

Cambridge International AS & A Level

PSYCHOLOGY**9990/21**

Paper 2 Research Methods

May/June 2024**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 May/June 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This document consists of **24** printed pages.

PUBLISHED**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 descriptions 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.

PUBLISHED**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.

PUBLISHED**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.

Guide to marking annotations

	benefit of doubt		correct point [use one tick per mark except in last question part (a)]		incorrect point	 	use for each point of description of a required feature in part (a) of last Q
	no benefit of doubt		indicates a point is a Generic Mark		continued (use 'link' icon)	 	
	'something is missing'		unclear point		not answering question		
	repetition (of stem / within response)	 	use wiggly underline / highlighter to bring attention to a key part	 	underline letter-tick when required feature is in enough detail	    	use to show Level 1, 2, 3, 4 or 5 in part (a) of last Q
SEEN	acknowledge blank pages						

Important marking guidelines for reference

NR or zero	Award No Response (NR): - if there is nothing written at all in the answer space - if there is any comment unrelated to the question being asked (e.g. 'can't do', 'don't know') - if there is any sort of mark which isn't an attempt at the question (e.g. a dash, a question mark). - Note: you can press the # or / key to enter NR Award Zero (0): - if there is any attempt that earns no credit, eg the candidate copying all or some of the question, or any working that does not earn any marks, whether crossed out or not.
Crossed out work	Please note that if a candidate crosses out a question and does not re-attempt the same question, you must attempt to mark the crossed out work.
Annotate every question	Please place a marking icon on every question and to indicate each mark awarded (number of ticks = number of marks on all questions except part (a) of the last question). However, you do not need to put 'seen' on NR spaces.

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Question	Answer	Marks	Guidance
1(a)	Identify the sampling technique used in the study by Milgram (obedience). Volunteer sampling = 1 [definitive] Self-selecting sampling = 1	1	Do not accept general description: 'the Ps were selected / sampled by replying to an advert' = 0
1(b)	Outline how the sample was obtained in this study. advertisement; (description) in newspaper; (detail) in New Haven; (detail) aged 20–50; (detail) asking for men / a range of occupations; (detail) by direct mail; (description / detail) Payment / Incentive; (detail) Asking for people for a study on memory / learning / punishment; (detail)	2	Description of sampling = 1 (definitive: advert / direct mail) Detail = 1 (can award this mark independently of the description mark, but max 1) Accept: 'white and blue collar workers'

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Question	Answer	Marks	Guidance
2	Explain what is meant by the ethical guideline of ‘species’ in relation to animals in psychological research. use the species that will suffer the least; (explanation) e.g. sentient animals will suffer more; (detail) use a species that will fulfil the aim of the research; (explanation or detail) e.g. one like us that was social / had colour vision / is clever; (detail) use mice as they suffer less than chimps; (detail) Use species that are not endangered = 1 (max) (explanation only) Bred in captivity = 0 = NAQ [this is about the particular individuals not the species] Humanely treated = 0	2	explanation = 1 detail = 1 Just saying ‘Species should be protected from harm’ is NAQ

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Question	Answer	Marks	Guidance
3	Dement and Kleitman (sleep and dreams) asked participants to record their dream narratives. The words in each narrative were counted.		
3(a)	Identify the type of data provided by counting the words in the narratives. Justify your answer. Quantitative; because it was the number of words/was numerical / how many ...; (justification)	2	type of data (quantitative) = 1 [definitive] justification = 1 (does not have to be linked) Ignore discrete / categorical = 0 = incorrect Accept ordinal/interval/ratio
3(b)	Explain <u>one</u> strength of collecting this type of data in this study. can be analysed / compared; (explanation) can use statistics/graphs; (explanation) e.g. compare number of words in REM and nREM; (link) objective / does not need interpretation / free of bias; (explanation) dream 'detail' less reliable to estimate; (link) numerical is reliable; (explanation) researchers are unlikely to make mistakes counting words; (link)s	2	explanation = 1 link = 1 factual / accurate = 0 measurable = 0 needs 'because' or 'than'

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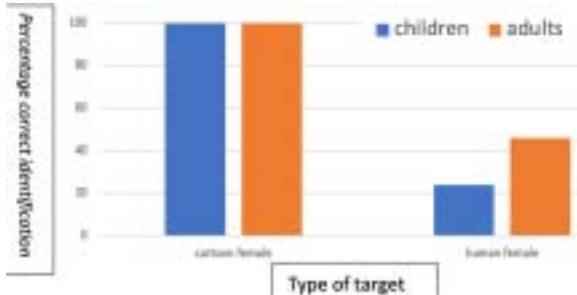
Question	Answer	Marks	Guidance
4	Glyn is conducting an experiment with an independent measures design. He is testing the effect of background noise on social learning (learning by imitation). Glyn shows each participant how to build a tower from blocks. Each participant then builds this tower, with either singing or silence in the background.		
4(a)	Explain what is meant by an ‘independent measures design’, including an example from Glyn’s study. Different participants / people / groups in each level of the IV / condition; (explanation) Because participants do not do both conditions; (explanation) BOD i.e. either singing or silence (but not both); (example) There are two conditions Silence and Singing; (example) Participants perform in either kind of background / sound condition / in singing or silence (but not both); (explanation + example)	2	Explanation = 1 Do NOT allow ‘different conditions’ HERE [could be repeated measures] must be participants / people / groups Example = 1 [can use ‘different conditions’ here] [Do not award independently of 1st mark] Just saying ‘Not repeated measures’ = 0
4(b)	Explain what is meant by a ‘control condition’, including an example from Glyn’s study. Level of the IV / condition in an experiment from which the IV itself is absent; (explanation) The silence condition; (example)	2	Explanation = 1 Example = 1 [this mark can be awarded separately] Do not accept ‘placebo’ / ‘placebo condition’ Do not accept ‘to compare’ alone, this could just be two experimental conditions)

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Question	Answer	Marks	Guidance
4(c)	Suggest how Glyn could measure social learning (learning by imitation) in his study. By observation = 1 (basic suggestion) Being able to build the tower/ to imitate Glyn's tower = 1 (basic suggestion) Whether the tower is the same as Glyn's = 2 (detailed suggestion) Whether the tower falls down = 2 (detailed suggestion) Timing them = 1 (basic suggestion) Timing how long it takes to build the tower = 2 (detailed suggestion) Count the blocks used = 1 (basic suggestion) How many blocks are accurate / the same as Glyn's = 2 (detailed suggestion) Sing (the same as Glyn) / how loud the singing is = 0 How well they imitated Glyn = 0 [REP] Needs to elaborate on 'how well' 'accuracy' in this context (of imitation) is fine – just not elsewhere in place of terms like 'valid' or 'reliable'. Whether the tower is like Glyn's = 1	2	Basic suggestion = 1 mark Detailed suggestion = 2 marks (must have link for 2 marks) Note: a basic linked suggestion is not enough for 2 marks

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Question	Answer	Marks	Guidance
5	In the study by Pozzulo et al. (line-ups), children were interviewed.		
5(a)	Explain why it was necessary to gain consent from both the children and the children's parents / guardians. Consent is agreeing to participate; (explanation) Having enough information to decide for their child; (explanation / parent) Parental consent as children may not understand; (parent) Children are not fully able to give informed consent / children may not understand enough; Child consent necessary as they have feelings too; Allow any advantage of gaining consent applicable to adults / children	3	Explanation of informed consent = 1 Why from parents = 1 Why from children = 1
5(b)	To test correct identification of the cartoon characters, many 'foils' were needed that were similar to the target cartoons. Explain <u>one</u> way in which the foils needed to be similar to the targets. <i>Similarities from the paper:</i> • facial structure • hair length (allow 'style') • hair colour • clothes • colours / black and white <i>Also:</i> • sex (also accept 'gender')	1	Explanation = 1 (Only need to identify similarity) Accept 'same size' Do not accept 'race' / 'ethnic group' (Latino / Latina form a pan-ethnicity)

Question	Answer	Marks	Guidance															
5(c)	Fig. 5.1 shows some of the data from this study. Use this graph to produce a table of the data. You <u>must</u> write full headings on your table. Fig. 5.1 Results from the study by Pozzulo et al. for the correct identification of target individuals in a line-up.  1 mark per correct point about table. Accurate figures from graph (100, 100, 24 [22–26], 46 [44–48]) = 1 Type of target (OWTTE) = 1 Cartoon female and human female = 1 Child and adult participants = 1 Percentage correct identification (of the individual in a line-up) = 1 (just once)	4	It is incorrect to put ‘%’ after each figure but ignore this. <table><tr><td></td><td></td><td colspan="2">(age of participants)</td></tr><tr><td></td><td></td><td>children</td><td>adults</td></tr><tr><td rowspan="2">Percent correct identification (of female target in a line-up)</td><td>Cartoon (female)</td><td>100</td><td>100</td></tr><tr><td>Human (female)</td><td>24 (22-26)</td><td>46 (44-48)</td></tr></table> Note: this table could be correctly drawn in several different ways.			(age of participants)				children	adults	Percent correct identification (of female target in a line-up)	Cartoon (female)	100	100	Human (female)	24 (22-26)	46 (44-48)
		(age of participants)																
		children	adults															
Percent correct identification (of female target in a line-up)	Cartoon (female)	100	100															
	Human (female)	24 (22-26)	46 (44-48)															

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Question	Answer	Marks	Guidance
6	Describe participant observation and non-participant observation, using any example(s). In either P or NP observation Ps may or may not be aware of being observed / it can be covert or overt; (detail– once) <i>participant observation:</i> researcher watches as part of the ongoing activity; (definition) appears to be like the participants in social role; (definition) The participants can see the observer = 0 (This is overt obs) Interaction can give greater insight into reasons for behaviours observed; (detail) Piliavin et al. the observers appeared to be passengers; (core study example) Note Piliavin et al.'s victims/models were NOT observing (so not eg. of participant observer) Note Milgram stooge/learner was not an observer (so not eg. of participant observer) If an observer joins in with children's games to record their behaviour; (own example) Saavedra & Silverman: observed boy performing in vivo button tasks; (core study)	6	1 mark for each definition / point of detail, up to a max of 2 for each term / concept. 1 mark for each example, max 2 for each term / concept. Examples can include examples from any studies (core, other, candidate's own studies). Max 4 if no examples or if only about one term / concept. Only 1 example needed to access 6 marks.

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Question	Answer	Marks	Guidance
6	<i>non-participant observation:</i> observer not involved in situation being studied; (definition) uses camera / one-way mirror / distanced from social group; (definition) (often inobtrusive) so fewer demand characteristics; (detail) Observer is objective as not involved in emotions of the social situation of Ps; (detail) Bandura et al./Milgram used a one-way mirror; (definition only) Bandura et al. observed from another room; (definition only) Milgram, observed from where he couldn't be seen; (definition only) Bandura et al. did a non-participant observation of <u>children</u>; (example: core study) 1 Bandura et al. observed the <u>children</u> from another room; (core study+detail) 2 Bandura et al. used a one-way mirror to observe the <u>children</u>; (core study+detail) 2 Milgram, did a non-participant observation of Ps shocking learners; (example: core) 1 Milgram, saw <u>teachers shocking</u> from where he couldn't be seen; (core st+detail) 2 Milgram, observations of <u>obedience</u> used one-way mirror; (core study+detail) 2		

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Question	Answer	Marks	Guidance
6	The participants cannot see the observer = 0 (this is covert observation) Hassett – NP Fagen – NP (because the researchers were not engaging in an elephantine way) Andrade – not an observation		

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Question	Answer	Marks	Guidance
7	Ranya is collecting data about study habits after school. She is asking students in her school two questions: 1 How long do you spend studying per week after school? 2 Which subject do you prefer to study after school: arts, languages, maths, or science?		
7(a)	Ranya will use two different measures of central tendency on her data, the mode and the mean. Explain which measure of central tendency would be <u>most</u> appropriate for each of Ranya's questions. Q1: mean because the data is on a scale/continuous data; (accept: interval/ratio data) Q2: mode because it is categorical/discrete data; (accept 'frequency data') Do not accept 'qualitative' for Q2 (mean) Do not accept 'words' for Q2 (mode) Do not accept 'qualitative'/'words' for Q2 (mode) Q1 To find the average number of hours they spend studying a week = 0 = NAQ Q2 To find the subject most of them prefer = 0 = NAQ Q2 To find the frequency of the subject most of them prefer = 1 = (indirect correct response)	2	Explanation = 1 [x2] Note: the mark is for the explanation. No mark for correct choice i.e. 'mean' / 'mode'
7(b)(i)	Explain how Ranya would calculate the range of hours spent studying per week after school. Take smallest number (of hours study) from largest (number of hours study) + 1;	1	Explanation (with or without link) = 1 Accept answers whether or not they add 1. Find / compare the largest and smallest scores = 1

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Question	Answer	Marks	Guidance
7(b)(ii)	Ranya's colleague says she should use the standard deviation instead of the range for the data from Question 1. Explain why the standard deviation would provide more information than the range. The standard deviation shows the spread around the mean (explanation); whereas the range only looks at the end points; (detail: comparison) ORA SD judges how far the scores are from the mean = 1 The SD indicates how much the results are clustered or spread out (explanation); whereas the range just gives / uses the extreme values; (detail: comparison) ORA So the range gives less information because it only uses 2 scores / endpoints / outliers; So the range can be misleading because it can be swung by a single outliers; The standard deviation shows the variation around the mean (explanation); Ranya would know how much variation there is in students' study time; (linked detail) The SD uses the whole data set / all the values (explanation); whereas the range only uses the ends/only uses two numbers; (detail: comparison) ORA	2	Explanation = 1 Detail (generic or linked) = 1 Accept spread / differences from mean/variation/dispersion but not 'deviation' [REP]

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Question	Answer	Marks	Guidance
7(c)	Ranya will use a non-directional (two-tailed) hypothesis about study habits. Explain which hypothesis Rayna will use: X. Students who prefer maths will spend more time studying. Y. There will be a difference in the time spent studying by students who prefer maths and students who do not prefer maths. Y because it only / simply / just says that there will be a difference (in time); BOD Y Does not say (a direction of – <i>ignore</i>) which group will spend more time studying; BOD Y because it does not say the which way the difference will go; Y because it says maths students will spend a different amount of time than the other / non-maths / arts, language and science students; Y because it doesn't say whether maths students will spend more or less time than the other / non-maths / arts, language and science students (a directional one would); Y because it does not indicate how the IV will affect the DV, only that it will.	1	Answer Y, but mark is for <i>explaining</i>, i.e. because = 1 (generic or linked) All attempts to justify hypothesis X = 0 Saying X does not indicate a direction = 0 = REP Y because it says that there will be a difference (in time) = 0 (also applies to directional hypotheses)

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Question	Answer	Marks	Guidance
8	Simon is conducting a study about children learning to read. He is comparing how well they understand a story when reading from a book which has pages with images that are either: • coloured shapes • pictures that are not related to the text • pictures that are related to the text.		
8(a)	Identify the independent variable (IV) in Simon's study. Illustrations on the pages / the types of image / the three conditions / pictures that are related or not related to the text or coloured shapes;	1	Identification of IV = 1
8(b)	Identify the dependent variable (DV) in Simon's study. (The children's) understanding (of the story / the book); The story / the book = 0 If a candidate operationalises the DV = 0 = NAQ [the Q asks for identification from the stem]	1	Identification of DV = 1 [definitive]
8(c)	All the pictures and shapes are brightly coloured. Explain <u>one</u> reason why this is important. It is a control (for the shapes); (identification) So that cause and effect can be established / differences in the DV are due to the IV / are not due to extraneous variables; (generic detail) e.g. for attention; (explanation) which could be better for coloured illustrations than black-and-white ones; (detail) If the shapes were more brightly coloured than the illustrations the children might be distracted; (detail) So that differences in understanding are due to the pictures / relevance not the colours; (effect)	3	Identification of 'control' = 1 Explanation of why this is important = 1 Detail / effect on results = 1 Note: although the 'identification' mark is clear, the 'explanation' and 'detail' marks are interchangeable. The response doesn't have to be linked to the stem, but it is unlikely that it wouldn't be for 3 marks.

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Question	Answer	Marks	Guidance
9	Heng is conducting a study to investigate the job satisfaction of male and female employees at a factory. She has identified two problems with uncontrolled variables. One is a situational variable and the other is a participant variable: Variable X: female employees have more responsibilities at home Variable Y: the factory promotes male employees faster than females.		
9(a)	Explain which <u>one</u> of these problems is a participant variable. <i>Female employees have more responsibilities at home / variable X</i> is a participant variable because responsibilities at home relate to each individual woman / internal factors / personal factors; (explanation)	1	Identification X should be correct, but NO mark for this 1 mark for explanation because amount of responsibility at home is unique to women = 0 because amount of responsibility at home is unique to each woman (as an individual) = 1 because women have (more) responsibilities at home = 0 = REP
9(b)	Explain which <u>one</u> of these problems is a situational variable. <i>Faster promotion for male employees / variable Y is a situational variable because this is external / environmental / setting (because it depends on the factory); (explanation)</i>	1	Identification of Y should correct, but NO mark for this 1 mark for explanation Because men are promoted faster = 0 = REP Anything just about the 'factory' = 0

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Question	Answer	Marks	Guidance
9(c)(i)	Suggest how Heng could limit the problem of <u>one</u> of these uncontrolled variables. <i>(participant) Female responsibilities:</i> Limit the effect by pairing male and females with equal family / home / parental responsibilities; (suggestion) To be sure any difference is due to gender; (detail) <i>(situational) male promotion:</i> Remove all individuals seeking/receiving promotion from the sample; (suggestion) e.g. by giving out a questionnaire to find out who to exclude (and removing them); (detail) To be sure any difference is due to gender; (detail)	2	No mark for identifying the problem (i.e. situational / participant var) 1 mark for suggestion (mitigation or elimination) 1 mark for detail
9(c)(ii)	Trying to limit a problem in a study can create further issues. Suggest <u>one</u> issue that your answer to part (c)(i) could create for Heng. <i>(participant) Female responsibilities:</i> lack of generalisability; (suggestion) If males and females are paired, this ignores the majority of females with extra responsibilities; (detail) <i>(situational) male promotion:</i> Validity may be reduced; (suggestion) Because promotion may cause satisfaction; (detail)	2	Suggestion of issue created = 1 (accept reasonable arguments except cost and time) detail = 1

Question	Answer	Marks	Guidance						
10	Mary is conducting a case study on a boy diagnosed with an autistic spectrum disorder. He produces many detailed doodles and Mary wants to learn about him and his doodling.								
10(a)	Describe how Mary could conduct a case study of doodling in a boy diagnosed with an autistic spectrum disorder. Do <u>not</u> describe sampling technique or ethical issues / guidelines in your answer. The four required features for this case study are: (a) details about the participant / unit (ASD / male, age, how found, other info e.g. diagnosis, parents, teachers, P background) (b) content of information collected: (e.g. depth / detail: e.g. types of doodles, frequency, e.g. associate with emotions / being with friends/being outdoors, examples of rating scales etc etc.) (c) two or more techniques for data collection (observation, interview him, interview, use rating scales parents/teachers – at least two) (d) analysis / interpretation / triangulation: (description of how data used: qualitative and/or quantitative; triangulation – making sure the sources agree to be confident in the conclusion. Note: this is not about reliability)	10	To mark Q10a, create four ‘imaginary columns’ down one margin, using one column for each of the four required features. Tick each feature (tick-a, tick-b, tick-c, tick-d) when it appears, then underline the letter () for detail. Use L1, L2, L3, L4, L5 at the end of the response to indicate the level. Use the table below to mark candidate responses to this question. <table><tr><th>Level</th><th>The response:</th></tr><tr><td>Level 5 9–10 marks</td><td> - has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning this investigation. </td></tr><tr><td>Level 4 7–8 marks</td><td> - has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology. AND <i>applies</i> knowledge of methodology involved in planning this investigation. </td></tr></table>	Level	The response:	Level 5 9–10 marks	- has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning this investigation.	Level 4 7–8 marks	- has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology. AND <i>applies</i> knowledge of methodology involved in planning this investigation.
Level	The response:								
Level 5 9–10 marks	- has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning this investigation.								
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Question	Answer	Marks	Guidance								
10(a)			<table><tr><td>Level 3 5–6 marks</td><td> - has some of the required features with <u>detail</u> / all of the required features with no detail, and some appropriate terminology. AND <i>applies a basic</i> knowledge of methodology involved in planning this investigation. </td></tr><tr><td>Level 2 3–4 marks</td><td> - has at least two of the required features, with little appropriate terminology. AND <i>attempts</i> to use knowledge of methodology involved in planning this investigation. </td></tr><tr><td>Level 1 1–2 marks</td><td> - has one of the required features and uses little appropriate terminology. AND - makes a <i>limited attempt</i> to use knowledge of methodology involved in planning this investigation, e.g. may not use the method required by the question. </td></tr><tr><td>0 marks</td><td>No creditable response.</td></tr></table>	Level 3 5–6 marks	- has some of the required features with <u>detail</u> / all of the required features with no detail, and some appropriate terminology. AND <i>applies a basic</i> knowledge of methodology involved in planning this investigation.	Level 2 3–4 marks	- has at least two of the required features, with little appropriate terminology. AND <i>attempts</i> to use knowledge of methodology involved in planning this investigation.	Level 1 1–2 marks	- has one of the required features and uses little appropriate terminology. AND - makes a <i>limited attempt</i> to use knowledge of methodology involved in planning this investigation, e.g. may not use the method required by the question.	0 marks	No creditable response.
			Level 3 5–6 marks	- has some of the required features with <u>detail</u> / all of the required features with no detail, and some appropriate terminology. AND <i>applies a basic</i> knowledge of methodology involved in planning this investigation.							
			Level 2 3–4 marks	- has at least two of the required features, with little appropriate terminology. AND <i>attempts</i> to use knowledge of methodology involved in planning this investigation.							
			Level 1 1–2 marks	- has one of the required features and uses little appropriate terminology. AND - makes a <i>limited attempt</i> to use knowledge of methodology involved in planning this investigation, e.g. may not use the method required by the question.							
			0 marks	No creditable response.							
Other appropriate responses should also be credited.											

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Question	Answer	Marks	Guidance
10(b)(i)	Explain how <u>one</u> feature of the procedure you described in part (a) helps to make the study valid. Do <u>not</u> refer to sampling or ethics in your answer. Part of procedure may relate to: • operationalisation • situational / participant variables factors • controls • design / counterbalancing Accept other practical influences on validity.	2	Identification of helpful part for validity = 1 explanation (generic or linked) = 1
10(b)(ii)	Suggest <u>one</u> way to improve the reliability of the procedure you described in part (a). Justify your answer. Do <u>not</u> refer to sampling or ethics in your answer. Part of procedure may relate to: • standardisation • consistency within and between raters (reliability). Accept other practical influences on reliability.	2	Suggestion for improvement of reliability = 1 (linked to (b)(i)) Justification = 1 (linked or generic)

Cambridge International AS & A Level

PSYCHOLOGY**9990/22**

Paper 2 Research Methods

May/June 2024**MARK SCHEME**Maximum Mark: 60

Published

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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 descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

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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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From this it follows that we:

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	benefit of doubt		correct point [use one tick per mark except in last question part (a)]		incorrect point		use for each point of description of a required feature in part (a) of last Q
	no benefit of doubt		indicates a point is a Generic Mark		continued (use 'link' icon)		
	'something is missing'		unclear point		not answering question		
	repetition (of stem/within response)		use wiggly underline/highlighter to bring attention to a key part		underline letter-tick when required feature is in enough detail		
							use to show Level 1, 2, 3, 4 or 5 in part (a) of last Q

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Crossed out work	Please note that if a candidate crosses out a question and does not re-attempt the same question, you must attempt to mark the crossed out work.
Annotate every question	Please place a marking icon on every question and to indicate each mark awarded (number of ticks = number of marks on all questions except part (a) of the last question). However, you do not need to put 'seen' on NR spaces.

Question	Answer	Marks	Guidance
1(a)(i)	State the <u>two</u> main features of a case study. Single unit / person is studied = 1 (definitive) In depth / detailed study = 1 (definitive). Accept two points on one line	2	Longitudinal / over a long time = 0 Aim to give therapy = 0 Rare case = 0 Lots of data = 0
1(a)(ii)	Explain why the study by Saavedra and Silverman (button phobia) was a case study, in relation to these <u>two</u> main features. Just one boy (and his mum) = 1 (single unit) History of his phobia; (in depth) Measurement of his phobia; (in depth) Monitoring change in his phobia; (in depth)	2	Why single unit = 1 Why in depth = 1

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Question	Answer	Marks	Guidance
1(b)	Explain <u>one</u> way to improve validity in a case study. Triangulation / use several different sources of data; (way) to confirm that each data source support the same findings / interpretation; (detail) e.g., using interviews, with them and family, questionnaires, observations; (any two) Use pre-validated measures; (way) e.g., standardised tests of personality; (detail) this would reduce researcher bias; (detail) Use several different methods to get in depth data; (way) e.g., use observations and interviews; (detail) as people might do things you can see that they would not say in interview; (detail) Use both qualitative and quantitative data; (way) to balance depth and being able to compare / analyse / measure; (detail) e.g., to get opinions about what something feels like and measure it with a machine; (detail) Maintain distance between the researcher and P; (way) to ensure objectivity; (detail) because if they built a relationship the researcher might become biased; (detail) Use standardisation / operationalisation (of data collected); (way) to ensure objectivity / avoid bias; (detail) e.g., if observing have categories with definitions; (detail)	3	Way = 1 Detail = 2 (detail can include any example)

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Question	Answer	Marks	Guidance
2	Kanav wanted to recruit participants from his town for his study. He put an advertisement into the window of every shop in his town and used all the people who responded as his sample.		
2(a)(i)	Explain the sampling technique Kanav used. Volunteer / self-selecting = 1 (definitive) Using people who choose to participate / respond to a request / advertisement to participate = explanation. The participants are those who were willing to take part = explanation;	2	Identification of sampling technique = 1 Explanation = 1
2(a)(ii)	Suggest <u>one</u> weakness of using this sampling technique in Kanav's study. Low generalisability / poor representation (of variety in the population); (weakness) Sample will only include shoppers / ones who responded to his advert; (link) Could include people who are not 'from his town' (e.g., delivery people, visitors); (link).	2	Weakness = 1 Link = 1

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Question	Answer	Marks	Guidance
3(a)	A study has the hypothesis ‘Four-year-old children make more language mistakes than eight-year-old children.’ State whether this hypothesis is a: • directional hypothesis • non-directional hypothesis • null hypothesis directional hypothesis (definitive)	1	
3(b)	Explain the reason for your choice in part (a). It says which level of the IV will be better/higher; (generic) It says which IV level, in this case older children, will be ‘better’; (link) As it states the causal effect of older age causing fewer mistakes; (link)	2	Generic response = 1 Linked response = 2 ‘Shows <i>direction</i> of results’ = 0 = REP

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Question	Answer	Marks	Guidance
4	The study by Hassett et al. (monkey toy preferences) used animals. Outline <u>two</u> named ethical guidelines in relation to the use of animals in this study. minimising harm / pain, suffering and distress / reward, deprivation and aversive stimuli; Not physically / psychologically hurting monkeys; monkeys sense pain; Replacement; use alternatives e.g., previous videos of monkeys; species; monkeys are clever so useful as human models; numbers; use as few (monkeys) as possible; (procedures) housing; Animals need enough space / monkeys are big, move; they need to be kept with conspecifics.	4	Name of animal guideline = 1 ×2 Link to monkeys / Hassett = 1 ×2 Note: 'Lots of space and controlled temperature' = 0 = NAQ as just description.

Question	Answer	Marks	Guidance
5	In the study by Baron-Cohen et al. (eyes test), a control task was used to be certain that the AS / HFA participants could use information from pictures of eyes to make simple judgements.		
5(a)	Identify this control task. Gender (recognition) = 1 (definitive)	1	Accept judgement of male / female
5(b)	Outline what participants were required to do in this control task. To judge the gender/sex of each person in each photograph / of the eyes = 1 (definitive)	1	'To say whether they/ a person was male of female' = 0 'To say whether a (person in) a photograph was male of female' = 1

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Question	Answer	Marks	Guidance
6	Describe how variables in correlations can be measured, using any example(s). ‘How’ may be interpreted as the technique, the measurement, or the operationalisation of the variable. Any is acceptable. <i>Interview / questionnaire:</i> (closed Qs with ratings, numerical scores assigned to Likert scales, open questions used to generate continuous score); <i>tests / tasks:</i> generating numerical values; percentages; totals; <i>observations:</i> tallying of behavioural categories; durations. Baron-Cohen: AQ / IQ / eyes test; Dement & Kleitman: number of words in narrative and dream duration / time in REM sleep; Piliavin et al.: group size (number of individuals) and frequency of helping;	6	1 mark per definition/point of detail, max 2 for each term / concept. 1 mark per example, max 2 for each term / concept. Examples can be any studies (core studies, other studies, candidate’s own). Max 4 if no examples or if only one term / concept. Only 1 example needed to access 6 marks. Note: Any point must relate to a continuous variable, otherwise = 0 for that point.

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Question	Answer	Marks	Guidance
7	Chyou is conducting a self-report about students' subject choices. Four of her questions are: A Describe how much you like maths. B How much do you enjoy studying science? 0 = do not enjoy it at all, 5 = enjoy it a lot. C “I have always known what subjects I want to study.” To what extent do you agree with this statement? strongly agree/ agree/ neither agree nor disagree/ disagree/ strongly disagree. D Write about whether you would like to be a doctor.		
7(a)	Identify <u>one</u> closed question from A to D. 1 mark for B or C (definitive)	1	
7(b)	Identify <u>one</u> open question from A to D. 1 mark for A or D (definitive)	1	
7(c)	Chyou has written two questions to investigate the process of students choosing their subjects. E How old were you when you decided you did or did not like science? F Describe how you felt when you made your final decision about subject choices.		
7(c)(i)	State <u>one</u> strength of question E. Question E quantitative data so can be used to compare between participants / can be analysed statistically	1	Strength = 1 (generic or linked) Note: a term alone is not an explanation.
7(c)(ii)	State <u>one</u> strength of question F. Question F qualitative data so provides detail (of feelings)	1	Strength = 1 (generic or linked) Note: a term alone is not an explanation.

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Question	Answer	Marks	Guidance
7(d)	Suggest <u>two</u> questions Chyou could ask to investigate factors affecting students' subject choices. 1 Explain how members of your family / teacher / hobbies / work experience affected your choice of subjects. 2 Do you think being an only child affected your subject choices?	2	1 mark per question about factor affecting subject choices x2 Questions and be open, closed or one of each. Closed questions must have choices. Open questions must generate genuine qualitative data (Describe, explain, tell me...).

Question	Answer	Marks	Guidance									
8	Daku is observing the obedience of boys and girls to teachers and older pupils when they are waiting for their lunch. Fig. 8.1 is a graph of Daku's results.  <table border="1"><thead><tr><th>Category</th><th>Boys</th><th>Girls</th></tr></thead><tbody><tr><td>Obedience to teachers</td><td>14</td><td>16</td></tr><tr><td>Obedience to older pupils</td><td>14</td><td>15</td></tr></tbody></table>	Category	Boys	Girls	Obedience to teachers	14	16	Obedience to older pupils	14	15		
Category	Boys	Girls										
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8(a)	Daku's conclusion is that girls are more obedient than boys. Daku's colleague, Jedda, has looked at Daku's graph and disagrees with Daku's conclusion. Explain <u>one</u> reason why Daku's conclusion may be incorrect. Do <u>not</u> refer to the sample size in your answer. The difference is very small; (reason) so it might not be significant / important / big enough to matter / could be due to chance; (detail)	2	Reason why Daku is incorrect = 1 Detail = 1									

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Question	Answer	Marks	Guidance
8(b)	Dr Jedda suggests that Daku needs a bigger sample. Explain <u>one</u> benefit of increasing the sample size in this study. Better generalisability from a larger sample; (reason) Because it should contain a bigger variety of children with different obedience levels; (detail)	2	Reason why = 1 Detail = 1 Because a small difference in a large sample is more reliable than a small difference in a small sample = (2) Improve reliability/replicability = 0
8(c)	Daku has identified a problem caused by an uncontrolled variable. The boys had to wait longer for their lunch than the girls.		
8(c)(i)	Explain whether this problem is caused by a situational variable or a participant variable. Situational because this was an external/environmental factor affecting the likelihood of being disobedient.	1	Explanation of situational variable = 1 Note: No mark for stating 'situational variable', the mark is for the explanation. Don't accept reverse argument, i.e., 'not participant'?
8(c)(ii)	Explain how this problem would have affected Daku's results. The boys would have been more likely to be disobedient than the girls because they were provoked / irritated / hungrier by being kept in a queue (whereas the girls did not need to queue).	1	Explanation = 1

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Question	Answer	Marks	Guidance
9	Carol is investigating how music in a sports centre affects the amount that people exercise. On each visit she listens to the music that is playing. She measures the music by counting the number of musical beats per minute (faster music has more musical beats per minute than slower music).		
9(a)	Suggest <u>one</u> problem with Carol's measure of the music. Carol may not count / time accurately; (weakness) so her analysis of the music may be unreliable; (detail) Other aspects of music (than tempo) may matter; (weakness) e.g., major / minor key / lyrics / genre (detail)	2	Weakness = 1 detail = 1
9(b)	Carol records the time each person in the sports centre starts and stops exercising. All of the sports centre members have given permission for this to happen. Explain <u>two</u> reasons why Carol obtained permission to gather her data, in relation to the ethical guidelines. Informed consent; (reason) Sports centre-goers need to know about / agree to, having their exercise watched; (linked detail) Privacy; (reason) (Carol is observing people and) they may not want to be watched when exercising; (linked detail) People may stop exercising early; (linked detail) Psychological harm; (reason) People may be embarrassed about being unfit; (linked detail)	4	Reason = 1 (×2) Linked detail = 1 (×2)

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Question	Answer	Marks	Guidance
9(c)	Explain <u>one</u> reason why it is important that Carol visits the sports centre at different times of day. e.g., morning people may be more fit; (reason) So might exercise for longer regardless of musical tempo; (linked detail) The music tempo may vary over the day; (reason) e.g., faster music in the evening so exercise would be more active then; (linked detail) type of people; (reason) e.g., old people come in the morning and are less fit; (linked detail)	2	Reason = 1 Linked detail = 1

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Question	Answer	Marks	Guidance						
10	Chloë is studying behaviour in the workplace. She wants to investigate how people behave during mealtimes at work. A range of food is available to the workers, which can be eaten in different ways. The workers also vary in how sociable they are during meals. Chloë intends to produce a detailed description of the variety of behaviours during meals at work.								
10(a)	Describe how Chloë could conduct an observational study using participant observation to record the variety of behaviours during meals at work. Do <u>not</u> describe sample/sampling technique or ethical issues/guidelines in your answer. The four required features for this participant observation are: (a) participant observation (outlined): (how the observer(s) will be engaged in the social context of eating / servers in the canteen) (b) overt/covert: (explicit and separate from participant) (c) naturalistic / controlled; (probably naturalistic – but impacted by nature of food being served / time of day) (d) structured (behavioural categories) / unstructured: (probably structured – ‘foods they eat, how they eat them, how social’ – but unstructured would allow for ‘detailed description of variety’) Other appropriate responses should also be credited.	10	To mark Q10(a), create four ‘imaginary columns’ down one margin, using one column for each of the four required features. Tick each feature (tick-a, tick-b, tick-c, tick-d) when it appears, then underline the letter () for detail. Use L1, L2, L3, L4, L5 at the end of the response to indicate the level. Use the table below to mark candidate responses to this question. <table><tr><th>Level</th><th>The response:</th></tr><tr><td>Level 5 9–10 marks</td><td> - has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning an investigation. </td></tr><tr><td>Level 4 7–8 marks</td><td> - has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology. AND <i>applies</i> knowledge of methodology involved in planning an investigation. </td></tr></table>	Level	The response:	Level 5 9–10 marks	- has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning an investigation.	Level 4 7–8 marks	- has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology. AND <i>applies</i> knowledge of methodology involved in planning an investigation.
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10(a)			Level	The response:
			Level 3 5–6 marks	- has some of the required features with <u>detail</u> / all of the required features with no detail, and some appropriate terminology. AND <i>applies a basic</i> knowledge of methodology involved in planning an investigation.
			Level 2 3–4 marks	- has at least two of the required features, with little appropriate terminology. AND <i>attempts</i> to use knowledge of methodology involved in planning an investigation.
			Level 1 1–2 marks	- has one of the required features and uses little appropriate terminology. AND - makes a <i>limited attempt</i> to use knowledge of methodology involved in planning an investigation, e.g., may not use the method required by the question
			0 marks	No creditable response.

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Question	Answer	Marks	Guidance
10(b)(i)	Describe <u>one</u> practical / methodological strength of the procedure you have described in your answer to part (a). Do <u>not</u> refer to sampling or ethics in your answer. Strengths may relate to: Validity • operationalisation • situational / participant variables factors • controls / standardisation • Demand characteristics Reliability • inter-rater consistency • intra-rater consistency. Accept other practical / methodological strengths.	2	identification of generic strength = 1 detail = 1 (generic or linked).

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Question	Answer	Marks	Guidance
10(b)(ii)	Describe <u>one</u> practical / methodological weakness of the procedure you have described in your answer to part (a). Do <u>not</u> refer to sampling or ethics in your answer. Weaknesses may relate to: Validity • operationalisation • situational / participant variables factors • controls / standardisation • Demand characteristics Reliability • inter-rater consistency / two observers that were not standardised • intra-rater consistency. Accept other practical / methodological weaknesses.	2	identification of generic weakness = 1 detail = 1 (generic or linked).

Cambridge International AS & A Level

PSYCHOLOGY**9990/23**

Paper 2 Research Methods

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1	Explain what is meant by a covert observation, using any example. participants unaware of (role of) observer; (define) out of view / far away / disguised / hidden; (example) Bandura used a one-way mirror; (example) Hassett used a camera; (example) Piliavin's observers looked like subway passengers; (example) 'In Piliavin the Ps did not know the observers were there' = 0 = REP	2	Explain covert = 1 Example = 1 (generic or embedded, but not just a reference) Observer does not interact with participants = 0 [this is non-participant obs]

Question	Answer	Marks	Guidance
2	The results from the study by Andrade (doodling) included the following data about the shading of shapes by participants in the doodling group: Outline what these <u>two</u> results show about doodling by this group of participants. - the mean number per participant was 36.3 - the range was 3–110.	2	Any descriptive point about the mean = 1 Any descriptive point about the range = 1 The mean/average doodling was in the bottom half of the range; (mean) All participants in this group doodled; (range) The variation in doodling was very wide; (range) Statements relating to the non-doodlers = 0 [NAQ] Comparative statements to controls = 0 [NAQ] Copying the numbers = 0 [REP] Conclusions = 0 = NAQ

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Question	Answer	Marks	Guidance
3	Describe how <u>one</u> feature of the study by Milgram (obedience) helped to make the study valid. • Shock machine looked real; / thought the shocks were real; • Drawing lots was rigged; • Grey technician's coat; • Location at a university; • Told it was about memory and punishment (deception); So participants unlikely to suspect the deception / guess aim / respond to demand characteristics; (how) the prods were the same for all Ps / standardised; (how) E.g. all Ps heard 'please continue'; (feature)	2	Link (feature of study) = 1 How it helped validity = 1 Authority figure = 0 Authority figure looked real because of coat/of location = 1

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Question	Answer	Marks	Guidance
4	One group of participants in the study by Hölzel et al. (mindfulness and brain scans) was a sample of 16 right-handed adults: 6 males and 10 females. Explain <u>two</u> reasons why this sample may <u>not</u> be representative. Gender bias / more females than males; So not / less representative of males; All righthanded; So not / less representative of lefthanders; All adults; So not / less representative of children; Small sample; So not much variability; So not generalisable to ambidextrous people / wide variety of...; (must be specific)	4	Partial explanation = 1 Full explanation = 2 Credit answers with other knowledge of the study eg. ages, ethnicity

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Question	Answer	Marks	Guidance
5	Memory research is often conducted using eyewitnesses who have witnessed a real crime. Alternatively, researchers can use a simulated crime in a laboratory and ask participants what they remember.		
5(a)	One strength of using a simulated crime in a laboratory is that it can improve objectivity. Outline what is meant by the term ‘objectivity’, using an example about eyewitnesses. judgment from external perspective; (outline) independent viewpoint; (outline) data obtained without personal bias; (outline) researchers might be biased by emotions/suffering of real eyewitnesses; (example) in artificial situations, researcher knows the correct memories of the scene; (e.g.)	2	Outline = 1 example must relate to objectivity= 1 an eyewitness seeing a thief stealing something = 0 [NAQ not about objectivity] If an effective answer is given relating to Pozzulo, credit it.
5(b)	Describe how <u>one</u> feature of the study by Pozzulo et al. (line-ups) helped to make the study objective. responses to line-ups limited to present or not; (strategy) so no ‘maybe’ or ‘more likely to be x than y’; (how it helped) participants’ responses were quantitative (present or not); (strategy) so the researchers did not have to interpret the results; (how it helped)	2	Objectivity strategy = 1 How it helped = 1 silhouettes (as a ‘target absent’ choice); (strategy) making the choice an objective one between present/absent rather than a difficult choice of present /not present; (how it helped)

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Question	Answer	Marks	Guidance
6	Describe the following experimental designs, using any example(s): matched pairs design repeated measures design. <i>Repeated measures:</i> Same Ps in each level of IV / condition; Risk of order effects / practice or fatigue effects; As Ps see experimental situation more than once; Also risk of recognising demand characteristics; Order effects resolved by counterbalancing; Where half Ps do conditions in order AB, others BA; eg Dement & Kleitman 5/15 minutes; Hölzel pre/post mindfulness course; Perry personal space situations (CIDs) Ps did all of the different approaching objects (ball, stranger, friend, authority figure); Perry different room configurations (of table/chair/plant); <i>Matched pairs:</i> Different Ps in each level of the IV; similar individuals allocated one to each level of IV; eg one twin in each group; reducing effects of individual differences; similarities relevant to study; e.g. age / IQ / gender; e.g. similar to Bandura aggression levels of children; Ps matched into pairs = 0 [REP]design.	6	1 mark per definition/point of detail, max 2 for each term/concept. 1 mark per example, max 2 for each term/concept. Examples can be any studies (core studies, other studies, candidate's own). Max 4 if no e.g.s or if only one term/concept. Only 1 example needed to access 6 marks.

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Question	Answer	Marks	Guidance
7	Yashal is planning an experiment about the effect music has on students doing their homework. She is choosing the conditions she will use.		
7(a)	Outline what is meant by the term ‘experimental condition’. levels of an independent variable that are actively manipulated; two (or more) situations/groups/conditions that compare levels of an independent variable;	1	Outline = 1
7(b)(i)	Outline what is meant by the term ‘control condition’. situation/group/condition from which the IV is absent; Accept ‘a level of the IV where the IV is absent’	1	Outline = 1 Accept ‘no change to the IV’ Accept: A <i>condition</i> where the IV is absent Do not accept ‘baseline’ / ‘to compare’ alone
7(b)(ii)	Suggest a control condition that Yashal could use in her experiment. e.g. a no music / no noise / silence group; e.g. white noise;	1	Example = 1

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Question	Answer	Marks	Guidance
7(c)	Yashal is planning to use students working at home as participants. Explain the type of experiment Yashal would be conducting. The students are at home; (explanation) It's homework so they won't be in the controlled situation of school; (explanation) The participants are in their normal setting for the activity of homework; The participants are in their normal/natural setting = 0 (not linked)	2	Type of experiment = 1 Field [definitive] Explanation (linked) = 1 (may be 'why it is' or 'why it has to be')

Question	Answer	Marks	Guidance
8	A parrot rescue centre has some new parrots which need to learn to enter a cage. Their trainer is planning a procedure using operant conditioning to teach the parrots to enter the cage.		
8(a)	Suggest <u>one</u> way that the parrots could be taught to enter the cage. Positive reinforcement; (way) Give a reward each time they go into the cage; (detail+link) Eg food; (detail) Using food; (way) To shape behaviour; (detail) For getting closer to the cage; (detail+link) operant conditioning = 0 [REP]	3	Way = 1 [can be interpreted in different ways] Detail = 2 Response must be linked to task for 3 marks Punish parrots; (way) If they go a different direction; (detail) E.g. have shock wires under their feet either side of the route to the cage; (link) Punish parrots; (way) If they go a different direction; (detail) E.g. have shock wires under their feet either side of the route to the cage; (link)

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Question	Answer	Marks	Guidance
8(b)	The success of the procedure can be measured by counting the number of days it takes each parrot to learn to enter the cage.		
8(b)(i)	Suggest <u>two</u> practical problems with this measurement of success. 1: 2: Learning in 1 minute, 1 hour or 1 day would all look the same; (linked limitation) So the data would be invalid (loss of discriminatory power); (detail) Parrots may all learn on first day; (linked limitation) so ceiling effect; (detail) some parrots may go in then straight out; (linked limitation) so not a useful measure for aim; (detail) parrots may focus for various lengths of time; (linked limitation) so not all parrots have same amount of training time; (linked detail) ethical limitations = 0 [NAQ]	4	Limitation = 1} [×2] Either limitation or detail must be linked for 2 marks Detail = 1} Individual differences between parrots = 0 = NAQ

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Question	Answer	Marks	Guidance
8(b)(ii)	For <u>one</u> of the problems you suggested in part (b)(i): Suggest <u>one</u> way this problem could be solved. <i>1 min = 1 day / Ceiling effect:</i> Make interval shorter / avoids a ceiling effect / easier to distinguish between learning speed / bigger range of scores is possible; (way) eg count hours; (detail) <i>straight out again:</i> add time limit to 'enter cage'; (way) e.g. and 'stay inside for 30 seconds'; (detail) <i>parrot focus:</i> only train in short bouts; (way) or stop when parrot isn't focussing; (detail)	2	Way = 1 Detail = 1 <i>The prompt (Problem: 1 or 2) should be used. If not clear, credit if possible</i>
8(c)	There are many members of staff at the rescue centre. The trainer cannot decide whether the parrots will learn better if the other staff are present or absent while the parrots are being trained.		
8(c)(i)	Explain <u>one</u> reason why the parrots may learn better if the other staff are present during the parrots' training. <i>Better if present</i>, if familiar with people; (exp) They may be less afraid (by people); (detail) <i>Better if present</i>, people may make them feel secure; (exp) So they pay attention more / are motivated more; (detail) <i>Better if present</i>, as people motivate them; (exp) eg audience effect/social facilitation/showing off; (detail) social desirability / demand characteristics = 0	2	Explanation for staff presence = 1 Detail = 1

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Question	Answer	Marks	Guidance
8(c)(ii)	Explain <u>one</u> reason why the parrots may learn better if the other staff are absent during the parrots' training. <i>Better if absent</i>, parrots need to focus to learn; (exp) Staff might distract them; (detail)	2	Explanation for staff absence = 1 Detail = 1

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Question	Answer	Marks	Guidance
9	Faiza is planning to investigate the effect of air pollution on emotion. She had planned to conduct a laboratory experiment, but rejected this for ethical reasons		
9(a)	Suggest <u>one</u> reason why conducting a laboratory experiment for Faiza's investigation could have been unethical. (risk of) physical harm / (poor) protection of participants; (reason) Pollution is dangerous; (linked detail) (hard to give) informed consent; (reason) Cannot know in advance of risk damage; (linked detail)	2	Reason = 1 (can be basic and generic, eg. named guideline) Linked detail = 1
9(b)	Faiza decides to use geography students as participants. They are visiting a rural environment and a polluted city as part of their geography course. She will collect data in both places. Explain <u>one</u> reason why Faiza's new plan is more ethical. Students exposed to pollution anyway; (linked reason) So no more risk of harm than in normal life; (detail) Rather than deliberately / on purpose / in a lab; (detail) Consent is only to participate in study; (detail) So can be fully informed because Faiza's not causing exposure; (linked reason)	2	Linked reason = 1 Detail = 1

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Question	Answer	Marks	Guidance
9(c)	Faiza is concerned about uncontrolled variables in her study. Suggest how <u>two</u> uncontrolled variables could affect the measurement of emotion. noise in city; (uncontrolled variable) noise can give you a stress headache; (detail) city light pollution; (uncontrolled variable) reduced sleep because of street lighting; (detail) busy city with lots to do; (uncontrolled variable) students go to bed late so exhausted; (detail) time of day (because course may be fixed eg. city in the morning); (uncontrolled variable)	4	uncontrolled variable linked to mood = 1 } x2 detail (why hard to control / mood affected) = 1 } e.g. people might be happier in cities regardless of pollution;

Question	Answer	Marks	Guidance
10	Bhaavik is interested in the relationship between shyness and happiness. He says to his friend Jim that the shy people he knows are really happy, but Jim says he knows lots of happy people who are not shy.		

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Question	Answer	Marks	Guidance						
10(a)	Describe how Bhaavik could conduct a correlational study to investigate the relationship between shyness and happiness. Do <u>not</u> describe sample/sampling technique or ethical issues/guidelines in your answer. The four required features for this correlation are: (a) two co-variables (shyness defined & happiness defined). (b) measure of variable 1 (shyness – how measured) (c) measure of variable 2 (happiness – how measured) (d) relationship (scatter graph, pos/neg, st/wk) Note: Both variables must be at least ordinal scales for L3	10	Use the table opposite to mark candidate responses to this question. To mark Q10(a), create four ‘imaginary columns’ down one margin, using one column for each of the four required features. Tick each feature (tick-a, tick-b, tick-c, tick-d) when it appears, then underline the letter() for detail. Use L1, L2, L3, L4, L5 at the end of the response to indicate the level. Use the table below to mark candidate responses to this question. <table><tr><th>Level</th><th>The response:</th></tr><tr><td>Level 5 9–10 marks</td><td> - has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables] </td></tr><tr><td>Level 4 7–8 marks</td><td> - has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology. AND <i>applies</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables] </td></tr></table>	Level	The response:	Level 5 9–10 marks	- has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables]	Level 4 7–8 marks	- has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology. AND <i>applies</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables]
Level	The response:								
Level 5 9–10 marks	- has all the required features, all with <u>detail</u>, with mostly appropriate terminology. AND <i>clearly applies</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables]								
Level 4 7–8 marks	- has all the required features, but only some of these with <u>detail</u>, with some appropriate terminology. AND <i>applies</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables]								

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Question	Answer	Marks	Guidance										
10(a)			<table><tr><th>Level</th><th>The response:</th></tr><tr><td>Level 3 5–6 marks</td><td> - has some of the required features with <u>detail</u> / all of the required features with no detail, and some appropriate terminology. AND <i>applies a basic</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables] </td></tr><tr><td>Level 2 3–4 marks</td><td> - has at least two of the required features, with little appropriate terminology. AND <i>attempts</i> to use knowledge of methodology involved in planning this investigation. [max if clearly an experimental method] </td></tr><tr><td>Level 1 1–2 marks</td><td> - has one of the required features and uses little appropriate terminology. AND - makes a <i>limited attempt</i> to use knowledge of methodology involved in planning this investigation, e.g. may not use the method required by the question. </td></tr><tr><td>0 marks</td><td>No creditable response.</td></tr></table>	Level	The response:	Level 3 5–6 marks	- has some of the required features with <u>detail</u> / all of the required features with no detail, and some appropriate terminology. AND <i>applies a basic</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables]	Level 2 3–4 marks	- has at least two of the required features, with little appropriate terminology. AND <i>attempts</i> to use knowledge of methodology involved in planning this investigation. [max if clearly an experimental method]	Level 1 1–2 marks	- has one of the required features and uses little appropriate terminology. AND - makes a <i>limited attempt</i> to use knowledge of methodology involved in planning this investigation, e.g. may not use the method required by the question.	0 marks	No creditable response.
Level	The response:												
Level 3 5–6 marks	- has some of the required features with <u>detail</u> / all of the required features with no detail, and some appropriate terminology. AND <i>applies a basic</i> knowledge of methodology involved in planning this investigation. [must be continuous data for both variables]												
Level 2 3–4 marks	- has at least two of the required features, with little appropriate terminology. AND <i>attempts</i> to use knowledge of methodology involved in planning this investigation. [max if clearly an experimental method]												
Level 1 1–2 marks	- has one of the required features and uses little appropriate terminology. AND - makes a <i>limited attempt</i> to use knowledge of methodology involved in planning this investigation, e.g. may not use the method required by the question.												
0 marks	No creditable response.												

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Question	Answer	Marks	Guidance
10(b)(i)	Describe <u>one</u> practical/methodological strength of the procedure you have described in your answer to part (a). Do <u>not</u> refer to sampling or ethics in your answer. Strengths may relate to: Validity • operationalisation • situational / participant variables • controls / standardisation • Demand characteristics • Reliability • inter-rater consistency • intra-rater consistency. Accept other practical/methodological strengths.	2	identification of generic strength = 1 detail = 1 (generic or linked). Strengths of experiments are incorrect Strengths of ways shyness/happiness was measured in an experiment are acceptable
10(b)(ii)	Describe <u>one</u> practical/methodological weakness of the procedure you have described in your answer to part (a). Do <u>not</u> refer to sampling or ethics in your answer. Weaknesses may relate to: • validity • operationalisation • situational / participant variables • controls / standardisation • demand characteristics • reliability • inter-rater consistency • intra-rater consistency. Accept other practical/methodological weaknesses.	2	identification of generic weakness = 1 detail = 1 (generic or linked). Weakness of experiments are incorrect Weakness of ways shyness/happiness was measured in an experiment are acceptable