, in groups; e.g. Pepperberg allowed the parrot space to fly in the laboratory; Rewards: Use positive experiences (to change behaviour); rather than punishment; to reduce pain/distress for animals; e.g. Pepperberg gave the parrot the object as a reward during testing; e.g. Pepperberg praised the parrot as a reward during testing;	6

Question	Answer	Marks
7	Dr Casson conducted a field experiment to compare the emotions that people show when they respond to shop assistants who are either wearing a uniform or casual clothes. She asked the assistants at her local shop to wear a uniform on Saturdays and wear casual clothes on Sundays.	
7(a)	Explain why Dr Casson's study was a field experiment. 1 mark for 'experiment' 1 mark for setting Plus 1 mark for further detail of setting or for controls (generic or linked) There must be at least one link for full three marks It is an 'experiment' i.e. has an IV (of clothing: uniform or casual) and a DV; The IV is manipulated by the experimenter (generic detail) IV is clothing / uniform or casual; (linked detail) The DV is measured by the experimenter (generic detail) DV is emotions (of shoppers); (linked detail) The setting is the normal location for the behaviour being studied; (generic) we normally respond socially to people in shops; (linked detail) Some controls are possible; (generic) These help to ensure only the IV causes changes in the DV; (generic detail) Other factors such as what the shop assistants wore was controlled; (linked detail)	3
7(b)(i)	Suggest how Dr Casson could have measured the dependent variable in her study. 1 mark for identifying DV what will be measured 1 mark for suggestion for how to measure (the DV is) the people's emotional behaviour / expression; (what) Could be measured (by observing) as whether they respond with a smile or not / how much they buy / fill in a form saying how they felt towards the shop assistant; (how) By observing) frowning; (what) How often / number of; (how)	2

Question	Answer	Marks
7(b)(ii)	Suggest <u>one</u> reason why it may be more difficult to measure the dependent variable in a field experiment than in a laboratory experiment. 1 mark for reason 1 mark for detail (response does not have to link to Dr Casson's study but this could be detail) It would be obvious to use scales/tests/questionnaires; (reason) Which could make the data less valid; (detail – generic) people would think it was strange to be interviewed on their emotions towards shop assistants in a lab; (detail – linked) It wouldn't be 'normal for the situation' to introduce researcher-based testing; (reason) participants might alter their behaviour (so become more socially desirable) if they knew they were in a study; (detail) It would make the aim of the study obvious to use; (reason) Must rely on existing ways to measure the DV / measuring the DV by observation / through untrained observes; (reason) Which could make the data less reliable; (detail- generic) E.g. it might be hard to record the participants emotional responses correctly; (detail – linked) Controls are irrelevant (NAQ)	2

Question	Answer	Marks
8	Keung and Jovita are planning a correlational study to investigate the relationship between a person's physical activity level and their attention level. They each make a different prediction about their results.	
8(a)	Suggest how Keung and Jovita could measure the physical activity level of their participants. 1 mark for suggestion of measure (not just technique) how many steps a person takes in a day (recorded using a Fitbit / app on their phone); how many hours the person spends out of bed per day;	1
8(b)	Write a null hypothesis for Keung and Jovita's correlational study. 1 mark for a null hypothesis There will be no correlation/relationship/link between activity level and attention; Any correlation/relationship/link between activity level and attention is due to chance;	1

Question	Answer	Marks
8(c)	Keung predicted that there would be a positive correlation and Jovita predicted that there would be a negative correlation. Their results show that a higher physical activity level is related to a lower attention level. Explain whether Keung or Jovita's prediction was correct. 1 mark for generic explanation of negative correlation 2 marks for link to study Jovita (was correct) = 0 A negative correlation is where one variable goes up the other goes down = 1 (Jovita was correct because) activity goes up as anxiety goes down = 1 Jovita suggested a negative correlation, which is where as one variable goes up, the other goes down. In this case as activity goes up, attention goes down = 2	2
8(d)	Keung and Jovita plot a scatter diagram of their results. Explain how they can see the strength of the correlation from their scatter diagram. 1 mark for generic explanation of how to interpret correlational strength from a scatter diagram 1 mark for link how close the points are to the line shows strength of a correlation; (explanation only) if the points are close to the line the correlation is strong; (explanation only) the points represent the score for physical and attention level (for each participant) = 1 (link) if physical activity level is strongly related to attention level the points would be close to the line; (explanation and link)	2

Question	Answer	Marks
8(e)	Keung and Jovita’s friend says that their results show that the difference in physical activity level is affecting attention level. Explain why they <u>cannot</u> draw this conclusion from their research. 1 mark for the generic explanation that correlations cannot show causality 1 mark for link (an illustration/explanation of why this cannot apply in this case) Correlations cannot judge causality (because they do not manipulate variables); (generic explanation) They wouldn’t know whether activity level was changing attention, vice versa, or both changed due to something else; (link) Correlations do not demonstrate cause and effect relationships; (generic explanation) Activity and attention could both change because of a third variable; (link) Only experiments, not correlations, can investigate causality; (generic explanation) Old age might make both activity and attention levels change; (link)	2

Question	Answer	Marks
9	Dr Wilson is conducting an experiment on memory for complex, coloured shapes. He is using students for his sample. Dr Wilson intends to generalise his results widely, to understand how well internet-users remember visual stimuli.	
9(a)	Suggest how <u>one</u> extraneous variable could affect Dr Wilson's study. 1 mark identification of extraneous variable 1 mark for effect on study (linked) (situational variable of) participant's access to the internet; (extraneous variable) If they are unfamiliar with the internet they might be distracted (by the colours / so not remember well); (linked effect) (participant variable of) colour blindness; (extraneous variable) (colour blind participants' results invalid as) it would be harder for them to see/recall the shapes' colours; (linked effect) How good the participant's memory is / their age (students are younger) / gender; (extraneous variable) Older people might be more forgetful; (linked effect) What the students are studying; (extraneous variable) Art students would be better than other students as they are good at colours and shapes; (linked effect) Weather / temperature / noise; (extraneous variable) Noises might distract participants from the task so they remember less; (linked effect)	2
9(b)(i)	Dr Wilson is using a volunteer sample of students from his university. Suggest how he could recruit his sample. 1 mark for volunteer sampling process 1 mark for detail He could put up adverts (asking for participants); (volunteer sampling) Around the university / in the students' residences; (detail) He could invite students during his lectures to contact him by email if they want to volunteer; (volunteer sampling) So that they would have to reply to him to become a participant; (detail) Asking students to (volunteer to) participate after lectures = 0 [opportunity sampling] (Dr Wilson) using all his students = 0 [opportunity sampling]	2

Question	Answer	Marks
9(b)(ii)	Suggest <u>one</u> advantage of using a volunteer sample compared to an opportunity sample. 1 mark for advantage of volunteer sample 1 mark for detail (comparison can be implicit or explicit) Volunteers come to the researcher; (advantage) Whereas in opportunity sampling the researcher has to go and find them / so is quicker; (comparison) Volunteers more willing (as have <i>chosen</i> to participate) than participants found by opportunity; (comparative advantage) Which is good because the study takes a long time; (detail) Volunteers have more time (on average than the general population) than those found by opportunity; (comparative ad) So are more likely to be able to stay for the whole of (the long) study / are less likely to drop out; (detail)	2
9(b)(iii)	Suggest <u>one</u> disadvantage of using a volunteer sample compared to an opportunity sample. 1 mark for disadvantage of volunteer sample 1 mark for detail (comparison can be implicit or explicit) It is slower; (disadvantage) There may be not replies to adverts whereas there may be people on the street; (comparison) Volunteers may be similar to each other; (disadvantage) Volunteers generally better educated than participants found by opportunity; (comparative disadvantage) problematic because they may (have more/less engagement with the internet so) be less representative; (detail) Volunteers have more time (on average) than those found by opportunity; (comparative disadvantage) So may be more exposed to colours e.g. if they do painting / art classes; (detail)	2
9(c)	One reason why Dr Wilson cannot generalise the results from his study is his sampling technique. State <u>one</u> reason why he should <u>not</u> generalise the results from his students to all internet users, other than his sampling technique. 1 mark for reason why generalisation should not be made from students to all internet users Students younger so more able to use the internet (than average / than older users); Students need to do research for their studies so use the internet a lot / have more practice;	1

Question	Answer	Marks
10	Dr Birkin is planning an observational study of children's imaginary play behaviour (for example, a child might use a leaf as a plate, or a big cardboard box as a boat or a house).	
10(a)	Describe how Dr Birkin could conduct an observational study of children to investigate their imaginary play behaviour. Three majors for an observational are: (a) behaviours recorded (e.g. definition / operationalisation of behavioural categories / qualitative obs / objects) (b) observation – participant / non-participant – naturalistic / controlled – structured / unstructured – covert / overt (c) observation: – more details – participant / non-participant – naturalistic / controlled – structured / unstructured – covert / overt The minors are: where – location of participants when data is collected (e.g. <i>university playroom / nursery / homes</i>) who – participants (<i>young children</i>) Other details for replication: • sampling technique • sample size • description of how data will analysed, e.g. use of measures of central tendency and spread, bar charts • ethical issues	10

Question	Answer	Marks				
10(a)	Other appropriate responses should also be credited. 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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Level 0 (0 marks) No response worthy of credit.						

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 - situational / participant variables factors 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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