GCSE Human Health and Physiology
Investigative Skills Assignment – Marking Guidelines
Specimen
For submission in May xxxx

Please mark in red ink, and use one tick for one mark. Each part of each question must show some red ink to indicate that it has been seen.

Subtotals for each part of each question should be written in the right hand margin.

Please add annotations where necessary to explain why marks have or have not been awarded.

Enter the marks for **Section 1** and **Section 2** and the **total mark** on the front cover of the answer booklet.

The teacher must sign and date the front cover of the ISA.

The papers must be kept in a secure place and must **not** be returned to candidates.

The marking guidelines show examples of typical responses that candidates may make. However, teachers should use their professional judgement in deciding whether or not to award marks. If, in the judgement of the teacher, the candidate has provided a response which correctly answers the question, then a mark should be awarded even if this response is not shown in the mark guidance. If necessary, the teacher should annotate the script and/or mark guidance to justify the decision.

In the mark guidance:

- the use of a solidus (/) indicates an alternative answer
- the use of brackets () indicates wording that is not essential in the candidate's answer, but makes the guidance clearer.

Marking of Quality of Written Communication (QWC)

In some questions candidates will be assessed on using good English, organising information clearly, and using specialist terms where appropriate. Instructions for assessing QWC are given against the appropriate questions in the mark scheme.

SECTION 1

Question	Answer	Additional Guidance	Marks
1(a)	independent variable correctly identified	eg type of exercise or duration of exercise	1 mark
1(b)	dependent variable correctly identified	eg pulse rate	1 mark
2	any **one** from: eg • to ensure pulse rate could be felt • check how to measure pulse rate • check how to use equipment • ensure exercise chosen would produce viable results • check duration of exercise was adequate • check if subject could complete exercise at same pace throughout	any sensible suggestion that indicates an understanding of the need to carry out a pilot	1 mark

Question	Answer	Additional Guidance	Marks
3	any **one** from: eg • to compare resting rate to rate after exercise • to be able to make a comparison with the rate after exercise • need to know to ensure pulse returns to this prior to starting next exercise		1 mark
4(a)	any **one** suitable control variable that the candidate was able to control eg • duration of exercise • pace for exercise • type / level / intensity of exercise • person carrying out test • person recording pulse rate • position, eg sitting each time	depends on the independent variable chosen for investigation do **not** accept independent variable as an answer	1 mark
4(b)	any **one** suitable control variable that was beyond the control of the candidate eg • constancy of effort made by the subject during the exercise • if repeats are made with the same subject, it may have proved impossible to start with the same resting pulse rate • if repeats were made using different subjects, the candidate may refer to differences between the subjects, eg gender / body mass / prior fitness / etc	depends on the independent variable chosen for investigation do **not** accept independent variable as an answer	1 mark

Question	Answer	Additional Guidance	Marks
5(a)	simple correct statement gains **1** mark only eg exercise affects time taken for pulse rate to return to normal amplified statement gains **2** marks eg the more vigorous the exercise, the longer it took for the pulse rate to return to normal	answer **must** relate to candidate's own data	max 2 marks
5(b)	simple qualitative statement gains **1** mark only eg the graph shows that it took much longer to return to normal as the exercise became longer amplified quantitative statement gains **2** marks eg for every minute of exercise, the recovery time increased by one minute, up to 5 minutes when it didn't make much more difference		max 2 marks
6	suitable suggestion eg carry out repeats / do more repeats and calculate new mean	repeat using different equipment or technique / compare your results with those of others	1 mark
	correctly linked explanation eg minimises effect of random errors	helps to identify systematic errors / anomalous results	1 mark

Question	Answer	Additional Guidance	Marks
7	**Table:** Correct headings AND units all correct for all measured variables Table with incomplete headings or units for the measured variables = **1** mark	eg: all headings present = **1** mark eg: all units present = **1** mark As a 'rule of thumb', add up the total number of headings and units that should be present, then: • all present and correct = **2** marks • some missing, but at least half present and correct = **1** mark • fewer than half present and correct = **0** marks	2 marks
	Graph/chart: X axis: suitable scales chosen and labelled with quantity and units Y axis: suitable scales chosen and labelled with quantity and units Points or bars plotted correctly to within ± 1mm Suitable line drawn on graph or bars correctly labelled on bar chart	Accept axes reversed It may not always be necessary to show the origin Scale should be such that the plots occupy at least one third of each axis Allow one plotting error out of each 5 points plotted Allow error carried forward from incorrect plots If wrong type of graph / chart, maximum **3** marks If the independent variable is: • *continuous,* should draw a *best fit line graph* **NB** if no line is possible because there is no correlation, candidates should state this on the graph to gain the mark • *categoric,* should draw a *bar chart* • *discrete,* allow either a bar chart or a line graph	1 mark 1 mark 1 mark 1 mark
			Max for Section One 18 marks

SECTION 2

Question	Answer	Additional Guidance	Marks
8(a)	range was from 58 to 92 beats per minute	ignore units	1 mark
8(b)	simple correct statement gains **1** mark only eg resting pulse rate increases during the day **or** resting pulse rate increases before noon **or** resting pulse rate decreases after noon amplified statement gains **2** marks eg resting pulse rate increases up until noon after which the resting pulse begins to decrease again		max 2 marks
8(c)(i)	add the results together and divide by the number added		1 mark
8(c)(ii)	minimises the effect of random errors		1 mark
9	Marks awarded for this answer will be determined by the quality of written communication.		
	The answer is coherent and in a logical sequence. It contains a range of appropriate or relevant specialist terms used accurately. The answer shows very few errors in spelling, punctuation and grammar. There is a clear and detailed scientific description of how the fitness consultant would take a pulse.		4 marks
	The answer has some structure and the use of specialist terms has been attempted, but not always accurately. There may be some errors in spelling, punctuation and grammar. There is a scientific description of how the fitness consultant would take a pulse, but there is a lack of clarity and detail.		2–3 marks
	The answer is poorly constructed with an absence of specialist terms or their use demonstrates a lack of understanding of their meaning. The spelling, punctuation and grammar are weak. There is a brief description of how the fitness consultant would take a pulse, which has little clarity and detail.		1 marks
	No relevant content.		0
	Examples of scientific points that may contribute to a candidates' response • feeling for pulse in wrist or neck or other appropriate place • positioning of fingers, not thumb • wave of pressure / throbbing felt in artery • artery closest to surface at wrist / neck • counting pulse for one minute or 15 seconds then × by 4.		

Question	Answer	Additional Guidance	Marks
10	idea that pulse rate will vary depending on position of person, eg pulse rate will be higher if standing	idea of a fair test explained, not just stated	1 mark
11(a)	sensible reason for control explained eg to use as a control / need to compare the exercise group with those that have not participated in exercise programme	idea of comparison needed	1 mark
11(b)	put all the patients into the two groups randomly		1 mark
11(c)	any t**hree** from: eg • reduces body fat • combats obesity • reduces blood pressure • reduces risk of heart attacks • improves fitness • leads to reduction of resting pulse rate		3 marks
11(d)	any **one** ethical idea such as: eg • control group not offered the benefits of exercise sessions • people at risk may die / suffer heart attack if not offered exercise incentive		1 mark
			Max for Section Two 16 marks
			ISA Total 34 Marks