Aga Khan University Examination Board
Notes from E-Marking Centre on SSC I Physics Examination May 2013

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 2013 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.

Section I (CRQ):

Question 1

"Physics helps in attaining sustainable development of our society." Discuss the given statement by mentioning THREE important roles of physics.

Better responses of candidates correctly mentioned the three important roles of physics.

In average responses, they mentioned only two roles.

In weaker ones they failed to provide any single correct point. They were unable to understand the question and wrote definition of physics.

Question 2

a.	Explain that motion and rest are relative terms.

a. In better responses, candidates related rest and motion using an example and explained it in a very good way.

In average responses, candidates related rest and motion using surrounding or any observer.

In weaker responses, candidates just gave definition of rest and motion because they failed to understand the command word "Relate".

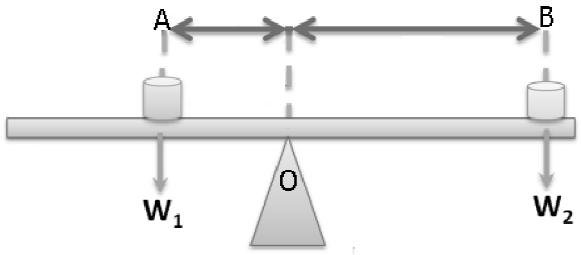
b.	Give any THREE examples to explain how a body can be at motion and in rest simultaneously.

b. In better responses, candidates gave very good examples from daily life which shows the true picture that how they are related that a body can be at motion and in rest simultaneously.

In weaker responses, candidates were unable to understand the term "relative" and gave examples which show rest and motion i.e. "a car is moving when we apply brakes it stop."

Question 3

A metre rod is supported at its middle point O as shown in the given figure.



A block of weight 5 N is suspended at point B, 20 cm from O. Find the weight of the block that balances it at point A, 10 cm from O.

In better responses, candidates got full marks because they solved this numerical in a very proper manner with data, formula and correct solution.

In average responses, they started solution without data or without formula.

In weaker responses, they used wrong symbols, wrong units and wrong calculations or they just wrote the answer directly.

Question 4

Two marble balls of 36 kg and 20 kg are placed in such a way that the distance between their centres is 60 cm. Find the force of attraction between them. (Take $G = 6.67 \times 10^{-11} Nm^2/kg^2$).

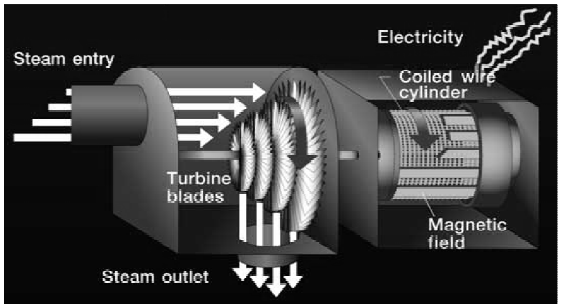
In better responses, candidates solved the question in a proper way with data, formula and also gave answer in standard form.

In average responses, they made a mistake on squaring the distance in the denominator in the formula and did not make conversion of distance from "cm" to "m".

In weaker responses, they did not mention data, formula and wrongly calculated the power of ten.

Question 5

a.	The given diagram represents a steam-powered generator. Describe how energy is transformed from one form to another.



a. In better responses, candidates gave correct answer of how energy is transformed from one form to another in the block diagram.

In average responses, candidates were confused from the figure given in the question as a stimulus .They thought by looking the figure, answer is required so they started energy transformation by looking the figure which is incorrect steps of power generation.

b.	Write TWO drawbacks of this process of power generation associated with the environment.

b. In better responses, candidates wrote correct drawbacks of power generation which associated with the environment.

In weaker responses, candidates were unable to understand word “drawback”, so they stated law of conservation of energy.

Question 6

A person is sitting in front of a room heater. Explain the possible ways through which heat is transferred to that person.

In better responses, candidates mentioned correct ways of transfer of heat.

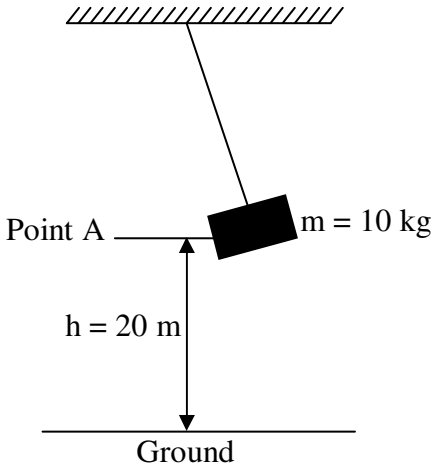
In average responses, candidates wrote correct possible ways but were unable to explain them.

In weaker responses, candidates wrote all three ways of transfer of heat and some of them gave wrong answer like close the door and windows, person must sit close in front of heater and so on.

Section II (ERQ):

Question 7

a. The diagram shows a block hanging by means of a fixed support.



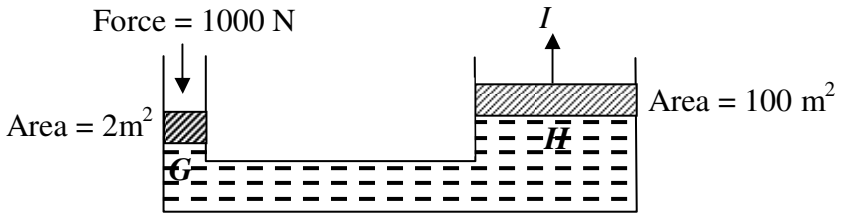
Calculate the potential energy (P.E) of the block at point A with respect to ground. If the block is released, calculate the energy with which it strikes the ground.

a. In better responses, candidates correctly calculated P.E of the block with respect to the ground and K.E with which it strikes the ground by using the formulae of P.E and K.E and some used law of conservation of energy concept to save their time and steps.

In average responses, candidates solved the numerical up till P.E. and left it incomplete.

In weaker responses, candidates used "W=mg" and some used value of height in finding K.E. in place of velocity.

b. The given figure shows the brake system of a vehicle.



Name the law which is used in the above diagram. Calculate the pressure exerted by the liquid at *G* and *H* and the force which is applied at *I*.

b. In better responses, candidates correctly identified the name of the law and calculated the force and pressure exerted by the liquid.

In average responses, candidates identified the correct name of law but failed to calculate the pressures or force.

In weaker responses, candidates either correctly identified the name or calculated the pressure or force.

Question 8

a.	A boy walks from 750 m North and then 500 m South-East at 40° to reach home. Draw a vector diagram to determine the resultant displacement of the boy by using a suitable scale. Calculate the velocity of the boy if he takes 5 minutes to reach home.

a. In better responses, candidates correctly calculated the velocity of the boy with correct formula. They also correctly drew the vector diagram to determine the resultant displacement by using a suitable scale.

In average responses, candidates correctly calculated the velocity of the boy with correct formula but they were unable to draw the vector diagram to determine the resultant displacement by using a suitable scale.

In weaker responses, candidates failed to give the correct answer. It seems that either students have lack of practice or teacher did not focus on this topic.

b.	A force of 40 N is applied to a carton in rightward direction on a frictionless horizontal surface to produce an acceleration of 3 m/s^2. Show the direction of force and acceleration in the given diagram and calculate the mass of the block. 

b. In better responses, majority of candidates correctly labelled the correct direction of force and acceleration and then found force by writing data, formula and proper calculation.

In average responses, they easily found value of force but forgot to mention the direction of force and acceleration.

Question 9

a.	Describe any FIVE factors which affect surface evaporation.

a. In better responses, candidates correctly described the five factors which affect evaporation.

In weaker responses, candidates provided either three or four factors.

b.	Describe any FIVE uses of good and bad conductors.

b. In better responses, candidates gave correct five uses of good and bad conductors and some candidates wrote five uses of good and bad conductors.

In weaker responses, candidates wrote properties of good and bad conductors rather than their uses.