Cambridge International AS & A Level

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PSYCHOLOGY **9990/21**

Paper 2 Research Methods **May/June 2019**

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.

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Generic Marking Principles

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

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

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

GENERIC MARKING PRINCIPLE 2:

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

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

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

GENERIC MARKING PRINCIPLE 4:

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

GENERIC MARKING PRINCIPLE 5:

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

GENERIC MARKING PRINCIPLE 6:

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

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Question	Answer	Marks
1	**From the study by Milgram (obedience):**	
1(a)	**Outline the sampling technique used in this study.** 1 mark for naming volunteer/self selected sampling 1 mark for explaining how it was done by Milgram volunteer/self selected = 1 mark participants gained by asking through adverts offering money / adverts in newspapers / direct mail requests = 1 mark	**2**
1(b)	**Suggest <u>one</u> advantage of using this sampling technique in this study.** Both marks are for one advantage. At least one point must be linked to the study. participants are easy to find **as they come to the researcher** = 1st mark ('easier' is not sufficient – opportunity is easier) e.g. Milgram only had to wait for replies to the ad/request = 2nd mark participants are likely to be more willing/committed/less likely to drop out = 1st mark e.g. would have been prepared to do a study on punishment = 2nd mark	**2**

Question	Answer	Marks
2(a)	**Explain what is meant by a 'covert observation'.** 1 mark for 'hidden'/'unaware' 1 mark for detail (can be of 'observation' or of 'covert' e.g. how they are going to be hidden e.g. in disguise) observation is watching behaviour (and listening) and recording it = 1 mark covert is where the participants are unaware of the observer = 1 mark because they are physically hidden/ not present / not apparent = 1 mark e.g. by using one-way mirrors / cameras = 1 mark	**2**
2(b)	**Suggest <u>one</u> disadvantage of <u>conducting</u> a covert observation.** Both marks are for one disadvantage of **conducting** being covert may make it hard to see all behaviours = 1st mark e.g. restricted by moving around conspicuously/ by video camera angle = 2nd mark may make it hard to record behaviour at the time / need to remember record and write it down after = 1st because if you are spotted taking notes it would break your cover = 2nd mark Max 1 for any response about ethics as these are about the consequences not the conduct of a covert observation	**2**

Question	Answer	Marks
3	**An experiment is testing the aim that smiling affects helpfulness. The procedure is to investigate whether people leaving a shop will hold a door open for people who are smiling.**	
3(a)	**Write an operationalised directional (one-tailed) hypothesis for this experiment.** 1 mark for a one-tailed hypothesis 2 marks for an operationalised hypothesis Components: Smiling (IV1) not smiling (IV2) holding door/helping (DV) 'more than' (one tailed) People help more when they are smiled at = 1 mark People help more when they are smiled at but don't when they are not = 2 marks. This has smiling (IV1) and not smiling (IV2) there is the DV (help more) and there is 'helping more when smiled at' so is one tailed. People are more helpful so hold doors open more often when they are smiled at = 2 marks [more helpful/hold doors (DV) when smiled at (IV1) but no IV2 so this can only be 1 mark] People are more helpful than when they are not smiled at = 1 mark. More helpful (in what way?) than when (with no detail) not smiled at?] People are more helpful so hold doors open more often when they are smiled at than when they are not smiled at = 2 [2 marks. Has IV1, IV2, DV and tail (i.e. more) People help when they are smiled at = 0 marks (too vague) People leaving a shop will hold the door open for people who smile = 0 marks (too vague)	**2**
3(b)	**Write a null hypothesis for this experiment.** Has to have two levels of IV but DV does not have to be operationalised Any difference between how helpful people when they are smiled at or not is due to chance. = 1 mark There is no difference between helpful people when they are smiled at or not. = 1 mark No marks for statements that are not hypotheses, or are experimental/ alternative hypotheses.	**1**

Question	Answer	Marks
4	**The study by Saavedra and Silverman (button phobia) raised ethical issues.** **Explain <u>two</u> ethical guidelines that are relevant to this study.** 1 mark for identifying an issues (whether resolved or not) } 1 mark for describing the situation in the study } ×2 the need for **informed consent**; this was obtained both from the boy and the parents; avoiding **psychological harm** ; he was distress by the desensitisation procedure; the researchers kept the sessions short/used a staged procedure to avoid too much distress; they used food which might encourage bad eating habits; maintaining **confidentiality**; we know the boy's ethnicity but few other details (so not identifiable); ensure **privacy**; the boy may have been asked questions he didn't want to answer (so not followed); boys' mother may have said things the boy didn't want other people to know; giving the **right to withdraw**; there were several adults in the room so he may have felt unable to leave;	**4**

Question	Answer	Marks
5	**State <u>one</u> advantage of using the mean as a measure of central tendency.** 1 mark for the advantage. the mean takes all the data points into account; it is more representative than the median/mode; the median/mode ignore the effect of outliers; 'it works out the average' = 0 marks (description not advantage)	**1**

Question	Answer	Marks
6	**Define extraneous variables and uncontrolled variables, using any examples.** Award 1 mark for each definition, up to a maximum of 2, for each type of variable. Award 1 mark for each example that is linked to one type of variable, up to a maximum of 2, for each type of variable. Examples can include examples from any studies or including imagined ones. **extraneous variables** are any variables that can affect the DV (other than the IV); and this effect can be random; e.g. if some participants in a study were hungry and worked faster to get home; which is less of a problem; or it can be systematic; and affect one level of the IV more than the other, resulting in a biased result/ error; e.g. if one condition was before lunch and all the participants were hungry so worked harder (and the other condition was after lunch so they were not hungry and worked more slowly); e.g. in Bandura's study the children's aggression was an extraneous variable (that was controlled); these are called confounding variables / ie they confound the results; these variables can be controlled (if they are identified); **uncontrolled variables** are variables that have not been identified as a problem; or have not been /cannot be successfully eliminated; so limit validity; because they can affect one level of the IV (more than the other); e.g. the weather; demand characteristics can cause uncontrolled variables; e.g. if it is obvious to one people in one level of the IV but not the other that they are in an experiment;	**6**

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Question	Answer	Marks
7	**Dan is looking for a correlation between the amount children play and how aggressive they are. He is not sure whether children who play more will be more aggressive or will be less aggressive.**	
7(a)(i)	**Suggest how 'playing' could be operationalised using a quantitative measure.** 1 mark for a suggested play behaviour or definition with a quantification. How often they participated in a game with other children; How much time they spent playing with other children; The number of times they jumped rope/skipped; Skipping, running, football; Number of times they played = 0 Checklist of play behaviours = 0	**1**
7(a)(ii)	**Suggest <u>one</u> problem with measuring 'playing'.** 1 mark for a suggested problem. Play fighting might be hard to tell from real fighting; Children may start to play but end up fighting so hard to break the stream of behaviour;	**1**
7(b)	**Suggest how 'aggression' could be operationalised using a quantitative measure.** 1 mark for a suggested fighting behaviour or definition with a quantification. How often they punched other children; How much time they spent fighting with other children; The number of times they pinched/bit another child; Behaviours like punching, kicking, pinching, fighting; (at least 2) Number of times they are aggressive = 0 Checklist of aggressive behaviours = 0	**1**
7(c)	**Dan finds that children who play more are also more aggressive. Explain why Dan <u>cannot</u> conclude that playing causes aggression.** 1 mark for identifying that it is because it is a correlation 1 mark for explanation. It's a correlation so you don't know which (if either of the two) variables are causal factors = 2 marks In a correlation a third factor might be the cause = 2 marks A correlation only allows you to say that two variables are related, not which one is making the other change = 2 marks	**2**

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Question	Answer	Marks
8	**Zho is investigating how quickly fish learn to respond to different coloured lights. She trains fish in two tanks to swim to the end of the tank for food in response to a light. She uses a red light with one tank and a green light with the other tank. She times how quickly the fish swim to the end of the tank.**	
8(a)	**Identify the dependent variable in this experiment.** 1 mark for identification of the DV How quickly the fish learn to respond to the light / swim to the end of the tank / work out that they must swim to get food; How quickly the fish swims / time to end of tank;	**1**
8(b)	**Identify the independent variable in this experiment.** 1 mark for identification of the IV colour (of light) / red or green	**1**

Question	Answer	Marks
8(c)	**Explain <u>two</u> ethical guidelines for working with animals.** describe ethical guidelines as used in to animals – replacement – species and strain – numbers – procedures – pain and distress – housing – reward – deprivation and aversive stimuli – anaesthesia – euthanasia 1 mark for identification of ethical guideline ×2 1 mark for explanation ×2 species (and strain); Choose a species that will suffer the least; minimum number (of animals); only use as many animals as is necessary to achieve the aim / e.g. 6 (or any small number); pain and distress; causing discomfort, stress etc. should be avoided; housing; the caging/environment should be the sufficient in terms of size/protection/appropriate opportunities for social behaviour; reward/deprivation/aversive stimuli; coloured lights could be an aversive stimulus;	**4**
8(d)	**Suggest how <u>one</u> ethical guideline for working with animals could be followed in Zho's experiment.** 1 mark for explanation linked to study *species (and strain)* Choose a fish species that it suited to living in a tank; *minimum number* only use as many fish as is really necessary; *pain and distress* e.g. she should make sure the fish get enough food; *housing* e.g. the tank should be big enough / the water should be the right temperature;	**1**

Question	Answer	Marks
8(e)	**Zho is plotting a bar chart of her results. Label the x-axis and y-axis on the graph below.** 1 mark: (mean) 'speed to swim' on y-axis 1 mark: units for y-axis (e.g. seconds/ minutes/ hours) 1 mark: 'colour of light' on x-axis 1 mark: 'red' and 'green' as categories on x-axis	**3**

Question	Answer	Marks
9	**Ella is conducting a laboratory experiment to find out whether singing helps people to relax. She is using a repeated measures design and will use pulse rate to measure relaxation.**	
9(a)	**Identify a suitable control <u>condition</u> for Ella's experiment.** 1 mark for control condition of 'no singing' people who don't sing = 1 mark a group who talk/whistle/hum instead of singing = 1 mark NB candidates may interpret this as 'listening to singing', accept this interpretation, in which case the appropriate control may be 'silence' or 'listening to music with no lyrics'	**1**
9(b)	**Explain why a repeated measures design is the best experimental design for Ella's study.** 1 mark for idea of individual differences 2nd mark for linking this to singing 3rd mark for detail e.g. in relation to the effect on relaxation people in an independent groups design might vary = 1st mark people are different = 1st mark it avoids the effects of individual differences = 1st mark they might differ in their normal pulse rate = 2nd mark this would be an uncontrolled variable = 3rd mark it would reduce the validity of the study = 3rd mark it could make it look as if there were differences in relaxation when really there were not = 3rd mark	**3**

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Question	Answer	Marks
9(c)	**Explain <u>one</u> disadvantage of a repeated measures design in Ella's study.** Both marks are for one disadvantage. At least one point must be linked to the study. there could be an order effect / a practice effect = generic mark The participants will have to have their relaxation level measured twice = link mark the second time they will know how this is done so might be more relaxed anyway = link mark they are likely to work out the aim of the study/there is a bigger risk of demand characteristics (than with an independent measures design) = generic mark so might try to relax more the second time = link mark	**2**
9(d)	**Ella considered using a field experiment but decided to use a laboratory experiment.** **Explain why it could have been better for Ella to conduct a <u>field</u> experiment.** 1 mark for each reason for being better as a field experiment (max 3) 2nd and 3rd mark may be for detail (including relevant use of terms) At least one mark must link directly to the study More ecologically valid = = 1st mark (generic) the participants would be less likely to guess the aim/ would not know they were in a study = 1st mark (generic) so their singing would be natural rather than forced = 2nd mark (link) there would be less risk of demand characteristics = 2nd mark (generic) so it would be more valid = 3rd mark (generic)	**3**

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Question	Answer	Marks
10	**Dr Bell is interested in how aware people are of the two factors involved in emotion according to the two-factor theory. He wants to know if people are aware of the influence of both physiological and cognitive changes on their emotions. He intends to use a structured interview to investigate this, based on people's recall of emotional events.**	
10(a)	**Describe how Dr Bell could conduct a structured interview to investigate whether people were aware of the influence of both physiological changes and cognitive changes on their emotions.** Three **major** omissions for a **structured interview study** are: **What**: – **content of questions** asked (i.e. topics, examples) **How**: – the interview is **structured** (e.g. question order/ timing/ location/ interviewer's dress, tone) – **style of questions** asked (e.g. open / closed / Likert / rating) The **minor** omissions are: **where** – location of participants when being interviewed **who** – participants Indicative content for an **interview** study: **What**: **content of questions** asked (i.e. topics, examples) **How**: open/closed questions about **emotions** lie questions filler questions description of how closed questions will be scored description of how quantitative data from closed questions will analysed description of how open questions will be interpreted sampling technique sample size ethical issues	**10**

Question	Answer	Marks
10(a)	Other appropriate responses should also be credited. Mark according to the levels of response criteria below: **Level 3 (8–10 marks)** • Response is described in sufficient detail to be **replicable**. • Response may have a minor omission. • Use of psychological terminology is accurate and comprehensive. **Level 2 (5–7 marks)** • Response is in some detail. • Response has minor omission(s). • Use of psychological terminology is accurate. **Level 1 (1–4 marks)** • Response is basic in detail. • Response has major omission(s). • If response is impossible to conduct max. 2. • Use of psychological terminology is mainly accurate. **Level 0 (0 marks)** No response worthy of credit.	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>10(b)</td><td>
Identify <u>one</u> practical /limitation with the <u>procedure</u> you have described in your answer to part (a) and suggest how your study might be done differently to overcome the problem. Do <u>not</u> refer to ethics or sampling in your answer.

Answer will depend on problem identified. If the problem was an obvious omission in (a), fewer marks will have been awarded in (a), so they can be awarded here.

Problems may, for example, be matters of:
Validity
• operationalisation
• participants have poor insight into reasons for emotions
• difficulty with poor recall/ lying to avoid emotional memories (also ethical problem)

Reliability
• standardisation – may not identify all aspects to standardise in interview
• subjectivity of Dr Bell's interpretation (as there may be open questions) – may also be validity

This list is not exhaustive and other appropriate responses should also be credited.

<table>
<tr><th>Level</th><th>Marks</th><th>Comment</th></tr>
<tr><td>3</td><td>3–4</td><td>Appropriate problem identified.
Appropriate solution is clearly described.</td></tr>
<tr><td>2</td><td>2</td><td>Appropriate problem identified.
plus
EITHER
Explanation of why it is a problem
OR
Ineffectual but possible solution described.</td></tr>
<tr><td>1</td><td>1</td><td>Appropriate problem identified.
Little or no justification.</td></tr>
<tr><td></td><td>0</td><td>No response worthy of credit</td></tr>
</table>
</td><td>4</td></tr>
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