



General Certificate of Education

Applied Science

8771/8773/8776/8779

SC02 Energy Transfer Systems

Report on the Examination

2007 examination - January series

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Question 1

- (a)(i) Mostly correct with occasionally 'under 25' given, at which temperature the person would be dead.
- (ii) Hypothermia mostly given correctly.
- (iii) Two correct symptoms provided mostly, but some answers referred to how the body tries to raise its temperature in cold conditions, rather than giving a symptom.
- (b) Most answers gained three out of the four available marks
- (c)(i) Many candidates failed to understand how sweating helps the body to cool down. They were mostly unaware that water is involved and that heat is lost when the water (or sweat) evaporates from the surface of the skin.
- (ii) The stronger candidates gained the full three marks, but many included sweating in their answer, having not read the stem of the question properly. Many incorrect examples given including 'vasodilation'.
A good discriminating question, even though it was not intended to function as such.

Question 2

- (a)(i) Mostly correct.
- (ii) The weaker candidates often referred to food passing down the trachea, having failed to understand that the trachea is part of the respiratory system.
- (iii) Reasonably well answered, although again, occasional reference to the movement of food.
- (b)(i) Mostly correct
- (ii) Despite the fact that previous examiners' reports have drawn attention to this; candidates are still writing word equations when the question has asked for a chemical equation.
Many marks lost due to incorrect formulae being written.

Question 3

- (a)(i) Mostly correct figures inserted in table
- (ii) Mostly correct identification of employee, with a choice of two individuals.
- (iii) The poorer candidates often failed to qualify their answers i.e. failed to indicate that their choice of employee had very high or very low blood pressure, or was above or below the normal range; instead they merely commented that the blood pressure was high / low.
- (b) Most answers gained one of the two available marks with most frequent reference being made to the fact that elastic tissue allows flexibility and that muscle tissue helps withstand pressure of blood or prevents bursting of aorta walls.

- (c) Most candidates gained two of the three available marks by mentioning that valves allow one-way flow only (of blood) by preventing backflow. Only the stronger candidates mentioned the action of (skeletal) muscles in aiding return of blood back to the heart. No reference was made to pressure change during inhalation aiding blood flow.
- (d) Normally only two out of the possible four marks gained here, usually for mentioning vasoconstriction and vasodilation. Seldom was any reference made to the role of the brain or the sympathetic nerves in the control of blood pressure by the arterioles.
- (e) Very well answered across the range of candidates.

Question 4

- (a) Calculation mostly correct.
- (b) Calculation mostly correct.
- (c) Where (a) and (b) had been correctly answered, most candidates gained full marks for this. The weaker answers gained only one mark for correctly stating the unit.
- (d) Mostly only gained one mark for saying that the lift maybe slightly overloaded. There was very little reference to the fact that the motor/mechanism/system is not 100% efficient.
- (e) Mostly two correct forms of energy provided.
- (f) The most common correct answer dealt with less injury to the passengers occurring when Model B was chosen. A poor understanding of momentum, and the issues relating to it, was evident across the range of candidates.

Question 5

- (a)(i) Mostly correct.
- (ii) Mostly correct.
- (iii) The stronger candidates correctly referred to radiation as the thermal transfer mechanism, but only one recognised that energy is transferred as a wave.
- (iv) Mostly correct answers.
- (v) Very poorly answered showing little understanding of the processes of conduction and convection.
- (b)(i) Mostly correct.
- (ii) Most answers dealt with the issue from an absorption / reflection angle, instead of that of radiation emitted, and hence gained no marks.

Question 6

- (a)(i) Mostly a correct calculation but often incorrect units provided, thus losing a mark.
- (ii) Mostly correct.
- (iii) Mostly correct.
- (b)(i) Where the candidate correctly stated that choice of machine, they usually gave the correct reason for this. Answered poorly by the weaker candidates.
- (ii) Mostly two correct points given.
- (c) Mostly incorrect calculation.
- (d)(i) Mostly correct.
- (ii) Mostly correct.
- (e)(i) Mostly correct.
- (ii) Mostly correct.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA Website.