

Examiners' Report/ Principal Examiner Feedback

January 2010

GCE O

GCE O Level Human Biology (7042) Paper 02

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General Comments

Almost all candidates completed the correct number of questions in each section, and few left blanks for parts of questions. There seemed to be a better balance this year between the quality of responses in sections A and B. Most questions seemed to be relatively mark yielding compared with those last year.

SECTION A

Question 1

This was a very popular question and most candidates showed detailed knowledge of the topics required. In section (a) most understood the meaning of homeostasis although some limited their response to temperature regulation rather than the general principle. Homeostatic mechanisms regulating rises in the water and glucose contents of the blood were well known, although many seem to think that insulin converts glucose to glycogen rather than stimulating the liver cells to carry out this process. The control of the carbon dioxide content of the blood was poorly understood and few mentioned the rise in pH of the blood or its detection by the hypothalamus. Many linked the rise in breathing rate to the need for more oxygen.

Question 2

Many candidates realised that meiosis gave rise to haploid gametes and that the diploid number was restored at fertilisation. A minority showed some confusion with mitosis, and not everyone realised that the doubling of the chromosomes at each fertilisation, if meiosis did not occur, would be likely to have adverse consequences. In part (b) most candidates gave an accurate explanation of sex inheritance although some just drew diagrams, that lacked sufficient labels to gain full credit. The role of the placenta was well known although some responses were too casual, implying that blood was transferred from mother to fetus rather than materials diffusing from one circulation to the other. The process of birth was usually well described but a few candidates failed to read the question with sufficient care and consequently wrote about implantation and pregnancy with few, if any, details of birth.

Question 3

This was a popular question and often well answered. In part (a) a few candidates failed to note that the question was about how the skin responded to a decrease in body temperature and included details such as an increase in general metabolism or behavioural details. Some responses needed further expansion to gain maximum credit. A decrease in sweating was often listed without explaining that this would mean less evaporation and therefore less heat loss. Vasoconstriction also lacked detail at times.

Part (b) was poorly answered with many candidates writing about trapping heat with no reference to air and its insulating effect. Many became confused and suggested that a thick layer of clothing would trap more heat.

Many candidates gave several other functions of the skin although some repeated information given in (a). Many thought that sebum provided the main protection against dehydration and

few mentioned the keratinised layer although most recognised that it was dead and helped to prevent the entry of pathogens.

Question 4

The mechanism of inspiration was well known and the only candidates who experienced difficulty were those who failed to read the question and described expiration instead. The functions of the skeleton were well understood but some candidates still used terms such as protection without explaining what is being protected or what the danger is. The roles of girdles in the attachment of limbs were rarely mentioned. The importance of calcium salts in bone formation and of vitamin D in the uptake of these salts from the blood were known but many candidates appeared to believe that phosphorus rather than phosphates should also be included in the diet and only about 50% of candidates mentioned proteins.

Question 5

The roles of the three cell components were well described. In part (b) the definition of a tissue was usually clear but few candidates made suitable references to muscle tissue in their explanation. Many listed the three types of muscle but made no reference to fibres, contraction or to bringing about movement. In part (c) there was some confusion between meiosis and mitosis and the sequence of events in mitosis was poorly described and often inaccurate. There was confusion between chromosomes and chromatids and also about when the chromatids actually separated.

SECTION B

Question 6

This was a popular question but there some evidence of careless reading of parts of the question.

In part (a) the principle was clearly understood but many candidates repeated the old error of implying that only animals respire. Some candidates also forgot to explain if the processes they described increased or decreased the concentration of a gas in the air. In (b) some candidates repeated the question by stating that CFCs damaged the ozone layer without describing the damage and too many thought the major result of the damage was global warming. In (c) descriptions of photosynthesis were usually good but details of the subsequent uses of the glucose were weak. Few mentioned cellulose or amino acid formation. The role of plant material in peristalsis was clearly described.

Question 7

The process of blood clotting was very well known although a few candidates showed confusion about the order of events. Responses to (b) were far poorer, with many candidates not realising that most antibiotics are produced by fungi and some became totally confused between antibiotics and antibodies. Many did not appreciate that most antibiotics are not effective against all pathogens and have no effect on viruses.

Responses on reducing the numbers of cases of tuberculosis were often far too general, quoting general hygiene measures, such as good sewage treatment, rather than those specific to

tuberculosis such as pasteurisation of milk. Some concentrated on treatment of patients rather than prevention.

In(d) most displayed knowledge of ORT and when it is of value.

Question 8

Candidates displayed good knowledge of all three pollutants in this question.

In (a) a significant number of candidates identified nitrogen and its oxides as being the main source of compounds in the water rather than agricultural fertilisers and few mentioned sewage. There was some confusion about the sequence of events leading to eutrophication with some candidates thinking that the algae used up all the oxygen in the water.

The formation of acid rain from sulphur dioxide was well known but descriptions of its effects were often too vague to gain full credit. Comments such as 'harms plants' and 'causes breathing problems' were common.

Candidates knew the effects of carbon monoxide poisoning but were less clear about the source of the carbon monoxide. Some candidates linked both sulphur dioxide and carbon monoxide with global warming.

Question 9

This was the least popular question on the paper. Parts (a) and (c), endemic and epidemic diseases were well known but knowledge of the life cycle of the mosquito was disappointing. Some candidates failed to read the question with enough care and wrote about the life cycle of plasmodium within the human body and others confused the mosquito with the house fly and talked about maggots on decaying food etc. Few made adequate references to the development stages in water and some did not appreciate that only the female mosquito sucks blood.

In part (c)(ii) responses were often limited to boiling water and washing hands. Few realised that they were expected to explain how these measures would help to limit the spread of the disease. Some candidates did mention keeping flies away from food and a limited number realised that there is a vaccine available.

HUMAN BIOLOGY 7042, GRADE BOUNDARIES

Grade	A	B	C	D	E
Lowest mark for award of grade	140	121	102	92	78

Note: Grade boundaries may vary from year to year and from subject to subject, depending on the demands of the question paper.

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