

Aga Khan University Examination Board

Notes from E-Marking Centre on SSC I Physics Examination May 2012

Introduction

This document has been produced for the teachers and candidates of the SSC Part I (Class IX) course in Physics. It contains comments on candidate responses to the 2012 Secondary School Certificate (SSC) examination, indicating the quality of the responses and highlighting their relative strengths and weaknesses.

This document should be read along with the AKU-EB physics syllabus based on the National Curriculum (2006).

General Comments

Teachers and candidates should be aware that examiners may ask questions that address the students learning outcomes (SLO) in a manner that requires candidates to respond by integrating knowledge, understanding and application they developed through studying the course.

Candidates need to be aware that the marks allocated to the question are related to the answer space (where this is provided on the examination paper), as a guide to the length of the required response. A longer response will not in itself lead to higher marks. Writing far beyond the indicated space may reduce the time available for answering other questions.

Candidates need to be familiar with the Command Words in the student learning outcomes which contain terms commonly used in examination questions. However, candidates should also be aware that not all questions will start with or contain one of the command words. Questions such as 'how?', 'why?' or 'to what extent?' may be used.

Question 1

Better responses of candidates clearly identified the S.I units and their symbol which are:

Physical Quantity	S.I Unit	Symbol
Mass	<i>Kilogram</i>	<i>Kg</i>
Electric current	<i>Ampere</i>	<i>A</i>
Luminous intensity	<i>Candela</i>	<i>cd</i>

In average responses, they identified the units but made a mistake in the writing of the symbol of luminous intensity.

In weaker ones they only completed one of the three quantities.

Question 2

- (i) In better responses, candidates correctly calculated the velocity of the cyclist with the help of a graph.

In weaker responses, they failed to give the correct answer, $v = 5\text{m/s}$.

- (ii) In better responses, candidates correctly calculated the interval of time with the help of a graph during which the cyclist had no acceleration.

In weaker responses, they failed to give the correct answer, $v = 5\text{s to } 15\text{s}$

- (iii) Better responses showed the correct calculation of the distance of the cyclist during 5 to 15 seconds with the help of formula, $v = \frac{d}{t}$.

Weaker students correctly identified the formula but failed to calculate the distance of the cyclist during 5 to 15 seconds.

- (iv) Better responses showed the correct calculation of the deceleration with the help of formula, $a = \frac{v}{t}$.

Weaker responses showed either correctly written formula of acceleration or calculated deceleration, $a = -2\text{ m/s}^2$

Question 3

In better responses, candidates calculated the unknown weight with the help of the given formula.

$$\text{Sum of clock wise moments} = \text{sum of anti-clock wise moment}$$
$$F_1 d_1 + F_2 d_2 = F_3 d_3 + F_4 d_4$$

In average responses, they were unable to find the moment arm of the weight from the axis of rotation.

Weaker responses of candidates showed the inability to measure the correct distance with respect to the given forces and made mistakes in mathematical calculation.

Question 4

Better responses of candidates clearly stated three important facts of the importance of pull of gravity on the earth.

In average responses, they identified only two facts and sometimes they were confused to differentiate between universal gravitation force and gravity on earth.

In weaker responses, they provided only one correct fact.

Question 5

- a. Better responses of candidates clearly differentiated between the renewable and non renewable sources of energy.

Average responses showed that candidates were unable to give two points of difference between them.

- b. Better responses of candidates correctly provided two examples each of renewable and non-renewable energy sources.

In average responses, they correctly provided two examples of either renewable and one example of non-renewable or vice versa.

In weaker responses, they correctly provided only one example of each.

Question 6

Better responses of candidates correctly described the processes of freezing, melting, evaporation and condensation.

In average responses, they correctly described three of the four processes. Most of such responses failed to correctly describe condensation.

In weaker responses candidates were failed to understand the requirement of the question. Instead of mentioning the processes (*freezing, condensing, melting and evaporating*) and describing them; they tried to describe the diagram.

Question 7

- a. Better responses of candidates correctly derived the Newton's second equation of motion which is $S = v_i t + \frac{1}{2} at^2$.

In average responses, candidates made mistakes in some of the important steps of derivation. For example they escaped the following steps:

$$S = V_{av} \times t, \quad V_{av} = \frac{V_i + V_f}{2}$$

- b. Better responses of candidates correctly provided five differences between mass and weight.

In average responses, they provided only three or four differences.

In weaker responses, they provided only one or two correct difference/s.

Question 8

- a. Better responses of candidates provided one condition with example when the work done is positive.

In weaker responses, they failed to provide any of the condition, when the work done is positive, negative and zero. Candidates were unable to understand the question; they made mistakes in writing the correct conditions of positive, negative and zero work.

- b. Better responses of candidates correctly defined the three terms stress, tensile strain and Young's modulus along with their respective formulae.

In average responses, they correctly defined all the terms but unable to mentioned the correct formula of stress or tensile strain.

Question 9

- a. In better responses, candidates justified the statement that evaporation occurs at all temperatures whereas boiling takes place at a certain temperature determined by the external pressure correctly with five points.

In average responses, they justified the statement by giving three or four points correctly.

In weaker responses, they reflected lack of understanding of the question and were confused how to justify that *evaporation occurs at all temperatures whereas boiling takes place at a certain temperature determined by the external pressure*.

- b. In better responses, candidates discussed all five applications of radiation.

In average responses, they discussed three or four applications only.

In weaker responses, they discussed only one or two applications of radiation. Most of the responses had wrong concept that radiation by the sun is also an application of radiation.