

Examiners' Report/ Principal Examiner Feedback

March 2011

GCSE

360Science

GCSE Additional Science
Multiple Choice Paper P2 (5019/01)

GCSE Physics
Multiple Choice Paper P2 (5047/01)

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5019 Additional Science/ 5047 Physics (P2) Examiners' Report

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Foundation Tier

It was pleasing to note that more than 60% of candidates answered correctly on half of the Foundation tier questions and all questions, except one, discriminated well between candidates. This exception question asked which of four identical cars, whose speeds were displayed on a graph, had the greatest kinetic energy. Only 35% related the kinetic energy to the highest speed, but many otherwise good candidates chose answers with varying accelerations but much lower speeds at the given time. A much better discriminating question (but answered correctly by fewer candidates) showed that only 1/3 of candidates realised that kinetic energy changed into potential energy when an object was slowing down as it gained height.

Another graphical representation was also poorly answered. 22% of the candidates thought that the activity oscillates in some way, while 21% thought the activity increases with time. Such questions appear regularly and the key is always the same, with different distractors. Nevertheless, less than 60% choose the correct option.

Another frequently asked question produced the disappointing outcome that 60% of candidates consider the control rods in a nuclear reactor are concerned with electrons rather than neutrons.

Two questions on this paper involved calculations but the emphasis this time was substitution of the relevant numbers rather than the final evaluation. The results were considerably better than normal.

Overlap Questions

The graph questions in this section were answered correctly by many candidates at both tiers. The lowest percentage at Foundation tier was for only 26% realising that positive charge was caused by loss of electrons (51% thought it was because of their gain).

Higher Tier

Quite good understanding was shown of the action-reaction forces involved in the motion of the steam train.

Two thirds of candidates realised that pulling out the control rods increased the rate of release of energy. The understanding of the effect of removing the moderator, however, was less well demonstrated.

51% thought the reason nuclear fusion is difficult to produce is that the high temperature needed has not been reached. This is erroneous as fusion has been achieved. The reason for needing the high temperature is of course the repulsion between similar charges.

The question with the best discrimination (facility value 57%) involved the chart classifying fission and fusion. It also illuminated some fairly large scale

misconceptions: fusion is triggered by neutrons (35%), fission is the joining of small atoms (32%) and the products of fusion are radioactive (25%).

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