

**GCE**

**Psychology**

**H567/01: Research methods**

Advanced 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**

<b>Annotation</b>	<b>Meaning</b>
	Unclear
	Attempts evaluation
	Benefit of doubt
	Context
	Cross
	Evaluation
	Extendable horizontal line
	Extendable horizontal wavy line
	Significant amount of material that doesn't answer the question
	Not answered question
	Good use of resources
	Tick
	Development of point
	Omission mark

**Section A: Multiple Choice**

Quest	Answer	
1	B	positive
2	C	type 1 error
3	B	median
4	A	Chi-square
5	C	Mann-Whitney U Test
6	C	$p < 0.05$
7	B	level of data
8	C	time sampling
9	A	dispersion around the mean
10	B	laboratory experiment using a mixture of repeated measures and independent measures design
11	C	nominal
12	D	0.05
13	B	4
14	D	positively skewed
15	C	data is normally distributed in the population
16	C	0.0061
17	D	surname
18	D	raw
19	D	structured pairs
20	B	median

Question	Answer	Mark	Guidance
21	<p>For example: Less food (number of items eaten) will be consumed from the red plate compared to the white plate. OR More food (number of items eaten) will be eaten from the white plate compared to the red plate.</p> <p><b>3 mark answer:</b> Correctly cited one-tailed alternative hypothesis with both variables operationalised</p> <p><b>2 mark answer:</b> Correctly cited one-tailed alternative hypothesis with reference to both variables, but only one operationalised</p> <p><b>1 mark answer:</b> Correctly cited one-tailed alternative hypothesis with reference to both variables, but neither operationalised</p> <p><b>0 marks:</b> No credit worthy information</p>	3	<p>Context = food, meal(s), eating, plate(s), crockery etc</p> <p>Can be written in future or present tense.</p> <p>Use of the word 'significant' is not necessary for full marks.</p> <p>For full marks both the variables must be operationalised.</p> <p>Award zero if a two-tailed hypothesis, null hypothesis, or reference to relationship</p> <p>Allow opposite one-tailed</p> <p>DV could be food, items of food, mass of food</p> <p>It needs to be clear that it is about food consumption and not being served</p> <p>Colours do not need to be red and white. Can be any colours</p>

22				15	Context – food, meal(s), eating, plate(s), crockery etc
Level of Response	Details of required features (RFs) included	Justification of decisions made	Additional guidance		
<b>Good</b> 12-15 marks	<ul style="list-style-type: none"> <li>- <b>All 4</b> required features addressed</li> <li>- Accurate and detailed knowledge and understanding of each feature in context</li> <li>- <b>Good</b> evidence of <b>application</b> of required features in context</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Appropriate justification</b> of all decisions and <i>some</i> is contextualised</li> <li>- Well developed line of reasoning that is clear and logically structured</li> </ul>	<p><b>Explicit</b> reference to own practical work and clear links between own work and the planned research required feature e.g. specific mention of aim or procedural features from own research</p> <p>If there is no explicit link between own practical work and any of the four required features – max 11 marks</p>		
<b>Reasonable</b> 8-11 marks	<ul style="list-style-type: none"> <li>- At least <b>3</b> required features addressed in context</li> <li>- Reasonably accurate and detailed knowledge and understanding of each feature</li> </ul>	<ul style="list-style-type: none"> <li>- Some appropriate justification of decisions related to required features (if no justification in context – max 8 marks)</li> <li>- There was some line of reasoning evident with some structure</li> </ul>	<p>RF1- Basic – Just identifying the sampling technique, Limited – sampling method identified and defined, Reasonable – Identified the sampling method, possibly defined and attempted to explain how this has been carried out in their study. Good – Identified the sampling method and clearly explained how this has been carried out in their study</p>		
	It <b>two</b> required features are addressed in detail and justified in context and explicit links made to own practical work – award 8 marks		<p>RF 2- Allow reference to design IMD/RMD as part of operationalising the IV</p>		
<b>Limited</b> 4–7 marks	<ul style="list-style-type: none"> <li>-At least <b>2</b> of the required features addressed in context</li> <li>- Limited application of required features</li> <li>- OR <b>3</b> or <b>4</b> required features referred to but in a limited way</li> </ul>	<ul style="list-style-type: none"> <li>- Attempt to justify decision(s) but weak</li> <li>- Evidence of some structure, but weak</li> </ul>	<p>RF 3- needs to lead to data to be at least ordinal data to be addressed. Semantic differential scales can be creditworthy and are considered reasonable (good if the numerical scale is given or an explanation of how the data will be made ordinal) weight is not context for this RF.</p>		
	If <b>one</b> required feature is addressed in detail and justified in context and explicit links made to own practical work – max 4 marks		<p>RF 4-Integrity, Respect, Responsibility, Competence. Also allow social sensitivity.</p>		
<b>Basic</b> 1-3 marks	<ul style="list-style-type: none"> <li>- At least <b>1</b> of the required features addressed</li> <li>- <b>Weak</b> application of required features</li> <li>- OR more than one of the required features referred to but in a very brief and/or basic way</li> </ul>	- <b>None</b> , or if present very weak	<p>Basic – just identifies the ethical consideration, Limited - Limited explanation of the ethical consideration, Reasonable – identifying the ethical consideration/how it can be addressed, Good – Explaining the ethical consideration and clarity on how it can be addressed.</p>		

Question		Answer	Mark	Guidance
23	(a)	<p>Likely answers: individual differences (participant variables) controlled for, fewer participants required</p> <p><b>3 mark answer:</b> Clear outline of strength in context</p> <p><b>2 mark answer:</b> Clear outline of strength but not in context OR Attempted outline of strength in context</p> <p><b>1 mark answer:</b> Brief and/or weak attempt to outline strength (whether in context or not)</p> <p><b>0 marks:</b> No credit worthy information</p>	3	Context = food, meal(s), eating, plate(s), crockery etc
	(b)	<p>Likely answers: order (or carry-over) effects a problem, increased risk of demand characteristics, fatigue</p> <p><b>3 mark answer:</b> Clear description of weakness in context</p> <p><b>2 mark answer:</b> Clear description of weakness but not in context OR Attempted outline of weakness in context</p> <p><b>1 mark answer:</b> Brief and/or weak attempt to describe weakness (whether in context or not)</p> <p><b>0 marks:</b> No credit worthy information</p>	3	Context = food, meal(s), eating, plate(s), crockery etc

24	(a)	<p><b>Example response:</b> Why did you eat the food during the study? Describe to me why you think the colour of the plate might have influenced how much food you ate.</p> <p><b>2 mark answer:</b> Clear outline in context</p> <p><b>1 mark answer:</b> Clear outline but not in context OR Attempt in context</p> <p><b>0 marks:</b> No credit worthy information</p>	2	<p>-Context = food, meal(s), eating, plate(s), crockery etc</p> <p>No marks awarded to closed questions.</p> <p>Can be awarded mark for both a question or a statement</p> <p>Do not necessarily have to ask a specific question for full marks</p>
	(b)	<p>Likely answers: provides rich and detailed responses, allows participants to explain their behaviour in the experiment, doesn't allow differences between participants to be ranked, is subjective, does not enable use of descriptive statistics (e.g. mean), some motivated participants may write more detailed responses compared to other participants, less reliable etc</p> <p><b>3 mark answer:</b> Clear evaluation in context</p> <p><b>2 mark answer:</b> Clear evaluation but not in context OR Attempt in context</p> <p><b>1 mark answer:</b> Brief and/or weak attempt (whether in context or not)</p> <p><b>0 marks:</b> No credit worthy information</p>	3	<p>-Context = food, meal(s), eating, plate(s), crockery etc</p> <p>Accept positive and/or negative evaluation points as creditworthy</p> <p>Can get full credit for one point although this will need to be a detailed point in context.</p>

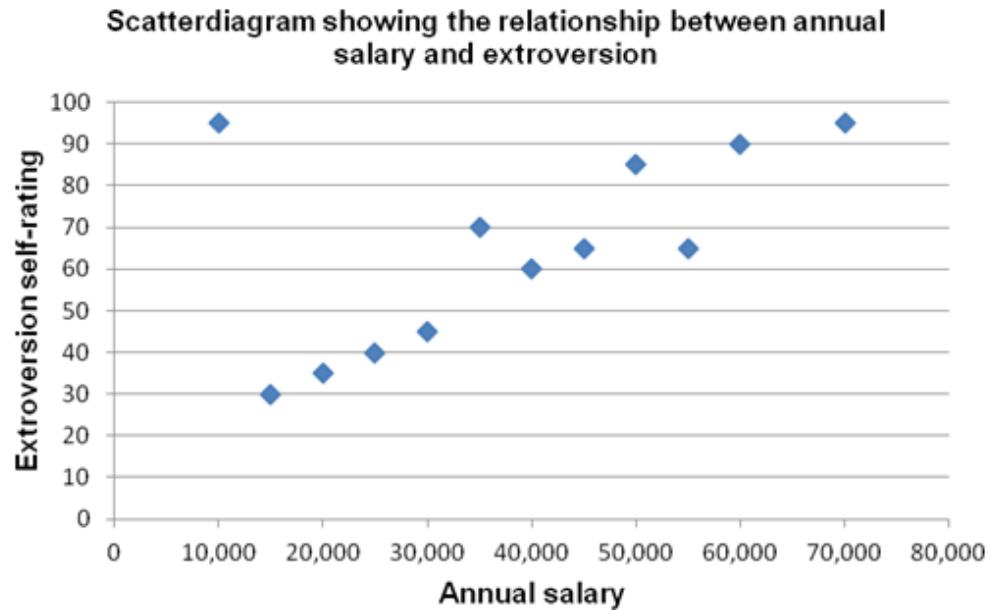


<b>25</b>			<p>External validity can refer to aspects of ecological validity and or population validity.</p> <p><b>5-6 mark answer:</b> Clear evaluation with two or more points with some context (for 6 marks two of the points must be in context)</p> <p><b>3-4 mark answer:</b> Clear evaluation with two or more points but not in context OR One clear evaluation point in context OR Two points, with one in context</p> <p><b>1-2 mark answer:</b> Attempted evaluation (whether in context or not)</p>	<b>6</b>	<p>Context = food, meal(s), eating, plate(s), crockery etc</p> <p>Accept positive and/or negative evaluation points as creditworthy</p> <p>Do not accept evaluation points related to the methodology used in general</p> <p>Ignore reference to usefulness</p>
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### Section C: Data analysis and interpretation

<b>26</b>	<b>(a)</b>	<p>Ranking data refers to assigning numbers to denote position in an ordered sequence (lowest to highest or vice versa)</p> <p><b>2 mark answer:</b> An explanation in context</p> <p><b>1 mark answer:</b> An attempted explanation whether in context or not</p> <p><b>0 marks:</b> No credit worthy information</p>	<b>2</b>	Context = personality, introvert, extrovert, money, salary etc
	<b>(b)</b>	<p>They both have the same extroversion rating (65), which in an ordered sequence of all the extroversion ratings occupy rank positions 6 and 7, so ranks 6 and 7 have been shared (added together and divided by two), resulting in a rank of 6.5 for both.</p> <p><b>2 mark answer:</b> Clear explanation</p> <p><b>1 mark answer:</b> Attempted explanation</p> <p><b>0 marks:</b> No credit worthy information</p>	<b>2</b>	Could refer to having a tied rank.

27 (a)



1 mark for accurate plotting of data  
1 mark for title with reference to both co-variables and relationship/correlation  
1 mark for clear labelling of both axes  
1 mark for scales on both axes

4

- If points joined up no mark for 'accurate plotting of data'

Question		Answer	Mark	Guidance
27	(b)	<p>Any 2 of the following:</p> <ul style="list-style-type: none"> <li>- There is a positive correlation between annual salary and extroversion/extroversion self-rating. (2 marks)            There is a correlation between annual salary and extroversion. (1 mark)</li> <li>- Extroversion does not necessarily cause a high salary as correlations do not show cause and effect (2 marks)</li> <li>- There is an anomaly with one participant has a high extroversion score but a low annual salary.(2 marks)</li> </ul> <p><b>2 mark answer:</b> Clear conclusion in context</p> <p><b>1 mark answer:</b> Clear conclusion but not in context OR Attempted conclusion in context</p> <p><b>0 marks:</b> No credit worthy information</p>	4	-Context = personality, introvert, extrovert, money, salary etc

Question	Answer	Mark	Guidance
28	<p>775/12= Mean 64.583333 Two SFs = 65</p> <p><b>3 mark answer:</b> Mean correctly stated to two significant figures with all workings shown</p> <p><b>2 mark answer:</b> Mean correctly stated to two significant figures but with no workings shown <b>OR</b> Workings shown but mean not written to two significant figures</p> <p><b>1 mark answer:</b> Mean only stated but not to two significant figures</p> <p><b>0 marks:</b> No credit worthy information</p>	3	
29	<p>Mean is a more sensitive measure of central tendency to use as there are no outliers in the results for extroversion self-ratings.</p> <p>The mean takes into account all of the data and is more mathematically accurate than the median which does not take into account all of the scores.</p> <p><b>2 mark answer:</b> Clear explanation in context</p> <p><b>1 mark answer:</b> Attempted explanation whether in context or not</p> <p><b>0 marks:</b> No credit worthy information</p>	2	Context = personality, introvert, extrovert, money, salary etc

30	(a)	$r_s = 1 - \frac{6(\sum d^2)}{n(n^2-1)}$ <p><math>R_s = +0.517</math></p> <p><b>1 mark</b> for calculation of differences between ranks in each condition  <b>1 mark</b> for calculation of sum of differences squared (<math>\sum d^2</math>) = 138  <b>1 mark</b> for correct application / use of formula provided/substituting at least one number correctly  <b>1 mark</b> for all workings at each stage shown  <b>1 mark</b> for correct final overall answer (<math>r_s = +0.517</math>)</p>	5	Won't necessarily show all these steps
	(b)	<p>Table critical value = 0.587</p> <p><b>2 mark answer:</b> Critical value correctly stated</p> <p><b>1 mark answer:</b> Correct sample size (12) used <b>or</b> 0.05 column, but wrong critical value quoted</p> <p><b>0 marks:</b> No credit worthy information</p>	2	

30	(c)	<p>As the Rs value (+0.517) is smaller than the critical value (0.587) with 12 participants and <math>p &lt; 0.05</math>, the null hypothesis is supported that there is no relationship between extroversion self-rating and salary earned).</p> <p><b>2 mark answer:</b> Correctly written significance statement with reference to calculated value, critical value, sample size and probability level</p> <p><b>1 mark answer:</b> Weak and/or brief written response e.g. the results are not significant or there is no relationship between extroversion and salary</p> <p><b>0 marks:</b> No credit worthy information</p>	2	<p>Allow this written in numerical form</p> <p>As <math>0.517 &lt; 0.587</math> for <math>n=12</math>, <math>p &gt; 0.05</math></p>
31		<p>Likely answers: don't know reasons why personality may / may not be related to salary earned; doesn't differentiate between different types of extroversion;</p> <p><b>3 mark answer:</b> Clear outline of weakness in context</p> <p><b>2 mark answer:</b> Clear outline of weakness but not in context OR attempted outline in context</p> <p><b>1 mark answer:</b> Brief and/or weak attempt (whether in context or not)</p> <p><b>0 marks:</b> No credit worthy information</p>	3	<p>Context = personality, introvert, extrovert, money, salary etc</p> <p>Do not credit weaknesses of correlations</p>

32		<p>Likely answers: demand characteristics affecting accuracy of extroversion self-rating; honesty regarding salary details; problems interpreting extroversion rating scale etc</p> <p>3 marks for each thing</p> <p><b>3 mark answer:</b> Clear outline in context</p> <p><b>2 mark answer:</b> Clear outline but not in context OR attempted outline in context</p> <p><b>1 mark answer:</b> Brief and/or weak attempt (whether in context or not)</p> <p><b>0 marks:</b> No credit worthy information</p>	<p><b>6</b></p> <p>Context = personality, introvert, extrovert, money, salary etc</p> <p>Can be strengths or weakness.</p> <p>Could outline two things that have a positive effect on the validity. Two things that have a negative affect on validity. One thing that is positive and one that is negative</p> <p>Could also outline a thing that might have affected the validity and the response explains that it is unclear whether this affect would have been positive or negative.</p> <p>All types of validity creditworthy including, for example, population validity and temporal validity</p>
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