Oxford Cambridge and RSA

GCE

Psychology

H167/01: Research methods

Advanced Subsidiary GCE

Mark Scheme for November 2020

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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Annotations

Annotation	Meaning
?	Unclear
AE	Attempts evaluation
BOD	Benefit of doubt
CONT	Context
✖	Cross
EVAL	Evaluation
▭	Extendable horizontal line
∿	Extendable horizontal wavy line
IRRL	Significant amount of material that doesn't answer the question
NAQ	Not answered question
RES	Good use of resources
✔	Tick
✔+	Development of point
⋀	Omission mark

Section A: Multiple Choice

Quest	Answer
1	B
2	C
3	A
4	A
5	B
6	C
7	A
8	B
9	D
10	D
11	D
12	C
13	B
14	A
15	C

Section B: Research Design and Response

Question			Answer	Marks	Guidance
Write a two-tailed alternative hypothesis for this study. [3]					
16			For example ... (accept variations in operational decisions of IV and DV) There will be a significant difference in the ability to concentrate (solving anagrams) when doodling (scribbling whatever liked) compared to not doodling. **3 mark answer:** Correctly cited alternative hypothesis with both IV and DV operationalised **2 mark answer:** Correctly cited alternative hypothesis with reference to both variables but neither or only one operationalised **1 mark answer:** Simply stating 'there will be a difference' **OR** An alternative hypothesis with reference to just one variable **0 marks:** No credit worthy information	Max 3	Context – doodling, drawing, scribbling, concentration etc - Can be written in future or present tense - Use of the word significant is not necessary for full marks - Award zero for citing a null alternative hypothesis - Award zero if reference to 'relationship' or 'correlation' - For full marks both the IV and DV must be operationalised

Explain how you would conduct a study using the experimental method to investigate if people are able to concentrate better when doodling compared to when not doodling. Justify your decisions as part of your explanation. You must refer to: [12]   - use of repeated measures design   - how you would operationalise the dependent variable (DV) in a way that would produce quantitative data   - the control of one extraneous variable   You should use your own experience of practical activities to inform your response.

Question	Answer	Marks	Guidance
17		Max 12	Context = doodling, drawing, scribbling, concentration etc

Level of Response	Details of required features (RFs) included	Justification of decisions made	Reference to own practical work
Good 10-12 marks	- **All 3** required features addressed - Accurate and detailed knowledge and understanding of each feature in context - **Good** evidence of **application** of required features in context	-**Appropriate justification** of all decisions and *some* is contextualised - Well developed line of reasoning that is clear and logically structured	- **Explicit** reference to own practical work and clear links between own work and the planned research for each required feature e.g. specific mention of aim or procedural features - For top level, 10 marks if one RF linker, 11 marks if two and 12 marks if all three - If there is no explicit link between own practical work and any of the three required features – max 9 marks
Reasonable 7-9 marks	- All 3 required features addressed - Reasonably accurate and detailed knowledge and understanding of each feature - At least two applications of required features in context	- Some appropriate justification of decisions related to all three required features - Bottom of the band if only two required features justified - There was some line of reasoning evident with some structure	
	It **two** required features are addressed in detail and justified in context and explicit links made to own practical work – award 8 marks		
Limited 4–6 marks	- **Two** of the required features addressed - Limited application of required features - OR all **three** required features referred to but in a limited way	- Attempt to justify decision(s) but weak - Evidence of some structure, but weak	
	If **one** required feature is addressed in detail and justified in context and explicit links made to own practical work – award 4 marks		
Basic 1-3 marks	- **One** of the required features addressed - **Weak** application of required features OR more than one of the required features referred to but in a very brief and/or basic way	- **None**, or if present very weak	

Outline how you would use random sampling to obtain a sample of 20 participants for this study from a group of 120 students in a lecture theatre at a university. [3]					
Question			Answer	Marks	Guidance
18	(a)		For example: Random sampling could be used by writing the name of all the 120 students in a lecture theatre at a university on slips of paper, put the slips of paper in a box, shake it up and pull out 20 slips of paper. The names of the students on these slips of paper would then be asked to participate in the study on doodling and concentration. **3 mark answer:** Clear description of how random sampling could be used, in context **2 mark answer:** Clear description of how random sampling could be used but not in context OR Attempt in context **1 mark answer:** Brief and/or unclear description of random sampling (whether in context or not) **0 marks:** No credit worthy information	Max 3	- Context – doodling, drawing, scribbling, concentration etc

Outline one strength of using random sampling to obtain participants for this study [3]					
		(b)		Answers could include: More representative of the effect of doodling on concentration of students as all students have had an equal chance of being selected, can generalise findings about the effects of doodling on concentration better etc **3 mark answer:** Clear outline of strength in context **2 mark answer:** Clear outline of strength but not in context OR Attempted outline of strength in context **1 mark answer:** Brief and/or weak attempt to outline strength (whether in context or not) **0 marks:** No credit worthy information	**Max 3**	- Context – doodling, drawing, scribbling, concentration etc

Name the sampling technique you used in any one of your own practical activities and outline one strength of obtaining participants in this way for your study [3]					
19			Answer here relates to one of the candidates own practical activities **3 mark answer:** Clear outline of strength in context **2 mark answer:** Clear outline of strength but not in context OR Attempted outline of strength in context **1 mark answer:** Brief and/or weak attempt to outline strength (whether in context or not) **0 marks:** If a sampling technique is simply named No credit worthy information	3	Context – the theme of the candidates own chosen practical activity

Outline one strength and one weakness of not having any qualitative data in this study [6]					
20			Strengths could include: easy to analyse data; easy to compare across individuals and conditions Weaknesses could include: don't know reasons why doodling may/may not affect concentration; lack of detail in general Up to 3 marks for each strength / weakness **3 mark answer:** Clear outline of strength/weakness in context **2 mark answer:** Clear outline of strength/weakness but not in context OR Attempted outline of strength/weakness in context **1 mark answer:** Brief and/or weak attempt to outline strength /weakness (whether in context or not) **0 marks:** No credit worthy information	**Max 6**	- Context – doodling, drawing, scribbling, concentration etc Note: Accept interchanging strengths/weaknesses of qualitative data. For example if a candidate has given a weakness of qualitative data as a strength of now having qualitative data in the study.
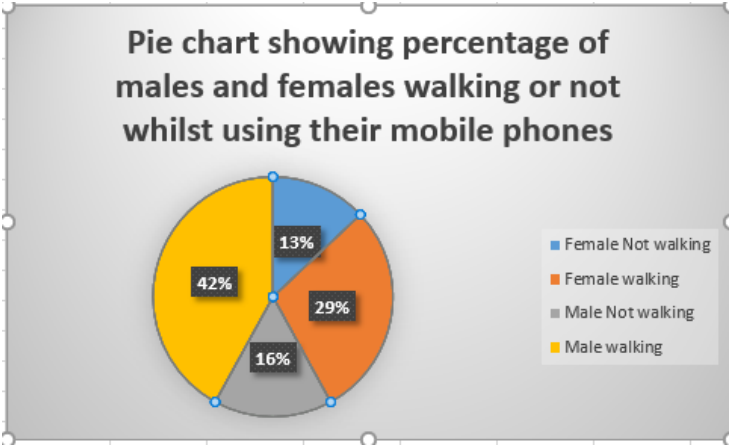
Outline how you could obtain some nominal data in this study [2]					
21	**(a)**		For example: Participants could be asked a closed question asking them to choose one of the following: ❑ Doodling helped me focus ❑ Doodling distracted me ❑ Doodling neither helped me focus or distracted me **2 mark answer:** Categories in context **1 mark answer:** An attempt at categories **0 marks:** No credit worthy information	**Max 2**	- Context – doodling, drawing, scribbling, concentration etc Note: Candidate must outline categories that relate to collection of data regarding the IV. Do not accept categories relating to the IV such as 'doodling' and 'not doodling'.

| | (b) | | Answers could include: provides more insight about the reason why doodling did / did not help concentration; can create fixed choice response options that allow ideas why doodling may help concentration or not to be explored more etc

3 mark answer:
Clear outline of strength in context

2 mark answer:
Clear outline of strength but not in context
OR
Attempted outline of strength in context

1 mark answer:
Brief and/or weak attempt to outline strength (whether in context or not)

0 marks:
No credit worthy information | **Max 3** | - Context – doodling, drawing, scribbling, concentration etc |

Section C: Data analysis and interpretation

Question			Answer	Mark	Guidance
What level of data has been collected in this study? Give reasons for your answer [2]
22			Nominal as the data is just frequent count of the number of males and females who did or did not use their phone whilst walking **2 mark answer:** Correct data identified and clear justification in context **1 mark answer:** Correct data identified and justified but not in context **OR** Correct data identified and a brief attempt to justify why in context **OR** Correct data identified **0 marks:** No credit worthy information	**Max 2**	Context = mobile, phone, walk(ing), texting etc

Outline two conclusions that can be made from the data collected in this study					
23				For example: Overall, most people walk whilst using their mobile, which suggests that they may think they are too busy to stop whilst doing what they are on their phone; more males than females walk whilst using their phone, which suggests that females may be more self-conscious of using their phone whilst walking than males and prefer to stop whilst doing so. Up to 2 marks for each conclusion **2 mark answer:** Clear outline of conclusion in context **1 mark answer:** Clear outline of conclusion but not in context **OR** Attempted outline of conclusion in context **0 marks:** No credit worthy information	**Max 4**	Context = mobile, phone, walk(ing), texting etc Must be conclusions (interpretation of data), and not simply stating findings (if so cap at 1 mark max, whether one or two findings stated)

Draw a fully labelled pie chart displaying the data from this study [4]				
24			Pie chart showing percentage of males and females walking or not whilst using their mobile phones **1 mark** for correctly calculating what proportion of the circle should represent each of the four behavioural categories. **1 mark** for drawing the sectors in proportional size to the data displayed **1 mark** for clear labelling of each sector of the pie chart **1 mark** is awarded for a clear and appropriate title	**Max 4**	Context = mobile, phone, walk(ing), texting etc Sectors of the pie chart need only be approximate sizes (examiners do not need to check with protractor or overlay in RM assessor) Calculations can be percentages and/or degrees (decimal places or whole figures) of circle (within labelling of the pie chart, or separately at the side) Females walking 58/200 x 100 = 29% 58/200 x 360 = 104.4 degrees Females not walking 26/200 x 100 = 13% 58/200 x 360 = 46.8 degrees Males walking 84/200 x 100 = 42% 84/200 x 360 = 151.2 degrees Males not walking 32/200 x 100 = 16% 32/200 x 360 = 57.6 degrees

Calculate the overall percentage of people using their phones whilst walking. Show your workings [3]					
25			71% 84 males + 58 females = 142 in total 142/200 * 100 = 71% **3 mark answer:** Correct answer with full workings shown **2 mark answer:** Correct answer with some workings shown **1 mark answer:** Correct answer with no workings shown **0 marks:** No credit worthy information	**Max 3**	

Explain why the chi-square would be the appropriate non-parametric inferential statistical test to use to analyse the data from this study [3]					
26	(a)		Reasons: - test of difference (the study investigated the difference between males/females walking or not whilst using mobile phone) - nominal data collected (frequency count of people using phone or not whilst walking) - independent measures design (males vs females using phone or not whilst walking) **3 mark answer:** Two appropriate reasons provided, both in context **2 mark answer:** Two appropriate reasons provided, but only one, or neither in context **1 mark answer:** One appropriate reason provided but, not in context **0 marks:** No credit worthy information	**Max 3**	-Context = mobile, phone, walk(ing), texting etc

Using the extract of the tables of critical values for the chi-square test presented below, what is the critical value at the 5% probability level for data collected in this study? [2]				
	(b)		The critical value is 3.841 **2 mark answer:** Critical value stated **1 mark answer:** Degrees of freedom correctly identified as 1 but without stating the critical value from the table (or incorrectly stating the critical value) **0 marks:** No credit worthy information	**Max 2**	If a candidate just circles the correct critical value in the table award 2 marks (as to be able to do this requires knowledge of what df to use) Award 1 mark if df = 1 is just circled on the table (so remember to check table)

The calculated value of chi-square is 0.2681. Write the significance statement at the 5% level of probability for this study [3]				
	(c)		$X^2 = 0.2681$, df=1, $p>0.05$ **OR** in words e.g. this **is** not a significant result (at the 5% probability level) because the calculated value of X^2 had to be equal to or exceed the table critical value (3.841) to be significant, therefore we reject the alternative hypothesis and accept the null hypothesis **2 mark answer:** Correctly written significance statement (calculated value, degrees of freedom and probability level) OR written in words rather than a formal statement **1 mark answer:** Just stating $p>0.05$ OR weak and/or brief written response **0 marks:** No credit worthy information	**Max 2**	

Name the appropriate inferential statistical test to analyse the data from any one of your own practical activities. Give reasons for your answer [4]

| 27 | | | Depends on candidates own practical activity

4 mark answer:
Appropriate test named and justified with **two or more** clear reasons in context

3 mark answer:
Appropriate test named and justified with **one** clear reason in context

2 mark answer:
Appropriate test named and justified, but not in context

1 mark answer:
Appropriate test named and weak attempt to justify why (whether in context or not)
OR correct test named only

0 marks:
No credit worthy information | Max 4 | Context here = the theme of the candidates own chosen practical activity

If incorrect test named = zero, regardless of whether any justification is provided or not (and regardless of whether the justification relates to the correct test)

Cap at 2 marks if correct test named and reasons given, but one is incorrect |

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