

PHYSICS

SUBJECT 5055

PAPER 2

GENERAL COMMENTS

Generally the performance of candidates was fairly good. This is evidenced by the candidates' scores which were relatively high in most centres. This is an indication that the paper was fair to all candidates who have prepared well for the examination.

The centres performed very well; however, there were some skills that were lacking. These were explaining, describing and defining concepts.

The questions that were done worst are: Question 2 (a)(iii), 4 (a)(i), 4(a)(ii), 6(a) and 7.

The questions that were fairly done were: Question 3, 4(b), 6 (b) and 6 (c).

The questions that were done very well are: Question 1, 5(b), 8, 9 and 10.

QUESTION 1

- (i) Most candidates scored here. The expected answer was 6.6N. Some candidates failed to score all marks here by multiplying 0.66 by 10N instead of 10N/KG or by 10M/S^2 .
- (ii) Nearly every candidate scored. The answer was $1.16 \times 10^4 \text{ kg/m}^3$ or 11.6g/cm^3 .
- (iv) Most candidates failed to score all the marks. They failed to round off the answer to a whole number. The answer was 9091 balls.

QUESTION 2

- (a) (i) Most scored here. The arrow was supposed to be directed towards the centre of the circle.
- (ii) This was not done very well. They failed to state that tension in the string provided the resultant force.
- (iii) This was done very well. Most candidates scored here. The arrow was supposed to be tangential to the point.

QUESTION 3

- (i) Most candidates did not get full marks here. The candidates failed to specify that ice absorbs latent heat from the drink to melt (without any temperature change) whilst water absorbs heat from the drink to change/rise its temperature.
- (ii) Most candidates failed to score all the marks by not stating the formula for calculating moment of force. They just mentioned that a lesser force is required for a longer spanner/distance from the pivot.
- (iii) Again, most candidates failed to score. They did not link friction to heat it produces to the evaporation of water.
- (iv) The candidates failed to apply to concept of contraction and expansion. They did not realise that sagging allows for contraction; expansion causes sagging. Most failed to state that sagging is also caused by the weight of the cables.

QUESTION 4

- (a)
 - (i) The majority of candidates failed to score. They did not state that gas molecules move freely, randomly and continuously.
 - (ii) Also most candidates failed to score. They failed to state that liquid molecules are relatively free to move around.
 - (iii) This was done very well.
- (b) The majority of the candidates failed to score all the marks. They just defined latent heat of fusion. They failed to mention that this heat is used/absorbed to increase the potential energy/break bonds – increasing potential energy rather than increasing kinetic energy.

QUESTION 5

- (a)
 - (i) This was fairly done. Some candidates lost marks by referring to turns as coils.
 - (ii) This was well done.
- (b)
 - (i) This was done very well by most candidates. The answer was 6V. A few candidates lost a mark by not stating the unit.
 - (ii) Well done. Expected answer was 2A.

- (iii) The majority of candidates failed to score here. They failed to apply the concept: power input equals to power output. ($VI_p = VI_s$). The answer was 0.05A.

QUESTION 6

- (a)
 - (i) Most candidates did not score here. They failed to state that air particles come closer together.
 - (iii) Candidates failed to score again. They should have stated that air particles are far apart than normal.
- (b)
 - (i) This was fairly done, however, some candidates did not clearly mention that what increases and what decreases.
- (c) This was done very well. Most candidates managed to score all the marks, however, some only calculated the time of echo or time for the bang. Most did not realise that the required answer was the time difference. The correct answer was 0.86 seconds.

QUESTION 7

- (a)
 - (i) Most candidates failed to secure all marks here. They failed to show the necessary meniscus on the bow/trough/container. Most did not indicate the height of the mercury column. Most candidates did not label the vacuum.
 - (ii) Most candidates failed to understand the question. They failed to state that pressure equals density times height times the acceleration due to gravity ($P = fhg$).
- (b) The majority of candidates failed to secure full marks. They did not use the correct units. The answer was $800\text{mm} - 640\text{mm} = 160\text{mm Hg}$. 160 Hg.

QUESTION 8

- (a)
 - (i) Well done by most candidates.
 - (ii) Most candidates scored all the marks here.
- (b)
 - (i) This was fairly done, however, most candidates did not label the axes correctly, also units for speed were omitted.
 - (ii) 1. This was done very well. The correct answer was 100J.

2. Most candidates were able to state that gain in KE is equal to loss in PE. Those who failed to score used the value of V as $g = 10\text{m/s}^2$ in the formula $KE = \frac{1}{2}mv^2$. The correct answer was 100J.
 3. This was well done. The correct answer was 0.125K or 0.125°C.
- (iii)
1. This was fairly done. Most candidates failed to get full marks. They failed to clearly show the forces on the ball, that is passing through the centre of mass.
 2. This was well done.

QUESTION 9

- (a) Most candidates did not score here. They did not mention that electrons were emitted from a hot metal surface.
- (b)
- (i) Acceleration was well defined. Collimation was not clearly defined. The candidates were supposed to state that it is to focus/narrows the electron beam.
 - (ii) This was done very well by most candidates.
 - (iii) Most candidates did not score full marks. They forgot to state that kinetic energy is converted to light and heat.
- (c) This was done very well.
- (d) This was done very exceptional.

QUESTION 10

- (a)
- (i) Most candidates failed to score here. They did not understand the question as they listed all the properties of the three types of radioactive emissions. They did not know that the nature of alpha particles is the Helium nucleus. Beta particles are the high speed electrons and gamma rays as high energy electro-magnetic radiation.
 - (ii) Most candidates did not score all the marks. They were able to show deflection of particles but they did not show the direction of field (the x or crosses) into paper.
- (b)
- (i) This was done well, some of the candidates did not score all the marks because they did not state that the substance should be a radioactive one.

- (ii) This was well done.
- (c) (i) Well done.
- (ii) Most candidates failed to score full marks. They were not aware that lead stops all the radiation. They mentioned that lead reduces the amount of gamma mediation.

The majority of the candidates were also not aware that the radiation badges are detectors. These serve as wiring system that beeps to alert that radiation has reached dangerous levels or the danger levels have been exceeded.

MATTERS FOR THE SUBJECT MANAGER'S ATTENTION

Question 8 (b) (i) was not clear to some candidates as they thought that the effect of air resistance was considered. The question should have stated that air resistance is negligible.

SAKUBVA HIGH SCHOOL, centre 020384 submitted 3 sheets with question 8 and 10 (Section B only). No section A was submitted.

There was no question number 2 (b).