GCE A LEVEL MARKING SCHEME

SUMMER 2024

A LEVEL
PSYCHOLOGY – UNIT 4
1290U40-1

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About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

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WJEC GCE A LEVEL PSYCHOLOGY – UNIT 4

SUMMER 2024 MARK SCHEME

Question	AO1	AO2	AO3	Total
1(a)	1	2		3
1(b)	2			2
1(c)	1	2		3
1(d)			4	4
1(e)		4		4
2(a)		4		4
2(b)		2		2
2(c)	2			2
2(d)			6	6
3(a)	2			2
3(b)		2		2
3(c)	2	2		4
3(d)			4	4
4(a)		2		2
4(b)		2		2
4(c)		4		4
4(d)			2	2
4(e)		4		4
4(f)			4	4
Total	**10**	**30**	**20**	**60**

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SECTION A – Personal Investigations

You should answer **all** the questions in this section with reference to the personal investigations carried out in your study of psychology.

INVESTIGATION ONE:

An experiment on a context dependent memory task.

1. (a) (i) Identify the experimental design used in your experiment. [1]

Marks	AO1
Credit will be given for: • Independent groups design. • Repeated measures design. • Matched pairs design. • Any other appropriate content.	
1	• Appropriate experimental design identified.
0	• Inappropriate answer given. • No response attempted.

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(ii) Justify why the experimental design identified in (a) (i) was appropriate in your experiment. [2]

Marks	AO2
Exemplar answers: • I chose the independent groups as I wanted to reduce the chances of demand characteristics as the students could have identified the aims of my study if I asked them to recall a list of words in the same room as they memorised and then asked them to recall a list of words in a different room as they memorised. Some could have tried harder the second time and decreased the internal validity. (2 marks) • I chose the independent groups as I wanted to reduce the chances of demand characteristics as they could have identified the aims of my study if I asked them to recall a list of words in the same room as they memorised and then asked them to recall a list of words in a different room as they memorised. (1 mark) • I chose a repeated measures design as this meant participant variables were eliminated as the same students were used for both conditions. This increased the internal validity of the study as there were no individual differences. (1 mark) • Any other appropriate content.	
2	• Reasonable justification of the choice of experimental design fully linked to the research. • Appropriate use of terminology.
1	• Basic justification of the choice of experimental design fully linked to the research. • Limited use of terminology. **OR** • Reasonable justification of the choice of experimental design partially linked to the research.
0	• Inappropriate answer given • No response attempted

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1. (b) State the null hypothesis of your experiment. [2]

Marks	AO1
Exemplar hypothesis: • There will be no difference in the amount of images recalled, out of 20, in the participants that were tested in the same classroom they were exposed to the images and the participants tested in a different classroom. (2 marks) • Any difference in the amount of images recalled, out of 20, between learners tested in the classroom they learned the material and learners tested in the exam hall will be due to chance factors. (2 marks) • There will be no difference in memory recall in the participants that were tested in the same classroom that they learned the material and the participants tested in different classrooms. (1 mark) • There will be no difference in the amount of images recalled, out of 20, in the context dependent condition and control condition. (1 mark) • Any appropriate content. N.B. Correlational null hypotheses are inappropriate.	
2	• Appropriate null hypothesis stated with both variables clearly operationalised.
1	• Appropriate null hypothesis stated with only one variable clearly operationalised.
0	• Inappropriate answer given. • No response attempted.

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1. (c) (i) Identify the location of research used in your experiment. [1]

Marks	AO1
Credit will be given for: • Laboratory. • Field. • Online. • Any other appropriate content.	
1	• Appropriate location of research identified.
0	• Inappropriate answer given. • No response attempted.

(ii) Justify why the location of research identified in (c) (i) was appropriate for your experiment. [2]

Marks	AO2
Exemplar answers: • I chose to conduct my experiment in the field as the students were in the classrooms allowing for the memory recall of the images to be in a usual environment for the students which increased the ecological validity of the experiment as the student's behaviour was more likely to be natural. (2 marks) • We chose to complete the experiment in a 'laboratory' environment as we wanted complete control over the memory test to increase validity. (1 mark) • Any other appropriate content.	
2	• Reasonable justification of the choice of location fully linked to the research. • Appropriate use of terminology.
1	• Basic justification of the choice of location fully linked to the research. • Limited use of terminology. **OR** • Reasonable justification of the choice of location partially linked to the research.
0	• Inappropriate answer given • No response attempted

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1. (d) Evaluate the descriptive statistics used to analyse the data in your experiment. [4]

Marks	AO3
Credit will be given for: <u>Strengths/weaknesses of using the mean as a measure of central tendency.</u> • Strength – most sensitive measure of central tendency. • Weakness – distorted by outliers/anomalies. <u>Strengths/weaknesses of using the median as a measure of central tendency.</u> • Strength – useful measure when data has outliers/anomalies. • Weakness – not as sensitive as mean as not all values are considered. <u>Strengths/weaknesses of using the mode as a measure of central tendency.</u> • Strength – good for nominal data. Useful measure when data has outliers/anomalies. • Weakness – not as sensitive as mean as not all values are considered. <u>Strengths/weaknesses of using the standard deviation as a measure of dispersion.</u> • Strength – most sensitive measure of dispersion. • Weakness – more time consuming to calculate compared to range. <u>Strengths/weaknesses of using the range as a measure of dispersion.</u> • Strength – quicker and easier to calculate than the standard deviation. • Weakness – distorted by outliers/anomalies. • Any other appropriate content.	
3-4	• Reasonable evaluation of the descriptive statistics used to analyse the data in the experiment. • Appropriate use of terminology.
1-2	• Basic evaluation of the descriptive statistics used to analyse the data in the experiment. • Limited use of terminology.
0	• Inappropriate answer given. • No response attempted.

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1. (e) Explain **one** issue of validity you considered for your experiment and **one** way you dealt with it. [4]

Marks	AO2
Exemplar answers: • One issue of validity was demand characteristics as I used a repeated measures design and the students were tested in the same classroom and then tested again in a different classroom. The students could've guessed the experiment was testing context-dependent memory and changed their behaviour in the second condition (the different classroom) to skew the results and affect the internal validity. To deal with this I used counterbalancing as half of the participants did condition A (same classroom) followed by condition B (different classroom) and the other half did condition B followed by condition A. (4 marks) • One issue of validity was demand characteristics as the participants may guess the aim of the experiment. To deal with this I used counterbalancing as half of the participants did condition A (same classroom) followed by condition B (different classroom) and the other half did condition B followed by condition A. (3 marks) • One issue of validity was population validity. This was dealt with by using a variety of ages as we used 5 students from each year group from Year 7 to Sixth Form to try to provide a more representative sample of ages. (2 marks) • One issue of validity was population validity as the sample was not representative. (1 mark) • Any other appropriate content. N.B. Credit not given for just identifying an issue of validity.
• One mark for explaining an appropriate issue of validity that is relevant to the personal investigation. • One mark for clearly linking the appropriate issue of validity to the experiment. • One mark for explaining an appropriate way of dealing with this issue of validity. • One mark for clearly linking the appropriate way of dealing with this issue of validity to the experiment.

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INVESTIGATION TWO:

A non-participant observation of mobile phone use.

2. (a) With reference to the observational sampling technique used, explain how you collected data for your non-participant observation. [4]

Marks	**AO2**

Exemplar answers:

- I used event sampling to collect the data. Firstly, I made a behavioural checklist with operationalised mobile phone use behaviours on it such as texting, phoning, taking selfies. I then put a tally when the participants displayed one of these mobile phone use behaviours. At the end I counted up each behaviour and this allowed me to see what the most popular use of the mobile phone was. (4 marks)
- I used time sampling to collect the data as I observed mobile phone use of males and females over a period of 30 seconds and then noted down what was the most common use for the phone. (3 marks)
- I observed mobile phone use of males and females over a period of 30 seconds and then noted down what was the most common use for the phone. (2 marks)
- I made a behavioural checklist with operationalised mobile phone use behaviours on it. I then put a tally when the participants displayed one of these mobile phone use behaviours. At the end I counted up each behaviour. (2 marks)
- I counted up how many males and females were on their phone. (1 mark)

- Any other appropriate content.

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Marks	AO2
4	• Observational sampling technique clearly referenced. • Reasonable explanation of how the data was collected for the non-participant observation using an observational sampling technique. • Fully linked to the research.
3	• Observational sampling technique clearly referenced. • Reasonable explanation of how the data was collected for the non-participant observation using an observational sampling technique. • Partially linked to the research.
2	• Basic explanation of how the data was collected for the non-participant observation using an observational sampling technique. • Fully linked to the research. **OR** • Observational sampling technique not clearly referenced. • Reasonable explanation of how the data was collected for the non-participant observation using an observational sampling technique. • Partially linked to the research.
1	• Basic explanation of how the data was collected for the non-participant observation using an observational sampling technique. • Partially linked to the research.
0	• Inappropriate answer given. • No response attempted.

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(b) Explain how you could assess the reliability of your non-participant observation. [2]

Marks	AO2
Exemplar answers: • The internal reliability was assessed through inter-rater reliability by having two observers with standardised behaviour checklists of the mobile phone use e.g. texting, each observer tallied up the mobile phone use observed and the observation checklists were compared. If there was 80% or more agreement between the observers then the observation had internal reliability. (2 marks) • Reliability was assessed through test-retest as the participants were observed using their mobile phones a month later. (1 mark) • Any other appropriate content.	
2	• Reasonable explanation of how reliability could be assessed within the non-participant observation. • Clear link to the research. • Appropriate terminology.
1	• Basic explanation of how reliability could be assessed within the non-participant observation. • Minimal link to the research. • Limited terminology.
0	• Inappropriate answer given. • No response attempted.

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(c) State **two** findings from the descriptive statistics used in your non-participant observation. [2]

Marks	AO1
Credit will be given for: • Any numerical raw data. • Measure of central tendency findings. • Measure of dispersion findings. **Exemplar answers:** • 5/10 females were observed texting on their mobile phone and 8/10 males were observed texting on their mobile phone. (2 marks) • 5/10 females were observed texting on their mobile phone. (1 mark) • The mean number of females using their mobile phone was 3 and the mean number of males using their mobile phone was 2. (2 marks) • The mean number of females using their mobile phones was 3. (1 mark) • Any other appropriate content. N.B. Conclusions are not creditworthy.	
2	• Two findings are clearly stated.
1	• One finding is clearly stated.
0	• Inappropriate answer given. • No response attempted.

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(d) Discuss why **two** changes to your non-participant observation would improve the investigation. [3 + 3]

Marks	AO3
Credit will be given for: • Changes to the sampling method to improve generalisability and/or representativeness and therefore population validity. • Improving ethical standards. • Improvements to the procedure to increase validity and/or reliability. • Content of behavioural checklists (a clear operationalisation of behaviours). • Any other appropriate content.	
3	• Thorough discussion of why the change would improve the investigation. • Appropriate use of terminology.
2	• Reasonable discussion of why the change would improve the investigation. • Reasonable use of terminology.
1	• Superficial discussion of why the change would improve the investigation. • Limited use of terminology.
0	• Inappropriate answer given. • No response attempted.

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3. A positive psychologist conducted a longitudinal study to investigate the effects that social media has upon mental wellbeing. Using a volunteer sample of 10 male and 10 female participants, she assessed their frequency of use of social media and their happiness at the age of 15 years, then at 21 years and again 26 years. To assess happiness, the psychologist used a 5-point Likert scale, ranging from 1 – 5, where 1 is very unhappy to 5 is very happy. The psychologist collected descriptive data using measures of central tendency. The results are shown in **Figure 1** below.

Figure 1. Mean, Median and Modal happiness scores at ages 15, 21 and 26 years.

Age	Mean happiness score	Median happiness score	Mode happiness score
15 years	3.5	3	2
21 years	3	3	3
26 years	4.5	4	5

(a) Define 'ordinal' data. [2]

Marks	AO1
Credit will be given for: • Ordinal data is the level of measurement where data can be placed into ascending or descending order**,** but the intervals between data not necessarily equal. (2 marks) • Ordinal data is the level of measurement where data can be placed into rank order. (1 mark) • Any other appropriate content.	
2	• Reasonable definition of ordinal data. • Appropriate use of terminology.
1	• Basic definition of ordinal data. • Limited use of terminology.
0	• Inappropriate answer given. • No response attempted.

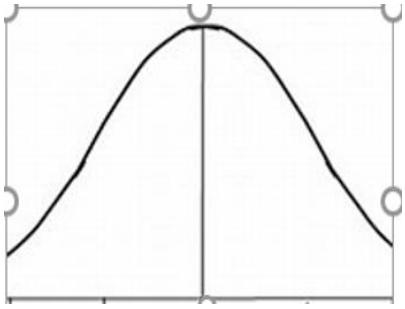
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(b) Explain how the psychologist could have gained her sample using self-selected sampling. [2]

Marks	AO2
Exemplar answers: • The psychologist could have put up posters in high schools detailing the study asking for the students to put themselves forward for the research if they were interested. The first 10 male and 10 female students to respond made up the sample. (2 marks) • The psychologist could have put posters up in the school detailing the study asking students to put themselves forward for the research. (1 mark) • Any other appropriate content.	
2	• Reasonable explanation of how the psychologist gained her sample fully linked to the research. • Appropriate use of terminology.
1	• Basic explanation of how the psychologist gained her sample fully linked to the research. • Limited use of terminology. **OR** • Reasonable explanation of how the psychologist gained her sample partially linked to the research.
0	• Inappropriate answer given • No response attempted

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(c) (i) Sketch a distribution curve for the scores attained by the participants at age 21 years. [1]

Marks	AO1
Credit will be given for: 	
1	• Normal distribution curve sketched.
0	• Inappropriate answer given. • No response attempted.

(ii) Identify the type of distribution curve you sketched in 3(c) (i). [1]

Marks	AO1
Credit will be given for: • Normal distribution curve.	
1	• Normal distribution curve identified.
0	• Inappropriate answer given. • No response attempted.

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(iii) Explain why the distribution curve you drew in (c) (i) represents the data for the participants at age 21. [2]

Marks	AO2
Exemplar answers: • I drew a normal distribution graph as the mean, median and mode were all at the exact same midpoint for the participants at age 21 as each of them had a happiness score of 3. (2 marks) • I drew a normal distribution graph as the average happiness scores were the same. (1 mark) • Any other appropriate content.	
2	• Reasonable explanation of why the distribution curve shown represents the data with link to the research. • Appropriate use of terminology.
1	• Basic explanation of why the distribution curve shown represents the data with link to the research. • Limited use of terminology.
0	• Inappropriate answer given • No response attempted

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(d) Evaluate **one** strength and **one** weakness of longitudinal research. [2 + 2]

Marks	**AO3**
Credit will be given for: **Strengths:** • The same person is tested numerous times so participant variables are controlled. • Developmental trends can be spotted easily as tests are repeated at regular intervals over many years and findings are compared. **Weaknesses:** • High attrition (drop out) rate because the research takes so long. As a result, the sample left is small which makes it a biased sample. • Participants are more likely to be aware of the aims of the study so may show demand characteristics. • Any other appropriate content.	
2	• Reasonable evaluation of the strength/weakness of longitudinal research.
1	• Basic evaluation of the strength/weakness of longitudinal research.
0	• Inappropriate answer given. • No response attempted.

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4. A researcher conducted a correlational study to investigate the relationship between sleep and exercise. He used an opportunity sample of friends and family. He asked the participants to estimate how much sleep they got per night and to estimate how many hours per week they spent exercising. The data was plotted on a scatter graph.

(a) Justify the choice of a scatter diagram to graphically represent the data in this research. [2]

Marks	AO2
Exemplar answers: • As the researcher was looking for a correlation/relationship between two co-variables: number of hours sleep and number of hours exercise. (2 marks) • As the researcher was looking for a correlation/relationship between exercise and sleep. (1 mark) • As the researcher was looking for a correlation/relationship between two co-variables on sleep. (1 mark) • Any other appropriate content.	
2	• Reasonable justification of why a scatter graph is the most appropriate graphical representation fully linked to the research. • Appropriate use of terminology.
1	• Basic justification of why a scatter graph is the most appropriate graphical representation fully linked to the research. • Limited use of terminology. **OR** • Reasonable justification of why a scatter graph is the most appropriate graphical representation partially linked to the research.
0	• Inappropriate answer given • No response attempted

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(b) Apart from it being a correlational study, fully explain **one** other reason why a Spearman's rank order correlation coefficient is appropriate in this research. [2]

Marks	AO2
Exemplar answers: • As the data is ratio because time has equal units of measurement and a fixed zero. (2 marks) • Hours slept and hours exercised are related data as the participants are recording the two variables. (2 marks) • Time is ratio data. (1 mark) • Sleep and exercise are related. (1 mark) • Any other appropriate content.	
2	• One reason as to why a Spearman's rank order correlation coefficient is fully explained with link to the research.
1	• One reason as to why a Spearman's rank order correlation coefficient is partially explained with link to the research.
0	• Inappropriate answer given. • No response attempted.

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(c) Explain **one** ethical issue in this research and **one** way of dealing with this issue. [2+2]

Marks	AO2
Exemplar answers: • As the researcher study was asking friends and family to record the estimated amount of exercise that they're doing per week they may have felt embarrassed by the amount or lack of exercise that they do and therefore raises the issue of risk of anxiety and humiliation. This could be dealt with by fully debriefing the friends and family and in the debrief stating that the results would be kept completely confidential. (4 marks) • One ethical issue could be confidentiality as the friends and family may not have wanted information on their exercise and sleeping patterns to be identifiable to them. This could be dealt with by using numbers to refer to the participants and not their names. (3 marks) • One ethical issue could be valid consent from the participants. This could be dealt with by giving the participants a consent form before the study. The participants would be asked to read the details of the correlational study on sleep and exercise. They would be made aware that the research could potentially trigger some embarrassment when recording their sleep and exercise habits and would be made aware they could withdraw from the investigation at any time. (2 marks) • One ethical issue was confidentiality of the data as the participant may not want to be identifiable. (1 mark) • Any other appropriate ethical issue or way of dealing with issue. N.B. Credit not given for just identifying an ethical issue.
For each identified ethical issue: • One mark for describing an appropriate ethical issue that is relevant to the research. • One mark for clearly linking the appropriate ethical issue to this research. • One mark for explaining an appropriate way of managing the risk posed by ethical issue in this research. • One mark for clearly linking the appropriate way of managing the risk posed by ethical issue to this research.

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The researcher wanted to further investigate the effect that exercise has upon sleep by conducting an experiment. His experimental hypothesis was 'the number of hours sleep per night will increase after exercising for one hour per day'. The researcher used a self-selected sample of 10 participants. During the first week, the participants did not exercise. During the second week, the participants exercised for an hour each day. In both weeks, the participants were required to wear a sleep monitoring device each night so that their length of sleep could be recorded.

(d) Discuss **one** reason the researcher may have wanted to study sleep and exercise using an experiment. [2]

Marks	**AO3**
Credit will be given for: • Increased control over extraneous variables. • To test the cause and effect. • Improve internal validity. • Any other appropriate content.	
2	• Reasonable discussion of why the researcher may have wanted to further study this using an experiment. • Appropriate use of terminology.
1	• Basic discussion of why the researcher may have wanted to further study this using an experiment. • Limited use of terminology.
0	• Inappropriate answer given. • No response attempted.

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(e) The sleep monitoring devices showed that all 10 participants slept more during the second week. The researcher analysed the data using a Wilcoxon matched pairs signed ranks test, using a 0.05 probability value. The observed (calculated) value of T was 10.

With reference to an appropriate critical value from **Figure 2**, explain which hypothesis the researcher should accept and which hypothesis the researcher should reject. [4]

Figure 2. Critical values for a Wilcoxon T test

N	One-tailed (Directional)	
	0.05	0.025
	Two-tailed (Non-directional)	
	0.10	0.05
8	6	4
9	8	6
10	11	8
11	14	11

Marks	**AO2**
Exemplar answers: • The researcher should accept his experimental hypothesis as the observed value (10) is less than the critical value (11) for a one-tailed test set at $p \leq 0.05$. The result is significant as it shows that the number of hours sleep per night increased after exercising for one hour each day. The null hypothesis can therefore be rejected. (4 marks) • The researcher should accept his experimental hypothesis as the observed value (10) is less than the critical value (11) for a one-tailed test set at $p \leq 0.05$. The result is significant as it shows that the number of hours sleep per night increased after exercising for one hour each day. (3 marks) • As the observed value is lower than the critical value the researcher should accept the experimental hypothesis and reject the null. (2 marks) • As the observed value is lower than the critical value the researcher should accept the experimental hypothesis. (1 mark) • Any other appropriate content.	
1 mark = stating observed value is lower than the critical so experimental hypothesis is accepted. 1 mark = including observed and critical value numbers. 1 mark = referring to the result being significant linking it to the hypothesis. 1 mark = stating null hypothesis is rejected.	

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(f) Evaluate **two** weaknesses of using experiments in research. [2+2]

Marks	AO3
Credit will be given for: **Weaknesses:** • Ethical issues of risk of humiliation, anxiety and harm could occur if the research is not done in a controlled way. • Low ecological validity as experiments do not represent real life settings so results are less generalisable than other methods. • Participants may respond to demand characteristics if they guess the aim of the research which could threaten the internal validity. • Any other appropriate content.	
2	• Reasonable evaluation of a weakness of using an experiment in research. • Appropriate use of terminology.
1	• Basic evaluation of a weakness of using an experiment in research. • Limited use of terminology.
0	• Inappropriate answer given. • No response attempted.

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