PHYSICS

Paper 0625/01
Multiple Choice

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Key	C	A	A	D	B	B	C	C	A	C	C	D	D	D	A	B	B	C	B	D

Item	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Key	B	C	C	C	A	C	C	B	C	C	B	B	B	A	B	D	D	C	A	C

General comments

This year 4223 candidates sat this paper, a significant increase on 2006. The mean score was 27.063, and the standard deviation 6.575.

This year there were only two items with a facility of 90% or higher: items **5** and **19**. Many more were found difficult, having a facility 60% or below; these were items **3**, **9**, **10**, **11**, **13**, **21**, **23**, **29**, **31**, **32**, **34**, **36** and **39**.

Comments on individual questions

(Percentages in brackets after an item number show the proportion of candidates choosing the correct response).

Item **1** (82%) worked well, with distractor **D** chosen by 12% of candidates who presumably linked the largest base area to the largest volume, and a similar success rate was found in item **2** (84%). In item **3** (47%) however, 39% opted for **B**, making the classic mistake of failing to halve the time from hit to echo being heard - this is always worth stressing in revision. Although item **4** (66%) was better answered, **C** attracted 30%, with candidates expecting an item with columns for weight and mass - careful reading of the question is needed here. The very straightforward item **5** (96%), caused little difficulty, but in item **6** (71%), 28% chose **C**; the key word in the stem is 'large', suggesting that the object could not be lowered into the measuring cylinder, and 'regularly-shaped' implies that direct measurement with a ruler would be preferable to using a displacement method. 86% were correct in item **7**, with one in ten choosing **D**. Some thought was required in item **8** (68%), and all distractors were effective; symmetry narrowed the choice to **A** or **C**, but considering the position of each point relative to **D** gave the answer. The force item **9** (56%) was not well answered - the most common error was believing that the engine would provide a force greater than air resistance when the aircraft was in equilibrium. A similar success rate was shown in item **10** (55%) in which nearly a third of candidates opted for **B**, not noticing that this would have involved an initial measured length of zero. The statistics for item **11** (54%) were almost the same, with roughly one in three failing to read that the person stops at the top of the stairs, so would have no kinetic energy.

All distractors worked well in item **12** (65%). Item **13** (18%) was by far the worst answered on the paper, with 65% of candidates choosing **C** in the belief that the pressure above the mercury surface would increase - the correct answer is more easily accepted if this space is explained as being essentially a vacuum, rather than through considering the small amount of mercury vapour present, possibly leading to difficulty with the concept of saturation vapour pressure not depending on volume. The success rate for item **14** was 84%, and for item **15** (74%), with **B** attracting one in five. Perhaps understandably in item **16** (78%) the largest block, **D**, was wrongly chosen most often. Candidates performed well in item **17** (85%), item **18** (82%) and item **19** (92%), but less strongly in the recall waves item **20** (65%). The next really badly answered item was **21** (37%); here over half opted for **C**, indicating that some further discussion about waves would be worthwhile. Item **22** (75%) had exactly the target facility, but nearly one in three chose **A** in item **23** (50%) which required careful consideration. Items **24** (82%) and **25** (89%) were well answered, but item **26** (67%) showed a third of candidates to be lacking some basic knowledge of magnets. The next two electrical items **27** (80%) and **28** (76%) worked well, but item **29** (48%) demonstrated that Ohm's law was not sufficiently familiar to many.

With 80% facility, item **30** lead 14% to choose **D**, not appreciating that the 12V supply would be shared between lamps in series. Similar confusion over currents in a parallel circuit caused one in two to choose incorrectly in item **31** (50%), but the capacitor item **32** (27%) was problematical to most and suggests a need to spend time on this topic - all distractors were popular, but **D** especially. The first electrical safety item **33** (88%) caused little difficulty, but the second, item **34** (53%) proved more of a challenge, with almost one in four choosing thinner cable. Although item **35** (70%) showed generally good knowledge of electrical transmission, in item **36** (52%) the word 'slide' was important, rather than simply 'move', as would be true for **B**. Performance in the cathode-ray tube item **37** (69%) was quite reasonable, and also in the first radioactivity item **38** (74%). However, the next radioactivity item **39** (55%) proved more difficult - a quarter believed radiation to be most likely from the surface, probably confusing it with evaporation. The final item **40** (76%) worked well, with all distractors being effective.

PHYSICS

Paper 0625/02
Core Theory

General comments

The general standard of the scripts presented in this exam was probably the most disappointing for many years, although the standard in recent years has been very satisfactory.
Many candidates did not grasp the basics of Physics knowledge. So, the following report is perhaps not as encouraging as ones in the recent past may have been.

Where the candidate knew the underlying Physics, any accompanying mathematics was usually clearly indicated, although there are still some candidates who risk losing marks by failing to show their working. This was especially the case in **Question 9**. Poor use of units is not penalised too heavily on this paper, but it is an important aspect of all sciences, and it was pleasing to see that most candidates were careful in this matter. Candidates on this paper can usually cope with numerical questions, so the fact that there were perhaps fewer numerical questions than has sometimes been the case, might have contributed to the lower marks. However, candidates should not rely too much on an ability in mathematics to get them through a Physics exam.

Comments on specific questions

Question 1

It was pleasing that this question was well done. Virtually all the candidates could read the volume, with only a handful reading from the top of the meniscus. There were very few who failed to realise that the level in the can would be lower than in the measuring cylinder, with the majority showing the level close to the 15 mark.

Question 2

(a) Many simply did not know how to calculate the volume of a "box". Instead, they tried to manipulate D=M/V, which of course meant that they had nothing left to offer in **part (b)**.

(200 000 m^3)

(b) Those who could answer **(a)** usually managed to calculate the mass of the air. Common causes of lost marks were inability to manipulate D=M/V to make M the subject, and the omission of the unit on the answer. Even nonsense working leading to a nonsense answer would have scored one mark for the correct unit here.

(260 000 kg)

(c) Very few linked heating with expansion and therefore lowered density.

(d) Most knew that "hot air rises", but there were still quite a few who insisted that "heat rises".

Question 3

This was a very disappointingly answered question. Simple barometers have appeared in this paper on numerous occasions in the past, and have usually been competently tackled. Not on this occasion, though.

(a) Virtually no candidate knew which distance should be measured.

(b) Most candidates believe that air occupies the space above the mercury, with some actually going as far as to say that it is pressurised air.

(c) A good proportion could answer this correctly. Some got the level in the tube correct, but made the level in the reservoir lower as well.

(d) Perhaps this part was too difficult for paper 2 candidates, because most of the answers showed no understanding at all of how the barometer actually works, even though it is on the syllabus.

Question 4

It was thought that a highly structured question like this would help the candidates, but this did not appear to be so. Perhaps it was the distraction of an actual application which candidates at this level found difficult. Whatever the explanation, virtually none were able to apply their knowledge in this situation. Lots simply failed to answer any part, so the implication is that they thought, “This looks difficult, therefore I can’t do it.”

(a) Very few correct answers were given to this part. *W* and *F* were shown in just about every direction and applied in just about every place, apart from the correct ones. *W* was frequently shown in places other than the boat, and rarely shown vertically downwards. *F* was rarely shown between the boat and the slipway, and rarely pointing opposite to the direction of motion.

(b) It was rare for a candidate to be able to apply work = force x distance, and answers like W x h x s were quite common. The mark in **part (ii)** could have been scored for any indication that the amounts in the previous two parts would have to be added, but this was only occasionally seen.

(c) Most candidates knew that time was involved in the calculation of power.

Question 5

Unfortunately, this straightforward question was poorly answered.

(a) Most (although not all) knew the unit for temperature.

(b) This should have been two easy marks for virtually all candidates, but it was not. Probably 50% did not know the values of the ice and steam points. A few more lost marks because they drew marks on the thermometer, which were very close to the 0 and 100 lines, but not quite. On this occasion, there was no reason why their marks should not be accurately on the 0 and 100 lines.

(c) Very few seem to know of ways of measuring temperature, other than liquid in glass thermometers.

Question 6

(a)(i) Generally answered correctly.

(ii) Very few could calculate this. The most common answer was 18/10 = 1.8.

(9 m/s)

(iii) Having answered **part (ii)** incorrectly, most were able to carry their answer over to this part without making any further mistakes and so were able to score marks. Some even started all over again and actually obtained the correct answer.

(90 m)

(b) Very few could explain this with any clarity. Most talked unconvincingly about the motorcycle accelerating, which is only part of the explanation.

Question 7

Most candidates could score at least some marks on this question.

(a) The calculation was usually correct, although some divided instead of multiplying. The drawing of the wave front was usually shown as circular, although many did not link its size with the 1.5 cm they had just calculated. Others showed the 1.5 cm from the point X. Many lost the mark because the wave front was simply badly drawn. Candidates need to realise that the standards for scoring marks from drawings are just as high as those for calculations.

(1.5 cm)

(b) It was pleasing to see how many could identify at least one difference.

Question 8

This was another question where candidates showed poor knowledge. Ray optics is often a problem area, and teachers would do well to allow extra teaching time for such topics.

(a) Very few candidates could correctly identify either the principal focus or the focal length. It was very common for a candidate to think that the image position was the principal focus and that the image distance was the focal length. This lack of knowledge possibly led to some incorrect answers to **part (c)**. The third ray on the diagram was normally drawn acceptably, although it has to be pointed out that many would have lost the mark for this if stricter requirements for accuracy of drawing had been applied.

(b) Most could score some marks on this part, and indeed quite a few scored all four marks. It might be worth teachers pointing out some of the necessary links between image characteristics e.g. enlarged must mean greater object distance.

(c) There was a lot of uncertainty about this.

Question 9

(a) Points were usually well plotted, but the curves through the points were often very careless. The last comment made for **7(a)** would apply here also.

(b) Values were usually within the required limits.

(5.3 – 6.1, 0.9 – 1.7)

(c) A good number knew how to calculate the resistance from the voltage and current, but the vast majority did not take into account that the current was given in mA and not A. Hence answers were usually wrong by a factor of10^3. There were the usual responses who thought that R =I/V or V x I.

(220 – 240, 40 – 60)

(d) All that was required here was an appropriate deduction from **part (c)**. Candidates usually answered this correctly.

Question 10

(a) Very few knew what the magnetic field of a coil looks like. Most attempts were poorly drawn, and large numbers simply did not answer this part. However it was rare to find a candidate who did not know that the iron bar would make the field stronger.

(b) Most were able to score the mark for “rods repel each other”, but few scored much else. There was a huge proportion that talked about the rods being charged, and even went as far as making them positive or negative. This confusion between electrostatic charge and magnetism is quite common, a fact which teachers might care to note.

Question 11

(a) Half lives were usually correctly estimated.

(18 – 20 mins)

(b) The usual misunderstandings about half life were evident in answers to this, but it was pleasing that a good proportion did get at least **(i)** correct. Answers to **(ii)** were often half or double the appropriate value.

(c) Either alpha or beta would have scored the mark here, and there were good numbers who did, but there were far too many answers like "gamma particles".

Question 12

It was anticipated that this question would make candidates think, even though it only contains basic syllabus content. The fact that it "looked different" seems to have made many candidates give up and not even attempt it.

(a) Basic knowledge that many answered incorrectly.

(b) Basic attraction and repulsion of charges, yet very few referred to deflection and even less to deflection towards P_1.

(c) This is really, the only "difficult" part to the question, but still only attraction and repulsion of charges. However, this time the candidates had to adapt their knowledge to a new situation, something which few could do.

(d) The most appropriate answer would have been a fluorescent screen. Few answered this, with sheets of paper or smoke or cathode rays tube or radiation detector being what was chosen. None of these was considered appropriate.

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Paper 0625/03
Extended Theory

General comments

There were many competent candidates who attempted this paper. As always it was pleasing to mark the scripts of able candidates who have been well prepared.

However, it was again clear that many of the weaker candidates would have been better advised to sit Paper 2, which was designed to enable them better to show what they know and are able to do.

Most candidates managed to score at least some marks on most questions and there were no questions which proved unreasonably hard for all candidates.

Where the candidate knew the underlying physics, any accompanying mathematics was usually clearly indicated. It needs to be said that there are still some candidates who risk losing marks by failing to show their working. The correct use of units is expected throughout the paper, and incorrect or missing units are penalised. Most candidates have been well trained in this aspect of their work.

Candidates are not penalised for poor handwriting, but there were instances where the writing was so poor that much of it could not be read. Markers will do all they can to award marks to deserving candidates, but they cannot award for an answer if it cannot be read.

Comments on specific questions

Question 1

(a) There were very few candidates who did not obtain values from the graph, but unfortunately very few who took the values accurately enough. Most said that the curve ended at 2 s. It does not, and the value taken affects subsequent working. However, a mistake in part **(i)** was not penalised further in **(ii)** – **(iv)**, unless further mistakes were made. The height of the building was found from the area under the graph, and any reasonable method of estimating the area under the curved line was rewarded, *where it could be seen what the method was*. Unfortunately lots of candidates produced answers without showing their working, or without explaining the working clearly enough. If an answer is wrong and there is no intelligible working, the marker cannot reward the answer.

(1.6 s – 1.8 s, 4.2 – 4.4 s, 32 – 36 m, 70 – 95 m)

(b) Answers to this part were usually very vague, with most candidates knowing little more than that at terminal velocity, forces up = forces down. It should be clear that for a total of 5 marks, far more than this is required. There were lots of answers along the lines of "weight down equals the acceleration."

Question 2

(a) Candidates must be sure to read the question, and give what is asked for. Part **(i)** required a description of the motion, not a discussion in terms of energy. Part **(ii)** requires understanding of energy. Here it was simply a recognition of energy being lost which was required. Most candidates scored at least 1 mark in **(a)**.

(b) It was pleasing to see how many candidates correctly equated PE and KE, to arrive at a value for the maximum speed. Some made arithmetical errors on the way, but were rewarded for the physics that they knew. It should be pointed out that numerical answers should be worked out and given to an appropriate number of significant figures. This means that $\sqrt{10}$ would not score the mark for the final answer.

(3.2 m/s)

Question 3

(a) As is often the case in questions about extending springs, a proportion of candidates related length and load, rather than extension and load. That said, it was pleasing to see how many scored full marks on this section.

(12 N)

(b) For such a simple topic, it was disappointing to see how many gave unconvincing answers to this question. Many answered **(ii)** as if it had asked how *F* is calculated, rather than the moment of *F*.

Question 4

Candidates often find difficulty in describing molecular motions clearly. In this case, however, many candidates scored well.

(a) (i) High speed and random motion were looked for here, and most candidates wrote something appropriate.

(b) (ii) Most were aware that collisions were involved, although many candidates seemed to think that collisions between molecules have some influence on pressure. There was less understanding of the relevance of hits per second, or hits per unit area, so few scored full marks on this part.

(c) This was a simple calculation which many candidates did well, although a few divided instead of multiplying.

(240 000 J)

Question 5

(a) The description of how the readings were taken was frequently poorly done. Candidates seem to be losing the ability to describe an experimental procedure in a systematic way, and this is something teachers could well take into account when planning their teaching strategy. Very few mentioned the need to take some readings before adding the water, and many did not even say that the hot water was added. Others invented their own experiment and imported thermometers and infrared heaters.

(b) It was disappointing to find how few candidates could answer this correctly.

(c) There were many good drawings of thermocouples, but some lost a mark because the metals were not identified as being different. (It was not necessary to name the metals).

Question 6

(a) The majority of candidates drew the lens diagram with acceptable accuracy, but, interestingly, hardly any were able to draw the rays to locate the image in the plane mirror. Most candidates knew where the plane mirror image was, but not how to locate it. Simple experiments with ray boxes or pins are very effective in promoting an understanding of this.

(b) Some candidates had muddled understanding, but generally candidates scored most of the available marks.

Question 7

(a) Diagrams of longitudinal waves are particularly difficult to draw and many candidates are to be complimented on the quality of their attempts. Generally the best attempts were a series of lines or dots with varying spacing. Some "sine" wave graphs were regarded as valid answers, but often these were difficult to interpret, especially as many did not have their axes labelled.

(b) All three parts of this were well answered, although the speed of radio waves was not so frequently known.

Question 8

(a) Almost all candidates answered this correctly.

(b) Most candidates could give at least one advantage.

(c), (d), (e) Lots of correct answers, although here units were not as reliable as elsewhere in the paper.

(12V, 2.4Ω, 3A, 24W, 7200J)

Question 9

(a) Some candidates gave good statements, but there were a lot who confused electromagnetic induction with electromagnetism, and talked about "inducing a magnet using electricity".

(b)(c)(d) The apparatus to be used was specified in the stem of the question. Many candidates introduced horseshoe magnets and moving wires. Where possible, markers awarded credit for such answers, but candidates must expect to lose marks if they do not pay attention to the question. Even if they had given grossly wrong answers to the previous parts, most seemed to know the answers to part **(d)**.

Question 10

Logic gates were not very well understood by candidates sitting this paper. Having said that, there were a small number of excellent answers from candidates who had been well taught. This topic requires a different kind of knowledge from most other parts of the syllabus, and teachers would help their students by making sure that adequate time is spent on it. There will be questions on this topic from time to time, as with all other topics.

(a) Most could answer this part correctly.

(b) Very few could draw a diagram showing suitable connections, and even fewer knew the levels of the inputs and outputs.

Question 11

(a) It has been pointed out that candidates are not good at describing a procedure in sequential steps. This was the case again here. Most candidates only scored the mark for saying that aluminium is put in the gap and a reading taken. Very few would have taken the background count, or subtracted this from the other readings. Most had no appreciation of the need to put the aluminium sheets in one at a time, to get different thicknesses.

(b) Because they had not set up the experiment with different thicknesses of lead, very few scored the mark for linking the detected count rate to thickness. In fact, for most candidates, any thickness of aluminium would stop beta particles.

PHYSICS

Paper 0625/04

Coursework

General comments

The candidates at all the Centres were given many opportunities to demonstrate their practical skills using a varied range of tasks from different areas of the specification; clearly a large amount of good work has been completed by teachers and students. The majority of samples illustrated clear annotated marks and comments, which was helpful during the moderation process.

It is pleasing to see that points made from previous reports were noted, although the following points are still relevant to some of the Centres:

- It should be noted that although Moderators do not expect to see written evidence of Skill C1, they do expect to be provided with details of how candidates achieved the marks awarded.
- It is advisable that a maximum of two skill areas should be assessed on each practical exercise.

PHYSICS

Paper 0625/05

Practical Test

General comments

The aim of the examination is to enable candidates to display their knowledge and understanding of practical physics techniques. These include

- graph plotting
- tabulation of readings
- manipulation of data to obtain results
- drawing conclusions
- dealing with possible sources or error
- control of variables
- accurate measurements
- choice of the most effective way to use the equipment provided

The general level of competence shown by the candidates was sound. Very few candidates failed to attempt all sections of each of the questions and there was no evidence of candidates suffering from lack of time. Many candidates dealt well with the range of practical skills tested. Each question differentiated in its own way. Some candidates appeared to have attempted to learn responses from past papers. This was particularly noticeable where candidates did not understand the difference between taking precautions to improve accuracy and the control of variables.

Comments on specific questions

Question 1

(a) – (e) Many candidates completed the table correctly, although some missed the units or wrote incorrect units, whilst others confused the initial temperature reading required in the table with the room temperature reading from **part (a)**.

(f) A surprisingly large number of candidates failed to carry out the instructions with care and calculated the wrong temperature difference in **part (ii**).

(g) (i) The better candidates realised what was required here and wrote a suitable explanation but only the most confident took their lead from **part (f)** and wrote that T_2 is less than T_1.

(ii) The best candidates were able to write three sensible suggestions of variables that should be controlled. Some candidates wrote a list of precautions and since this did not answer the question, scored no marks.

(h) Candidates who simply suggested ‘a lid’ scored the mark here. Many used different words or phrases but if the meaning was ‘lid’ a mark was awarded. Insulation wrapped round the beaker was an incorrect response. ‘Covering’ the beaker was, of course ambiguous but if in the context of a sentence the meaning seemed to be ‘lid’ the Examiners awarded a mark. However, candidates should be taught to use words carefully and avoid vague or ambiguous words and phrases.

Question 2

(a) – (d) Most candidates completed the table correctly.

(e) The accuracy of plotting on the graph was generally good, but a significant number of candidates chose unsuitable scales (using less than half of the grid) and too many drew poor quality lines, either 'zig-zagging' between the points or drawing a line that was too thick.

(f) and (g) Some candidates did not follow the instructions. Of those who did, some failed to score the final mark because they did not give their answer to one decimal place.

Question 3

(a) – (c) Candidates who set up the circuits correctly produced a good set of results. Some quoted currents that were clearly ten times (or more) too large. Marks were lost by candidates who did not include the correct unit (A) or who did not give currents to two (or more) decimal places.

(d) Candidates who were used to reviewing the results of experiments realised that the readings they obtained agreed with the theory within the limits of experimental error and were able to express that.

(e)and (g) Many candidates correctly suggested a variable resistor and were able to calculate the resistance although some missed the unit (Ω).

(f) Few candidates were sufficiently confident to write down the zero reading that their voltmeter would have shown when connected across the switch.

Question 4

Candidates were not expected to be familiar with this particular experiment, but they should have had experience of finding an image by the 'no parallax' method. Nevertheless most of the marks were available even if the candidate did not accurately find the image position.

(f) – (h) Most candidates recorded an x value that was less than a sensible h value and went on to successfully calculate n.

(e) – (k) Most candidates successfully repeated the procedure and obtained another sensible set of readings and a second n value. Many went on to calculate the average n value correctly. However marks were lost if the value was not given to two or three significant figures or if a unit was given. Also, if the experiment had not been carried out with care the mark for gaining an average value between 1.4 and 1.6 was lost.

(l) The expected answer (a diagram showing the distances of each end of the pin from the bench being the same) was rarely seen. Other suitable responses using a protractor or set square correctly were accepted.

PHYSICS

Paper 0625/06
Alternative to Practical

General comments

The aim of the examination is to enable candidates to display their knowledge and understanding of practical physics techniques. These include

- graph plotting
- tabulation of readings
- manipulation of data to obtain results
- drawing conclusions
- dealing with possible sources or error
- control of variables
- accurate measurements
- choice of most suitable apparatus

It is assumed that, as far as is possible, the IGCSE course will be taught so that candidates undertake regular practical work as an integral part of their study of Physics. This examination should not be seen as suggesting that the course can be fully and effectively taught without practical work.

Clearly, some of the skills involved in practical work can be practised without doing experiments – graph plotting, tabulation of readings, etc. However there are parts of this examination in which the candidates are effectively being asked to answer from their own practical experience.

The answers given by some candidates in this examination often point to a lack of practical Physics experience. Some candidates have a good overall understanding of what is required, backed by personal practical experience and therefore score high marks. Others, obtaining lower marks, appear to have limited experience.

Comments on specific questions

Question 1

(a) The thermometer was generally correctly read. The most common error was to write 20.4°C.

(b) (i) A significant number of candidates neglected to fill in one or both of the units.

(ii) and (iii) A surprisingly large number of candidates failed to carry out the instructions with care and calculated the wrong temperature difference in **part (iii)**.

(c) (i) The better candidates realised what was required here and wrote a suitable explanation, but only the most confident took their lead from **part (f)** and wrote that T_2 is less than T_1.

(ii) The best candidates were able to write three sensible suggestions of variables that should be controlled. Some candidates wrote a list of precautions and since this did not answer the question, scored no marks.

(d) Candidates who simply suggested ‘a lid’ scored the mark here. Many used different words or phrases but if the meaning was ‘lid’ a mark was awarded. Insulation wrapped round the beaker was an incorrect response. ‘Covering’ the beaker was, of course ambiguous but if in the context of a sentence the meaning seemed to be ‘lid’ the Examiners awarded a mark. However, candidates should be taught to use words carefully and avoid vague or ambiguous words and phrases.

Question 2

(a) Most candidates completed the table correctly.

(b) The accuracy of plotting on the graph was generally good and few candidates chose unsuitable scales (using less than half of the grid). However many drew poor quality lines, either 'zig-zagging' between the points or drawing a line that was too thick. Most were able to find the value of *d* although some neglected to show clearly how they obtained the value.

Question 3

(a) Many candidates were able correctly to read the meters and record the results. Some neglected to include the unit (A).

(b) Candidates who were used to reviewing the results of experiments realised that the readings that they obtained in **part (a)** agreed with the theory within the limits of experimental error and were able to express that.

(c) and (d) Many candidates correctly suggested a variable resistor and were able to calculate the resistance although some missed the unit (Ω). Most knew the symbol for a voltmeter but only those confident with its use positioned the voltmeter correctly on the circuit diagram.

Question 4

(a) Most candidates measured and recorded the values of *x* and *h* correctly and went on to a successful calculation of *n*. Some lost a mark by adding a unit, others by quoting in excess of three significant figures.

(b) The expected answer (a diagram showing the distances of each end of the pin from the bench being the same) was relatively rarely seen. Other suitable responses using a protractor or set square correctly were accepted.

Question 5

(a) Most candidates recorded the values of V_1 and V_2 correctly and went on to a successful calculation of V followed by correctly calculating the density.

(b) In the table headings the units were often correct but, a significant number of candidates left the V_2 and V_1 headings blank.

(c) Relatively few candidates realised that since a brief explanation was required and only 1 mark was available that they should have made the point that the same method would be appropriate provided a known mass of sand was used. Any mention of counting sand grains did not gain the mark.