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January 2012

International GCSE Physics (4PH0)
Paper 2P

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Question 1

Candidates tended to perform well here. Nearly all were able to calculate the frequency properly.

Question 2

Most candidates did well in their choice of measuring instrument for (a) and gained two marks. A common reason for scoring only one mark was for suggesting two different instruments that measure the same quantity e.g. a metre rule and a measuring tape. Candidates tended to plot the graph in (b) well, but many lines were poorly drawn. Where the points suggest a curve, candidates should not just put a series of straight lines. If the origin is amongst the points plotted, then it should also be included on the line. Most candidates read the required distance correctly from the graph for (c). Some simply misread the scale and put 25 m despite the indication of their line. A few others responded with 5 m, presumably after calculating the difference between 31 m and 25 m. Many candidates correctly described the change of speed for (d), but very few related this change correctly to the shape of the graph.

Question 3

The majority of candidates chose the correct words from the box for (a). Many candidates only scored one mark for (b)(i). The typical response usually mentioned the repulsive force, but did not go on to relate it to the context of paint spraying. This pattern was also seen for (b)(ii), where the majority of candidates mentioned the attractive force without relating it to the way it could affect where the paint might land. Part (c) was generally well answered. The majority of candidates gave the hazard associated with refuelling as their example and correctly stated how it can be reduced. Weaker responses mentioned the need for a wire, but did not state that the charged object, usually an aircraft, should be connected to earth. The very weakest responses included the idea of earth connection, but this was given incorrectly in the context of current electricity.

Question 4

Candidates found it difficult to explain evaporation and cooling in terms of particles. Some responses to (a) included the basic idea of liquid becoming gas, but there was little mention of the way that average particle energy decreases because the faster particles leave. Many candidates resorted to repeating the information from the stem – which gained no credit. Some candidates assumed that a description of convection was required here. In (b)(i), some candidates correctly mentioned that the runner was still wet, or that his sweat continued to evaporate after the race, but very few realised that the amount of heat coming from his body had reduced. Candidates found (b)(ii) slightly easier. Many candidates realised that the blanket formed a barrier to particle movement or acted as a reflector, but fewer related this idea correctly to a heat transfer process. The weakest responses merely repeated the idea of reduced heat loss that was given in the question, without the development required for any credit.

Question 5

Most candidates found (a) difficult and few responded successfully. However, those who offered a workable method to check that the ruler was horizontal usually suggested an appropriate measurement to go with it. Almost all candidates knew the correct equation for (b) and most went on to calculate the moment correctly. Most could suggest an appropriate unit for their answer. Part (c) was designed to discriminate between abilities and did so successfully. Most of the successful responses came from the higher scoring candidates. Very few candidates realised that the weight of the ruler has an effect, but more were able to relate the newtonmeter reading to the range of its scale. Most candidates correctly related the larger force to the position of the load in (d), but far fewer could explain this in terms of moments. The best responses tended to come from candidates who began by stating an equation – either the equilibrium equation or the definition of a moment.

Question 6

The vast majority of candidates correctly matched the parts of the power station with their functions in (a). In (b), nearly all candidates gave the correct equation, but comparatively few went on to use it to compare the currents properly. Some merely stated that the output current would be smaller, without any reference to the numerical data supplied. Some candidates did not attempt (b)(ii). Many candidates gave good answers to (b)(iii). Most candidates gave a full response to (c). Many of these just made simple points – usually that nuclear waste is radioactive and that this radioactivity is harmful to life. However, there were some excellent and detailed responses that also included other valid points. Many candidates were able to do well here.

Question 7

Responses to (a) tended to be full, but they were not always focussed. Although few candidates scored full marks here, many were able to make at least two valid points, showing a fair grasp of the kinetic theory of gases. Hardly any candidates related their response fully to the context and the examiners saw no mention of the elastic nature of the balloon fabric or the tension in it. Nevertheless, responses to this part of the question tended to be better than the responses to Question 4, which included some similar ideas. There were many weak responses in (b), particularly from candidates who failed to spot some of the flaws in the student's experimental planning. Many weaker responses included simple repetition of the stimulus material. However there were many excellent responses from candidates who spotted flaws in the planned methods and/or choice of variables. There was a significant minority of candidates who thought that further repetition of the investigation would make it a "fairer test". Marks were given for suggesting appropriate improvements, even when the relevant fault had not been clearly identified.

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