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PSYCHOLOGY **9990/23**

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 **20** printed pages.

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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 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.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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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.

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Guide to marking annotations

BOD	benefit of doubt	✓	correct point [use **one tick per mark** except in last question part (a)]	✗	incorrect point	✓a ✓b ✓c ✓d	use for each point of description of a **required feature** in part (a) of last Q
NBOD	no benefit of doubt	GM	indicates a point is a Generic Mark	CONT	continued (use 'link' icon)		
A	'something is missing'	?	unclear point	NAQ	not answering question		
REP	repetition (of stem/ within response)		use wiggly underline/ highlighter to bring attention to a key part	✓a	underline letter-tick when required feature is in enough ***detail***	L1 L2 L3 L4 L5	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 un elated 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	**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

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.** *Repeated measures:* 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); *Matched pairs:* 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 *condition* 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

Question	Answer	Marks	Guidance
8(b)(ii)	**For <u>one</u> of the problems you suggested in part <u>(b)(i)</u>:** **Suggest <u>one</u> way this problem could be solved.** *1 min = 1 day / Ceiling effect:* Make interval shorter / avoids a ceiling effect / easier to distinguish between learning speed / bigger range of scores is possible; (way) eg count hours; (detail) *straight out again*: add time limit to 'enter cage'; (way) e.g. and 'stay inside for 30 seconds'; (detail) *parrot focus:* only train in short bouts; (way) or stop when parrot isn't focussing; (detail)	**2**	Way = 1 Detail = 1 *The prompt (Problem: 1 or 2) should be used. If not clear, credit if possible*
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.** *Better if present,* if familiar with people; (exp) They may be less afraid (by people); (detail) *Better if present,* people may make them feel **secure**; (exp) So they pay attention more / are motivated more; (detail) *Better if present,* 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.** *Better if absent,* 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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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr>
<td>10(a)</td>
<td>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</td>
<td>10</td>
<td>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
• clearly applies 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
• applies knowledge of methodology involved in planning this investigation. [must be continuous data for both variables]</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>10(a)</td><td></td><td></td><td>
<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 <u>no detail</u>, and some appropriate terminology.
AND
• applies a basic 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
• attempts 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 limited attempt 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>
</td></tr>
</table>

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Question	Answer	Marks	Guidance
10(b)(i)	**Describe one practical/methodological strength of the procedure you have described in your answer to part (a). Do not 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 one practical/methodological weakness of the procedure you have described in your answer to part (a). Do not 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

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