



Examiners' Report Principal Examiner Feedback

June 2025

Pearson Edexcel International GCSE
in Human Biology (4HB1) Paper 01

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The progress made by candidates concerning the answering of maths related questions appears to have continued for this series. Candidates are reminded that it is in their interests to always show their working. Graph plotting has improved for this series as well. Candidates now are much more focussed on labelling axes and putting in units, using the majority of the graph paper and also indicating which line is which. A minority unfortunately, continue to use very blunt pencils and inappropriately, use free hand when trying to draw straight lines. There is still the issue of many candidates failing to concentrate their answers on what is actually asked rather than including erroneous information.

Question 1

Most candidates scored well here, a high number scoring full marks. The most common errors were candidates who mistakenly thought the elbow joint is a ball and socket rather than a hinge, or candidates who confused ligaments with tendons.

Question 2

Part (a)(i) was generally very well answered, most scoring full marks. Many candidates simply wrote 'sugar' which could have been more correctly named as pentose or deoxyribose sugar, and a few candidates lost the mark as they incorrectly stated that it was a ribose sugar. Similarly, a few candidates lost the phosphate mark for incorrectly stating that it was phosphorus.

Almost all candidates scored part (a)(ii) correctly. Most common misconception was that the type of nucleic acid was an amino acid, rather than DNA.

In answer to part (a)(iii) most candidates scored a mark for thymine. Many candidates also identified that only DNA has thymine as a base (and often that RNA has uracil). Most candidates scored 2-3 marks here. Quite a few commented on the type of sugar present in DNA (deoxyribose), though this wasn't evident from the simplified diagram.

Almost all candidates scored part (b)(i) correctly. Some candidates lost the mark for only stating 'bonds' alone. The most common misconception was that the bonds were polypeptide rather than hydrogen.

Many candidates referenced hydrogen bonds holding bases together in answer to part (b)(ii). There were not many references to nucleotides but there were references to complementary base pairings. Quite a few candidates using the abbreviated letters for bases so no credit was given. Some candidates went into DNA replication and the breaking of hydrogen bonds by enzymes.

Question 3

The main issue with part (a) seemed to be the 'constant' internal environment. Many of candidates scored the first point. There were lots of examples given (like thermoregulation, blood glucose control, or osmoregulation) which didn't gain credit. Candidates just didn't know the definition well enough (but did seem to understand

the principles of homeostasis). Weaker candidates thought homeostasis was simply controlling/regulating body temperature.

Very few candidates, in answer to part (b), made any reference to an increase in blood temperature, with some references to changes in body temperature. Thermoreceptors detecting changes came up often but this wasn't credited. 'Blood vessels dilate' was another common response which was too vague. Quite a few candidates scored marks for heat being radiated from the body and sweat evaporating.

in their answers to part (c), enzymes denature was a common comment. Candidates wrote good explanations of how the shape of the active site of enzymes changes at higher temperatures and how the substrate no longer fits/binds. There were also quite a few references to fewer enzyme-substrate complexes forming. Not many referenced a decrease in metabolic activity. There were vague references to rates of respiration falling or the digestive process being affected (which is where candidates have probably been introduced to enzymes). Weaker candidates went down the route of water loss and dehydration.

Question 4

In their answers to part (a), a high number of candidates scored this extremely well, however, there were many who simply mentioned a type of microorganism, such as bacteria with no mention of it causing disease.

In answering part (b)(i), candidates often scored well, but many lost marks for labelling the cell membrane incorrectly, as the label was pointing to the cell wall. Other mistakes, included labelling the flagellum as 'tail' commonly, or incorrectly labelling the DNA as a nucleus. Many candidates did not read the question correctly and labelled more than three, where some of these were incorrect they then lost marks.

The main issue in answering part (b)(ii) was the conversion from cm to mm. Some candidates were confused by how many mm were in a cm, so their magnification calculations sometimes ended up as 3200 or 320,000 (after converting into micrometres). On the whole candidates did do well on this question, with many scoring three marks.

The graphs were well drawn in general. Many candidates scored the point for the overall description. Fewer scored other points for giving a more detailed analysis. Many candidates quoted figures without describing trends or interpreting the patterns in the data.

Question 5

There were very few who scored full marks for part (a)(i). The most commonly scored marking point was 'intercostal muscles' for C, sternum was very rarely correctly seen and ribcage was often placed in A in error. Many candidates seemed to not understand the model at all and scored 0.

There were few who scored full marks for part (a)(ii), many named different tubules and only scored one in total as a result. There were a significant number of candidates who listed a great many more than the three asked for, and so could not score if their correct answers were beneath the initial three responses.

Weaker candidates described the structure of the lungs, in their answers to part (a)(iii), including bronchi, bronchioles, and alveoli. Volume of thorax increasing was less common and not many said air rushes/is drawn in, instead saying it flows in or enters and therefore missing the last marking point. Many candidates referenced the contraction of the intercostal muscles; not many described the rib cage moving upwards and outwards.

Most candidates scored maximum marks with their answers to part (b). There were a few word equations written. There were no obvious issues with this question.

Question 6

Most candidates scored one mark with their answers to part (a)(i) for the idea of a steep increase, or the idea that alcohol was entering the blood. Reference to the stomach was rarely seen.

Candidates scored reasonably well with their answers to part (a)(ii). There were many references to alcohol being broken down or detoxified in the liver. Those that didn't do so well described alcohol being removed from the blood by the kidneys. Most scored the point referencing the fall in blood alcohol levels.

Most candidates answered (b)(i) correctly.

In their answers to part (b)(ii) most candidates referenced an increased likelihood of accidents or crashes. Many candidates went into detail on the slowing of nerve impulse transmission/neurotransmitters/etc. Blurred vision was a common one, as was a lack of awareness of surroundings. Quite a few referenced increased reaction times. There were also references to people's behaviour when intoxicated that weren't really relevant. Few recognised that alcohol is a depressant. There was also confusion between increasing and decreasing reaction time and speed of reactions.

Candidates showed a good understanding of the role of ADH with their answers to part (c), with many references to the permeability of the collecting duct being reduced and less water being reabsorbed (some did say absorbed rather than reabsorbed). Not as many referenced the blood. There was a good understanding that more water would be present in the urine so its concentration would be less, though few actually said the volume of urine would be greater.

Question 7

This question overall, caused problems for candidates with many seeming unable to apply their thoughts to the issues raised by the questions.

Many candidates scored a mark for referencing the larger/wider lumen of the vein or the narrow lumen of the artery in answering part (a)(i). Very few marks were awarded for the other points. Quite a few candidates vaguely referenced how the capillaries

were narrower than the arteries so blood pressure was lost, or that blood is pumped to the body via arteries from the heart so pressure is higher. Many described the thick muscular walls of arteries too. Some candidates thought the pressure differences were down to blood being oxygenated or deoxygenated.

Candidates tended to score two marks or no marks for part (a)(ii). There were quite a lot of good explanations of how plasma proteins are too large to pass through capillary pores.

Most candidates scored well in answering part (b), giving the correct test/reagent and the positive colour change for proteins. There were candidates who thought the biuret reagent and sample needed to be heated in a water bath for the colour change to happen. The spellings of biuret were a little off on occasions.

Very few candidates scored the marking points requiring use of the data. Some candidates did try to quote some data but didn't manipulate it or do any form of calculation (there was very little use of data at all). Not many achieved marks on this question. Candidates just stated that fluid moved from the arteries, through the capillaries, and into the veins. There were detailed descriptions of the substances that are exchanged between tissue fluid and body cells, and the role of the lymphatic system and vessels, but this isn't what the question was asking.

Candidates struggled with part (d). Quite a few discussed a thickening of the blood or the blood clotting, or referenced a reduction in the flow of blood due to some sort of blockage of vessels. Very few connected lower blood volume to lower blood pressure. Quite a few candidates explained how the heart would have to work harder or pump faster due to the loss of fluid from capillaries. Also candidates linked a reduction in oxygen levels in the blood to lower respiration rates in cells. All to no avail!

