OCR
Oxford Cambridge and RSA

GCE

Psychology

Unit **H167/01**: Research methods

Advanced Subsidiary GCE

Mark Scheme for June 2018

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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.

These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

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 which doesn't answer the question
NAQ	Not answered question
RES	Good use of resources
	Tick
	Development of point
^	Omission mark

Section A: Multiple choice

Ques	Answer
1	D
2	C
3	A
4	B
5	B
6	D
7	C
8	B
9	D
10	B
11	A
12	C
13a	B
13b	C
13c	C

Section B: Research design and response

Write an alternative one-tailed hypothesis for this study. [3]					
Question			**Answer**	**Marks**	**Guidance**
14			For example … There will be a positive correlation between the amount of TV watched (average hours viewed per week) and the number of items of snack foods (crisps, peanuts and chocolate) eaten. 3 marks are awarded for correctly citing an appropriate alternative hypothesis for this study with increasing level of detail in terms of reference to the variables studied. 1 mark for the stem, which should predict a correlation plus 1 mark for the inclusion of each of the variables, plus a further mark if both variables are fully operationalised.	**Max 3**	-Can be written in future or present tense. -Use of the word 'significant' is not necessary for full marks. -Award zero if reference to a difference and/or cause-and-effect (rather than relationship or correlation) -For full marks both the variables must be operationalised. -can state positive or negative correlation will be found -Zero marks if cited as two-tailed (must be one-tailed - i.e. state a positive OR negative correlation) -If phrased as an experimental, rather than correlational hypothesis = zero
			Correctly cited one-tailed alternative hypothesis with both variables operationalised	**3**	
			Correctly cited one-tailed alternative hypothesis with reference to both variables, but only one operationalised	**2**	
			Correctly cited one-tailed alternative hypothesis with reference to both variables, but neither operationalised	**1**	
			The candidate has not provided any creditworthy information	**0**	

Explain how you would conduct a study using the correlation technique to investigate if there is a relationship between the amount of TV watched and snack foods eaten. Justify your decisions as part of your explanation. You must refer to: **[12]**

- how the participants would be obtained
- how data for each of the measured variables would be obtained
- the control of at least one extraneous variable

You should use your own experience of practical activities to inform your response.

Question			**Answer**		**Marks**	**Guidance**
15					**Max 12**	Context = reference to TV and snacks

<table>
<tr><th>Level of response</th><th>Details of required features (RFs) included</th><th>Justification of decisions made</th><th>Reference to own practical work</th></tr>
<tr><td rowspan="2">Good
10-12 marks</td><td>-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</td><td>-Appropriate justification of all decisions and some is contextualized
-Well developed line of reasoning that is clear and logically structured</td><td rowspan="6">-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 band (good) 10 marks if just one RF linked, 11 marks if two and 12 if all three

-If there is no explicit clear link between own practical work and any of the 3 required features caps the mark at 9 maximum.

RF1 – sampling technique must be described, not just named (otherwise counts as ‘basic’)

RF2 – must be clear how both variables will be measured for use in a correlation analysis (production of quantitative data)</td></tr>
<tr><td rowspan="2">Reasonable
7-9 marks</td><td>-All 3 required features addressed
-Reasonably accurate and detailed knowledge and understanding of each feature
-At least two applications of required features in context</td><td>-Some appropriate justification of decision related to all three required features (7 marks if only two required features justified)
-There was a line of reasoning evident with some structure</td></tr>
<tr><td colspan="2">If two required features are addressed in detail and justified in context and explicit links made to own practical work award 8 marks</td></tr>
<tr><td rowspan="3">Limited
4-6 marks</td><td>-Two of the required features addressed
-Limited application of required features
OR all required features referred to but in a limited way</td><td>-Attempt to justify decision(s) but weak
-Evidence of some structure, but weak</td></tr>
<tr><td colspan="2">If one required feature addressed in detail and justified in context and explicit links made to own practical work award 4 marks</td></tr>
<tr><td rowspan="2">Basic
1-3 marks</td><td>-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</td><td>-None, or if present very weak</td></tr>
</table>

Describe one strength of using the correlation technique in this study. [3]					
Question			**Answer**	**Marks**	**Guidance**
16	**(a)**		Likely answers: enables the relationship between amount of TV viewed, and amount of snack food eaten to be studied; enables both variables (TV viewing hours and amount of snacks consumed) to be expressed quantatively; allows data to be plotted on a scatterdiagram etc etc	**Max 3**	Context = reference to TV and snacks -If using *'can see relationship between variables'* as strength needs elaboration for full marks – e.g. by stating when the data is plotted on a scatterdiagram, or by outlining how the relationship shown can then be used as the basis for more controlled research investigating cause-and-effect etc. If just simply stating can see relationship easy cap at 1 mark (whether in context or not) -Any reference to cause-and-effect as a strength at any stage of answer = zero
			Clear description of strength of correlation in context	**3**	
			Clear description of strength of correlation but not in context **OR** attempt in context	**2**	
			Brief and/or weak attempt to describe strength of correlation data (whether in context or not)	**1**	
			The candidate has not provided any creditworthy information	**0**	

Describe one weakness of using the correlation technique in this study. [3]					
Question			**Answer**	**Marks**	**Guidance**
16	**(b)**		Likely answers: doesn't show cause-and-effect (whether watching TV makes people eat more snacks or not); affords no insight in to why people may eat more when watching TV etc etc	**Max 3**	Context = reference to TV and snacks -If just saying something like ... *'doesn't establish cause-and-effect between amount of TV watched and amount of snack foods eaten'* without any elaboration, cap at 1 mark
			Clear description of weakness of correlation in context	**3**	
			Clear description of weakness of correlation but not in context **OR** attempt in context	**2**	
			Brief and/or weak attempt to describe weakness of correlation data (whether in context or not)	**1**	
			The candidate has not provided any creditworthy information	**0**	

Name the graph that would be used to display the data from a correlation analysis. [1]					
Question			**Answer**	**Marks**	**Guidance**
17			Scatter diagram (accept 'scattergraph' or 'scattergram' also)	**Max 1**	-Also accept 'scattergraph' and 'scattergram'
			AO1 mark: 1 mark for correct naming of scatter diagram (or scattergraph or scattergram)	1xAO1 mark	
			Scatter diagram (or scattergraph or scattergram) correctly named	**1**	
			The candidate has not provided any creditworthy information	**0**	

Explain what the term 'positive correlation' refers to. [2]					
Question			**Answer**	**Marks**	**Guidance**
18			A positive correlation is a relationship between two variables in which the value of one variable increases as the other increases	**Max 2**	-Any reference to IVs and DVs or cause-and-effect = zero
			Clear explanation of what a positive correlation is	**2**	
			Attempt to explain what a positive correlation is	**1**	
			The candidate has not provided any creditworthy information	**0**	

Explain how you could reduce the possibility of social desirability in this study. [4]					
Question			**Answer**	**Marks**	**Guidance**
19			For example: keeping participants naïve; anonymous responses; inclusion of other, unrelated questions (distractor / filler questions); providing data / completing study outside of a research context etc	**Max 4**	-Context = reference to TV and/or snacks -The explanation for reducing social desirability can refer to either variable, or both of them together
			Clear explanation of how to reduce social desirability in context	**4**	
			Clear explanation of how to reduce social desirability, but not in context **OR** attempt in context	**3**	
			Attempt to explain how to reduce social desirability but not in context	**2**	
			Brief and/or weak attempt to explain how to reduce social desirability whether in context or not	**1**	
			The candidate has not provided any creditworthy information	**0**	

Explain what the term 'criterion validity' refers to in this study. [3]					
Question			**Answer**	**Marks**	**Guidance**
20			Criterion validity (or 'predictive validity') assesses how well one measure predicts an outcome for another (related) measure. Here, it refers to how well the measures taken to investigate the relationship between the amount of TV viewed and the number of snacks consumed would compare to different measures of the same thing, such as using weight gain instead of the number of snacks consumed.	**Max 3**	Context = reference to TV and/or snacks Accept reference to'predictive validity' -Award one mark for discussion of validity in general (and cap at this if no explanation of criterion validity specifically)
			Clear explanation of what criterion validity refers to in context	**3**	
			Clear description of what criterion validity refers to but not in context **OR** attempt in context	**2**	
			Brief and/or weak attempt to explain what criterion validity refers to, whether in context or not	**1**	
			The candidate has not provided any creditworthy information	**0**	

For each of the following, identify the section (or sub-section) they would appear in when writing-up the practical report for this study.

(a) Raw data [1]

(b) Replicable details of how the study was conducted [1]

(c) Names, dates and place of publication of work by other researchers [1]

(d) An evaluation of the way the study was conducted [1]

Question			**Answer**	**Marks**	**Guidance**
21			(a) Appendices (b) procedure (also credit 'method' as section the procedure is in) (c) References (d) Discussion One mark each for correctly identifying the section or sub-section	**Max 4**	
			Section or sub-section correctly identified for all 4 things	**4**	
			Section or sub-section correctly identified for 3 things	**3**	
			Section or sub-section correctly identified for 2 things	**2**	
			Section or sub-section correctly identified for 1 things	**1**	
			The candidate has not provided any creditworthy information	**0**	

Section C: Data analysis and interpretation

Explain what quantitative data is. [2]					
Question			**Answer**	**Marks**	**Guidance**
22	**(a)**		Ouantitative data is information about the quantity of something that is expressed in numbers, rather than words	**Max 2**	-1 mark if literally just saying 'numbers' without any attempt to explain what is meant by numbers. -Examples of 2 mark responses could include … 'findings', 'data recorded in numbers', or 'the measurement of a variable or aspect of persons behaviour' -'Numbers that are easy to analyse and compare' = 2 marks
			Clear explanation of what quantitative data is	**2**	
			Attempt to explain what quantitative data is	**1**	
			The candidate has not provided any creditworthy information	**0**	

Outline one advantage of having quantitative data rather than qualitative data in this study. [3]					
Question			**Answer**	**Marks**	**Guidance**
22	**(b)**		Advantages include ... -Able to perform more descriptive statistics (e.g. calculate the mean of the tastiness of each brand of crisp) -More objective -Easier to analyse and present findings -Easier to compare results across conditions	**Max 3**	-Context = crisps, premium and/or budget brand and tasty/tastiness -Accept any reference to study details (e.g. participant numbers) as context -For 3 marks must be some comparison with qualitative data in discussing strength -Cap at 1 mark if there is no reference to qualitative data at all in answer (whether in context or not). However, candidates may refer to 'data being in words', rather than using the 'qualitative', and this IS acceptable.
			Clear and detailed outline of advantage in context	**3**	
			Clear outline of advantage, but not in context **OR** attempt in context	**2**	
			Brief and/or weak attempt to outline advantage (whether in context or not)	**1**	
			The candidate has not provided any creditworthy information	**0**	

Name the appropriate inferential statistical test to analyse the data in this study. Give reasons for your answer. [4]					
Question			**Answer**	**Marks**	**Guidance**
23	**(a)**		The appropriate inferential statistical test is the Mann Whitney U test. This is because ... (i) It is a test of the difference between two conditions (and the study was investigating the difference in ratings for premium and budget crisps) (ii) It is a test that is used with independent measures designs (and the experiment had different people rating the premium crisps compared to rating the budget crisps), and (iii) It is a test that requires ordinal level data (ratings of the tastiness of crisps on a scale 1 to 20 is ordinal because the outcomes can be ranked)	**Max 4**	-Context = crisps, premium and/or budget brand and tasty/tastiness -Context needs to be expressed in relation to justifying choice of test (just saying as a standard lead sentence … 'In this study about taste and crisps …. ' is not acceptable for context here) -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 (e.g. saying nominal rather than ordinal data)
			The candidate has not provided any creditworthy information	**0**	
			Appropriate test named and justified with more than one clear reason in context	**4**	
			Appropriate test named and justified with one clear reason in context	**3**	
			Appropriate test named and justified, but not in context	**2**	
			Appropriate test named and attempt to justify why (whether in context or not)	**1**	
			The candidate has not provided any creditworthy information	**0**	

Explain how you would find the critical value to compare the calculated value to after conducting this test. [2]					
Question			**Answer**	**Marks**	**Guidance**
23	**(b)**		It would be obtained from a table of critical values using the number of participants in each condition (12) to look up the appropriate figure to use	**Max 2**	-1 mark if just stating something like ... 'use table of critical values' -Reference to tables of critical values for the wrong test (e.g. Chi square) = zero -Reference to number of participants alone is not creditworthy
			Clear explanation of how to find the critical value	**2**	
			Attempt to explain of how to find the critical value	**1**	
			The candidate has not provided any creditworthy information	**0**	

Outline one conclusion that could be made about this study if p<0.05 appeared in the significance statement after conducting this test. [4]					
Question			**Answer**	**Marks**	**Guidance**
23	**(c)**		**2 marks for each conclusion** In this study p<0.05 would mean that there is a less than 5% probability that null hypothesis (which states there would be no difference in how premium and budget brand crisps tasted) was true. Therefore, we can conclude that people regard premium brand crisps as being tastier than budget brand crisps. This means that things other than actual taste of crisps can influence our perception of what they are like. Things such as the appearance of the packaging of the crisps and the labels used to describe them.	**Max 4**	-Context = crisps, premium and/or budget brand and tasty/tastiness -For 4 marks must include reference to rejecting the null **and** accepting the alternative hypothesis in context -Reference to alternative and null hypotheses can be implicit – e.g. stating that there is a significant difference between the ratings of the two different brands of crisps (this is creditworthy as H_1)
			Clear and detailed conclusion outlined in context with correct reference to both the null and alternative hypothesis	**4**	
			Clear and detailed conclusion outlined in context with correct reference to *either* the null or alternative hypothesis	**3**	
			Clear and detailed conclusion, but not outlined in context **OR** attempt to outline conclusion in context	**2**	
			Brief and/or weak attempt to outline conclusion, whether in context or not	**1**	
			The candidate has not provided any creditworthy information	**0**	

The range and standard deviation are both measures of dispersion. Outline one way that they are different. [2]					
Question			**Answer**	**Marks**	**Guidance**
24	**(a)**		The range only compares the highest and lowest value, subtracting one from the other, whereas the standard deviation compares each individual score with the mean.	**Max 2**	-For two marks some acknowledgement of the fact that SD takes in to account ALL the data collected is required -If just describing how to calculate one of the measures of dispersion, with no comparison of how this is different to the other (or if the point of comparison is incorrect) = zero marks -Accept as a difference the difficulty of calculating the SD compared to the range
			Clear outline of one way the range and standard deviation are different	**2**	
			Attempt to outline of one way the range and standard deviation are different	**1**	
			The candidate has not provided any creditworthy information	**0**	

Outline two conclusions that can be made about this experiment from the calculation of the range. [4]					
Question			**Answer**	**Marks**	**Guidance**
24	**(b)**		Examples could include … -People vary a lot in how they rate the tastiness of premium and budget brand crisps -There is more variation in peoples' ratings of the tastiness of the budget crisps than the premium brand crisps. This means some people seem to think they are very tasty, whereas others do not regard them as tasty at all **2 marks for each conclusion**	**Max 4**	-Context = crisps, premium and/or budget brand and tasty/tastiness -Cap at 1 mark maximum out of 4 overall if only results / findings presented with no attempt to interpret what they suggest and no conclusion. If there is one finding and one clear conclusion in context = 3 marks, or 2 marks if the conclusion is not in context/attempted in context) -Zero marks if findings presented which are incorrect (e.g. claiming that the range for the budget brand crisps was 16 which means people really liked the taste of them etc) -Range for 'Premium brand' ... 20 - 8 = 12 (also accept +1 in calculation, = 13) -Range for 'Budget brand' ... 18 - 2 = 16 (also accept +1 in calculation, = 17)
			Clear conclusion outlined in context	**2**	
			Clear conclusion outlined but not in context **OR** attempt to outline conclusion in context	**1**	
			The candidate has not provided any creditworthy information	**0**	

Explain how the choice of experimental design used in this study could have affected the validity of the data collected. [4]					
Question			**Answer**	**Marks**	**Guidance**
25			The experimental design used in this study was independent measures design. This could have lowered the validity of the data collected as the ratings given about the crisps may not have been based on brand, but individual differences between the participants in each condition in terms of simply whether they liked crisps or not in general (regardless of brand). The validity could also have been lowered as the different participants in each of the conditions may have interpreted and used the rating scale differently.	**Max 4**	-Context = crisps, premium and/or budget brand and tasty/tastiness -Both strengths and weaknesses of the use of independent measures designs are creditworthy
			Clear and detailed explanation of how the experimental design may have influenced the validity of the data collected	**3-4**	
			Clear and detailed outline of how the experimental design may have influenced the validity of the data collected not in context **OR** clear brief outline of how the experimental design may have influenced the validity of the data collected in context	**2**	
			Brief and/or weak attempt to describe how the experimental design may have influenced the validity of the data collected (whether in context or not)	**1**	
			The candidate has not provided any creditworthy information	**0**	

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