www.xtrapapers.com
www.PapaCambridge.com

PHYSICS

Paper 0443/13
Multiple Choice

Question Number	*Key*	*Question Number*	*Key*
1	**A**	21	**A**
2	**D**	22	**D**
3	**C**	23	**A**
4	**B**	24	**A**
5	**B**	25	**C**
6	**C**	26	**C**
7	**B**	27	**C**
8	**C**	28	**C**
9	**A**	29	**A**
10	**C**	30	**D**
11	**A**	31	**A**
12	**A**	32	**D**
13	**C**	33	**B**
14	**C**	34	**D**
15	**A**	35	**B**
16	**D**	36	**B**
17	**D**	37	**B**
18	**A**	38	**B**
19	**A**	39	**D**
20	**C**	40	**A**

General Comments

In this paper **Questions 2**, **8**, **11** and **21** were particularly well-answered, but **Question 32** caused difficulty for many.

Comments on Specific Questions

Question 3

This question concerned average speed, and was generally well answered. Those candidates who wrongly chose option **B** may not have taken account of 'in the air' in the question, despite this phrase being printed in bold.

CAMBRIDGE International Exami
© 2014
PAPA CAMBRIDGE

www.xtrapapers.com
www.PapaCambridge.com

Question 6

Although the vast majority of responses to this question on density were correct, some of the lower-a candidates did not subtract the mass of the empty measuring cylinder, therefore opting for **D**.

Question 9

This was generally a well answered question; however some of the lower-achieving candidates chose option **C**, possibly having not taken account of the emboldened 'within the battery'. Candidates should always pay particular attention to any text written in **bold**.

Question 12

This question was not answered correctly by a sizeable proportion of candidates, with many thinking that a narrower tube would cause *h* to increase.

Question 14

Responses to this question on evaporation showed some confusion over cause and effect, with some candidates opting for **B**, possibly due to a misconception that energy would be conducted *away* from the water through the metal dish, rather than *into* the water, as would happen once the water started to cool.

Question 17

A significant number of candidates thought that thermal conduction only occurred in solids, neglecting substances such as mercury, or indeed any other molten metals.

Question 23

This question concerned the image produced by a converging lens and was less well answered than many others. Many candidates opted for **B**, an object position that would produce an enlarged image.

Question 25

Many of the lower-achieving candidates were unable to average the set of results in this question, and opted for distractor **B**.

Question 29

The most common mistake was to calculate the p.d. across the 30 Ω resistor and giving this as the answer, rather than subtracting it from 6.0 V.

Question 32

The potential divider caused problems, with all options proving popular.

Question 33

A significant number of candidates thought that the low-rated fuse would not only blow, but also cause damage to the kettle.

Question 34

A significant number of candidates did not appreciate that changing both the direction of the current and that of the magnetic field would have no effect on the direction of the force produced on the wire.

© 2014
PAPA CAMBRIDGE

www.xtrapapers.com
www.PapaCambridge.com

PHYSICS

Paper 0443/23
Core Theory

Key Messages

Apart from being well prepared to answer questions from across the Core syllabus, there are further aspects of examination preparation that could have helped some candidates improve their performance.

Candidates should note the number of marks available and the space allocated for responses as these factors provide a clear indication of the type of answer that the Examiner is expecting. For example, on a two mark question the Examiner is expecting two distinct points, not two versions of the same point.

Candidates must read the question carefully and make sure they follow the rubric of the question. In particular, candidates must not try to maximise their chances by giving more than the required number of answers to a question. If two alternative answers are given, one correct and the other incorrect, the candidate will almost always score no credit. A useful tip for candidates is that they should read the question through very carefully, both before and after writing their answer.

It was noted that a number of candidates had underlined the question command word and the key terms in the question. This may help candidates to identify what the question wants them to write about.

Candidates are advised to read carefully through their responses to make sure that what they have written has the intended sense. Concise explanations are often the best.

In calculations, candidates must set out and explain their working correctly. The Examiner may be able to give credit for working if the final answer is correct, due to the merit of the work. However, when a candidate makes an error and no working is shown, it is often impossible for the Examiner to give any reward for the question.

General Comments

A high proportion of candidates had clearly been well taught and prepared for this paper. There remains the tendency to think less rigorously and logically in non-numerical questions than in numerical questions. Some areas of the syllabus were better known than others; in particular energy transfers, the interpretation of melting and heat transfer and nuclide notation were not well understood.

Equations were generally well known by all but the weakest candidates. Many candidates understood well how to apply equations to fairly standard situations. On occasions however, when asked to apply their knowledge to a new situation, their responses were confused and displayed a lack of breadth of understanding of the use of the equation. More practice in applying equations in unfamiliar situations would deepen candidates' understanding and improve their marks in the examination.

An occasional candidate had written out answers in pencil before tracing over them in ink. This should be strongly discouraged; not only is it a waste of the candidate's time but it can lead to an answer which is less legible than it would otherwise be. Candidates should be encouraged to present their answers as carefully and neatly as possible. Whilst examiners are generous in interpreting spelling mistakes and awarding due credit they will not accept responses that try to have two attempts e.g. if the answer required is refraction, words such as 'reflaction' are not credited as the examiner cannot be certain of the candidate's intended meaning.

The majority of candidates indicated, by their knowledge and skills, that they were correctly entered for this Physics Core paper. However, a significant minority of candidates found the subject matter and level of some questions very easy, and they may have benefited from being prepared and entered for the Extended Theory paper.

CAMBRIDGE International Examinations
© 2014
PAPA CAMBRIDGE

www.xtrapapers.com
www.PapaCambridge.com

The English language ability of the vast majority of the candidates was adequate for the demand paper. However, there was a small minority who struggled to express themselves adequately.

This is a paper where all of the questions are compulsory. Candidates did not seem to find any difficulty completing it in the allocated time and relatively few left answers to questions blank.

Comments on specific questions

Question 1

(a) The majority of candidates struggled with this fairly straightforward description. Only the highest achieving candidates were able to give three valid points about how the length of the spring could be measured accurately.

(b) Most candidates gained full credit for this, but a number went on to divide the correct answer by two.

(c) Many candidates did not show a firm understanding of the concept of the resultant force, and answers involving addition of the two forces were common. Many candidates did not gain credit for the direction, with answers such as north, south, forwards and towards.

Question 2

(a) Many candidates answered correctly, but some divided by 1000 or multiplied by 100.

(b) A significant number of candidates either did not remember or were unable to correctly transpose the equation for density.

Question 3

(a) Most candidates scored partial credit for this question. The most common mistake was having distance and time in the first sentence.

(b) Many candidates gave responses that did not properly address what was being asked in the question. Only the higher achieving candidates gave suggestions about energy being transferred as thermal energy to the surroundings.

Question 4

(a) This question was not well answered. Some candidates scored the first marking point, but many lost credit by stating that the substance was melting in the region AB. Very few candidates went on to correctly state what was happening in the other two regions.

(b) Only the highest achieving candidates recognised that ice needed to take thermal energy from the water in order to melt.

(c) **(i)** Most candidates gained credit for a correct statement of what would happen, but only the highest achieving candidates gave valid explanations for the increase in temperature.

(ii) In this part of the question, most candidates scored quite well, with clear explanations about the steam condensing to increase the mass of the water.

Question 5

(a) A large majority of candidates gained credit for their answers.

(b) Most candidates correctly applied the equation linking speed, distance and time. Some candidates did not transpose the equation correctly, and a significant number did not divide their answer by two.

(c) Most of the candidates who had given good answers in **(b)** went on to gain credit here.

© 2014
PAPA CAMBRIDGE

www.xtrapapers.com
www.PapaCambridge.com

(d) Many candidates gave correct differences, but a number only gave one difference, or had given two differences by giving the converse of their first response, e.g. 1. sound wa longitudinal waves, 2. light waves are transverse waves.

Question 6

(a) Many candidates gained full credit. A common mistake in **(ii)** was not to give the result of their test, e.g. stating "bring the rod close to some small pieces of paper", but not stating that the paper would be attracted if the rod was charged.

(b) This question was generally well answered, with many candidates providing clear suggestions for why the lady experiences an electric shock.

Question 7

(a) (i) Very few candidates correctly indicated the focal length of the lens.

(ii) This part of the question scored quite well, but many candidates were let down by a lack of precision in their drawing. A common mistake was not showing a correct refraction at either the centre of the lens or at both surfaces.

(b) Many candidates did not realise that, in order to see a focused image, the screen should be placed at I.

(c) (i) Only the highest achieving candidates were able to state that the image would move closer to F_1 or the lens.

(ii) Many candidates correctly stated that the size of the image would be diminished.

Question 8

(a) Many candidates gave the correct name for the component. Common errors included omission of variable, or calling the component a fixed resistor. Only the highest achieving candidates went on to gain the credit in **(ii)** for a correct description of the function of the variable resistor in the circuit.

(b) Most candidates gained full credit, although some of the less well-achieving candidates often gained credit in **(i)** but gave an incorrect unit in **(ii)**.

(c) Most candidates correctly applied the equation for calculating the combined resistance of two resistors in series.

(d) (i) Many candidates scored full credit. The most common errors were either drawing a line through the resistor symbol, or short circuiting the parallel combination.

(ii) The majority of candidates gained credit.

Question 9

(a) Many candidates gained full credit, but a significant number confused core with coil and iron with steel or copper.

(b) Many candidates gained the full credit for this calculation. However, a significant number scored zero through simply writing down an incorrect answer with no calculation shown. Candidates should be encouraged to show their working in all calculations in order that some credit can be given for partially correct responses.

(c) The highest achieving candidates scored full credit, but the majority did not give enough detail, about either fewer turns or lower voltage, in their explanations.

(d) The majority of candidates gave correct answers.

© 2014
PAPA CAMBRIDGE

www.xtrapapers.com
www.PapaCambridge.com

Question 10

(a) The majority of candidates gained credit.

(b) Few candidates stated that the screen would glow to indicate the presence of cathode rays.

(c) This question was not well answered by candidates. There were very few completely correct responses.

(d) Only the highest achieving candidates recognised that Y_2 needed to be made positive and Y_1 negative in order to deflect the cathode rays to the top of the screen.

Question 11

(a) The majority of candidates were able to identify the electron, but there was considerable confusion between proton and neutron.

(b) The majority of candidates scored the credit for this marking point.

(c) Only the highest scoring candidates gave the correct nuclide notation for deuterium and tritium. Many candidates had the notation inverted.

Question 12

(a) Many candidates were able to correctly plot the points and draw a line of best fit for the points. However, a significant number lost credit through careless plotting or line drawing.

(b) (i) The majority of candidates gained credit.

(ii) Only the highest scoring candidates were able to determine the “half-life” of dice. A common error was to simply state half the number of throws shown on the graph, i.e. seven.

(iii) Only a few of those who determined the “half-life” of dice were able to give a correct suggestion and explanation for this question.

© 2014
PA CAMBRIDGE