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CAMBRIDGE
International Education

Cambridge International AS & A Level

PSYCHOLOGY **9990/22**

Paper 2 Research Methods **February/March 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 February/March 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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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	Each point of description of a **required feature**
NBOD	no benefit of doubt	G	indicates a point is a Generic mark	CONT	continued (use 'link' icon)	✓c	
IRRL	irrelevant	?	Unclear point	NAQ	not answering question	✓d	
REP	repetition (of stem/ within response)	~~~	wiggly underline e.g. use to bring attention to a key part	✓a ~~~	Award when description required feature in ***detail***	L1 L2 L3	Use to show Level 1, 2, 3, 4 or 5 in part (a) of last Q
E	ethical point in Q 10a	∧	'something is missing'	SEEN	Acknowledge blank pages	L4 L5	

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(a)	**Explain what is meant by a 'negative correlation'.** **Relationship/link** between two variables; (explanation) As one (variable/thing) **goes up the other goes down**; (explanation/detail) =1	**2**	Explanation = 1 [**Relationship/link]** Detail/ = 1 [**one up one down]**
1(b)	**Explain <u>one</u> ethical advantage of a correlational study compared to an experiment, using any psychological example.** Can investigate variables that would be **unsafe** to change; (advantage) **because** variables do not have to be manipulated, correlations are better; (detail) e.g. the amount of sleep someone has; (example) Can study variables that would be **distressing** to manipulate; (advantage) e.g. how many friends a person has; (example)	**3**	Advantage = 1 Detail = 1 Example = 1 (link to advantage can be implicit) Practical advantage = 0 [NAQ]

Question	Answer	Marks	Guidance
2	**The memory score in the study by Andrade (doodling) was calculated using two sources of data. One source was the number of 'correct responses' of names and places given by the participants.** **Describe how the total memory score was calculated.** Second source of data = 1st mark How the memory score was calculated = 2nd mark 'false alarms' / errors; (second source of data) [1st] …were taken away from the correct responses score (to give the memory score); (how) [2nd]	**2**	

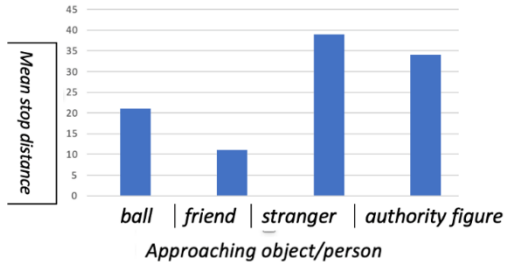
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Question	Answer	Marks	Guidance
3	**In the study by Dement and Kleitman (sleep and dreams), participants were given instructions before the study about what they should and should not do.**		
3(a)	**Outline <u>one</u> of these instructions.** no alcohol / no coffee / no caffeine / eat normally / arrive before normal bedtime;	**1**	Outline of control = 1
3(b)	**Explain why the instruction you described in part <u>(a)</u> was important to the validity of the study.** *no alcohol / no coffee*: drugs affect dreams/sleep; (explanation) so the participants' dream/sleep would not be **representative**; (detail) to **reduce participant variables**; (detail) *arrive just before bed:* if they came earlier/later they might not feel sleepy; (explanation) so could be sure **changes in DV** (of sleep) **were due to the IV**; (detail)	**2**	Explanation = 1 (linked) Detail = 1 (does not have to be linked) (ignore second reasons, must be explanation not just statement)

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>4</td><td>The study by Perry et al. (personal space) measured preferred interpersonal distance (stop distance) in a computerised virtual room.</td><td></td><td></td></tr>
<tr><td>4(a)</td><td>Preferred interpersonal distance was measured in relation to:
• a ball
• a friend
• a stranger
• an authority figure.</td><td></td><td>Table 4.1. Preferred interpersonal distances in the control (placebo) condition for the high empathy group.
<table><tr><td></td><td>ball</td><td>friend</td><td>stranger</td><td>authority figure</td></tr><tr><td>Mean stop distance</td><td>21</td><td>11</td><td>39</td><td>34</td></tr></table></td></tr>
<tr><td>4(a)(i)</td><td>Draw a bar chart of the data in Table 4.1, on the axes provided. You <u>must</u> label the axes.

</td><td>4</td><td>1 mark for each correct feature. Max 3 marks if bars are not separate.

x-axis label: ‘Being approached by a…’ / protagonist / stooge / object; OWTTE
x-axis units: ball / friend / stranger / authority figure;
y-axis label: Mean stop distance;
x-axis units: at least 11-39;
all bar heights correct;</td></tr>
<tr><td>4(a)(ii)</td><td>Explain why a bar chart is the appropriate graph to use to plot this data.

Definitive: (IV is) categorical / discrete data / nominal categories (OWTTE/ORA e.g. it’s not continuous)</td><td>1</td><td></td></tr>
</table>

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Question	Answer	Marks	Guidance
4(a)(iii)	**State <u>one</u> conclusion from this data.** e.g. **Smaller** distance for a friend than a stranger; e.g. balls are approached **less** than friends but more than strangers;	**1**	Conclusion = 1 Must be a conclusion not a repetition of the results.
4(b)	**Suggest <u>one</u> ethical strength of using a computerised virtual room to measure preferred interpersonal distance.** Less risk of invading **privacy**; (strength) Less risk of invading **protection from (psychological) harm**; (strength) participants might be upset by close real people; (linked detail)	**2**	Ethical strength = 1 Linked detail = 1

Question	Answer	Marks	Guidance
5(a)(i)	**Define the term 'population'.** Individuals who **share a characteristic /** have something in common;	**1**	Definition = 1 Note: 'people from the same area/place/country/location / ethnic group' **= 0** [this is an example, not a definition]
5(a)(ii)	**Outline <u>one</u> example of a population from a core study from the social approach.** *Piliavin* subway passengers / people on the trains / people on routes at the time being used for the study; *Milgram* readers of the (New Haven / local) newspapers; *Perry et al.* undergraduates / people from Haifa university / from Israel;	**1**	**Example** from a **core study** = 1 core study must be evident but may be implicit
5(b)(i)	**Define the term 'sample'.** individuals who participate in a study;	**1**	Definition = 1

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Question	Answer	Marks	Guidance
5(b)(ii)	**Outline <u>one</u> example of a sample from a core study from the social approach.** *Piliavin* passengers in the carriages with the observers / 4500 people; *Milgram* **40** men / 40 people with different occupations / volunteers responding to the advert; *Perry et al.* **54** (**40**) men;	**1**	Example from a **core study** = 1 Outline may or may not include sample size

Question	Answer	Marks	Guidance
6	**Describe practice effects and fatigue effects, using any example(s).** **order effects** are consequences of doing tests/tasks more than once; (definition) e.g. in a repeated measures design; (detail) or in a longitudinal study; (detail) can be overcome with counterbalancing; (detail) **practice effects** Participants **improve** with repetition; (definition) e.g. remembering the answers to a test; (example) e.g. getting more skilled on a physical task; (example) **fatigue effects** Participants get **worse** with repetition; (definition) e.g. getting bored; (detail) or tired from answering questions; (detail/example)	**6**	1 mark for each definition/point of detail, up to a maximum 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 studies, other studies, 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
7	**Kavi has noticed that when customers leave a takeaway restaurant, they often drop rubbish. He plans to conduct a field experiment to investigate this. Kavi will place rubbish in the street or remove any rubbish so that he can record data in two conditions:** • **when the street has 10 pieces of rubbish** • **when the street has no rubbish.** **Kavi will observe ten customers in each condition. He will count how many customers in each condition drop rubbish.**		

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>7(a)</td><td>Draw a table that Kavi could use to collect his data.

<table>
<tr><td></td><td>Rubbish</td><td>No rubbish</td></tr>
<tr><td>number of people dropping rubbish</td><td></td><td></td></tr>
</table>
3 marks – would collect data with full detail (tally/count / participant numbers)

<table>
<tr><td></td><td>Rubbish</td><td>No rubbish</td></tr>
<tr><td>number of people</td><td></td><td></td></tr>
</table>
2 marks – identifies 2 levels of IV but not DV

<table>
<tr><td>Participant number</td><td>Drops rubbish</td><td>Doesn’t drop rubbish</td></tr>
<tr><td>1</td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td></tr>
</table>
1 mark – table outline / has DV but not both levels of IV</td><td>3</td><td></td></tr>
</table>

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Question	Answer	Marks	Guidance
7(b)	**Kavi chose a narrow street rather than a wide street for his experiment.** **Suggest <u>one</u> reason why this choice was important for the validity of Kavi's experiment.** so the IV was definitely affecting the DV; (reason) to ensure they saw the rubbish; (linked detail) To be sure he would see dropping of rubbish; (linked detail) Or the DV measure would be invalid; (reason) Easier to observe; (reason)	**2**	Reason for affecting validity = 1 Detail = 1 Must be linked to study for 2 marks
7(c)	**Explain why it was necessary for all the rubbish to be removed in the second condition.** Otherwise there might be litter left from previous customers / other rubbish; (linked detail) Which would invalidate his manipulation of the IV; (explanation) To make it a control (condition); (explanation) To be sure only the IV of rubbish present affected the DV; (linked detail)	**2**	Explanation = 1 Detail = 1 Must be linked to study for 2 marks

Question	Answer	Marks	Guidance
8	**Cerys is observing a class of children who are learning to count. She is introduced to the class by the teacher, but then sits separately from the children to record her data.**		
8(a)(i)	**Explain whether Cerys is conducting a participant observation or a non-participant observation.** **Non-participant** (definitive) [no marks for just stating] **because** she is separate / not involved with the class;	**1**	Explanation = 1

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Question	Answer	Marks	Guidance
8(a)(ii)	**For the answer you have given in part (a)(i):** **Explain one strength of this type of observation.** Less risk of social desirability / demand characteristics; (explanation) because her presence will have less influence (on the children than if she joined in); (detail)	**2**	Explanation of strength of **non-participant observation** = 1 detail = 1
8(b)	**Cerys uses a structured observation.**		
8(b)(i)	**Suggest two behavioural categories that Cerys could use to measure how well the children are learning to count.** Counting to 5 correctly; Making a mistake; Missing out a number; Pointing at a number but saying a different number; Counting on fingers;	**2**	Behavioural category = 1 (x2) Must be an observable behaviour (not e.g. an emotion or belief)
8(b)(ii)	**In relation to using one of the behavioural categories you have suggested in part (b)(i):** **Explain one practical problem that Cerys could have.** *Making a mistake:* Cerys won't know whether the child couldn't count or was distracted so didn't try to count; = 2 (ambiguity) *Missing out a number*: The child may be shy/uncertain so speak too quietly; Cerys may think they have missed out a number / Cerys will underestimate their ability; (effect on results)	**2**	Brief practical problem = 1 Clear and detailed practical problem = 2 (e.g. ambiguity in scoring, effect on results) Ethical problem = 0

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Question	Answer	Marks	Guidance
9	**Nila is using a questionnaire to investigate adults' use and understanding of the internet. Four of her questions are:** **A Describe how useful the internet is to you.** **B Explain whether you would like to use the internet more than you do.** **C How confident are you that you could send an email? 1 = not confident at all, 5 = very confident.** **D 'Using the internet can be dangerous.' Do you agree? yes / no / not sure.**		
9(a)	**Identify <u>one</u> closed question from A to D.** 1 mark for C or D (DEFINITIVE]	**1**	**Accept** responses that have copied out the question instead of giving a letter
9(b)	**Identify <u>one</u> open question from A to D.** 1 mark for A or B (DEFINITIVE)	**1**	**Accept** responses that have copied out the question instead of giving a letter

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Question	Answer	Marks	Guidance
9(c)	**Nila wants to add this question to explore how adults use social media:** **How do you use social media? Tick all that apply.** • **to connect with colleagues** • **to connect with family** • **to discover local events.** **Explain <u>one</u> strength of Nila's question about the use of social media.** Her (closed) question gives **quantitative** data; (explanation) **so** can be used to compare between participants; (detail) **so** can be easily analysed / totalled / graphed; (detail) **so** the data is objective; (detail / explanation) Her (closed) question is **less** likely to produce **lies**; (explanation) **as** they only have to choose; (detail)	**2**	Explanation = 1 (generic or linked) Detail = 1 (generic or linked)

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Question	Answer	Marks	Guidance
10	**Henri feels relaxed when he smells flowers. He thinks that pleasant smells could influence daydreaming.**		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**. Detail in brackets. Other appropriate responses should also be credited. Use the table below to mark candidate responses to this question.
10(a)	**Describe how Henri could conduct a laboratory experiment to investigate the effect of pleasant smells on daydreaming.** **Do <u>not</u> describe sample/sampling technique or ethical issues/guidelines in your answer.** The four required features for this laboratory experiment are: (a) **independent variable**: smells: flowers/pleasant/unpleasant (any two, operationalised) (b) **dependent variable**: daydreaming (e.g. time, depth, detail – test/self-report/observe) or recall (as per Andrade) (c) **controls/standardisation**; 2 aspects identified (e.g. nature/intensity of smell, silence, boredom for daydreaming) (d) **experimental design**: any named (clear that different participants in each, how allocated etc.)	**10**	

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Level	The response:
Level 5 9-10 marks	• describes **all** the required features, **all** explicit and with detail, with mostly appropriate terminology. • clearly applies knowledge of methodology involved in planning an investigation.
Level 4 7–8 marks	• outlines **all** the required features, **all** explicit but only **some** of these with description/detail, with some appropriate terminology. • applies knowledge of methodology involved in planning an investigation.
Level 3 5–6 marks	EITHER: • outlines/identifies **some** of the required features and may have **some** description/detail, with some appropriate terminology OR • outlines/identifies **all** the required features, but one or more required feature is **implicit** and with little appropriate terminology. AND: • applies a basic knowledge of methodology involved in planning an investigation.
Level 2 3–4 marks	• outlines/identifies at least **two** of the required features but this lacks description/detail and uses little appropriate terminology. • attempts to use knowledge of methodology involved in planning an investigation.
Level 1 1–2 marks	EITHER: • identifies **one** of the required features and uses little appropriate terminology OR • may **not** use the method required by the question. AND • makes a limited attempt to use knowledge of methodology involved in planning an investigation.
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 <u>(a)</u>.** **Do <u>not</u> refer to sampling or ethics in your answer.** Strengths may relate to: Validity • operationalisation • situational/participant variables factors • controls/standardisation • design/counterbalancing. Reliability • inter-rater consistency • intra-rater consistency.	**2**	identification of generic strength = 1 detail = 1 (generic or linked). Accept other practical/methodological strengths.
10(b)(ii)	**Explain why the feature of the procedure you have identified in part <u>(b)(i)</u> is a strength.** **Do <u>not</u> refer to sampling or ethics in your answer.** Explanation may include possible effects on: • participants' responses/behaviour if the procedure had been different • the collection of results if the procedure had been different • the interpretation of results if the procedure had been different.	**2**	Both marks are for explaining the implications of the strength for the study. Award 1 mark for an explanation. Award 1 mark for detail. Max. 1 mark if no link to planned study.

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