

Our Ref:
Your Ref:
Date: 24/10/2023

RE: PROTEST

We acknowledge receipt of your letter dated 21st October 2023 titled: **RE: PROTEST OF RESULTS of NSMQ SEMI-FINALS BETWEEN PREMPEH COLLEGE, OPOKU WARE SCHOOL AND POPE JOHN SHS.**

In your letter, you affirmed the ruling of the Quiz Mistress following her consultation with the Physics Consultant. Secondly, you suggest in your response that the Prempeh College NSMQ Team has resorted to a smear campaign on social media to tarnish the reputation of Primetime. We proceed to respond as follows:

Ruling of the Quiz Mistress on the Principle of Superposition

We state that the essence of the competition is to, among others, encourage the learning of Science and Mathematics in second-cycle institutions in Ghana. Thus, Prempeh College owes a duty to the ethos of the competition to ensure that people who follow the competition learn known, approved, and conventional scientific principles and it is for this reason we contest the rejection of the right answer our contestant gave to the riddle question. We strongly maintain our position that the answer our contestant gave is correct because there is a plethora of available literature on the Principle of Superposition which is conventionally interchangeable with the Principle of Linear Superposition.

With respect to the riddle question posed, we maintain that the response given in your reply does not address the inquiry in terms of the clues provided and this is not supported by various reference materials and authoritative publications on the subject matter.

We shall repeat the riddle (for ease of reference) as follows:

I am a physical principle, and even though there is no theoretical basis for me, I am an experimentally confirmed principle; I operate



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across many domains of physics, including mechanics, electromagnetism, and even quantum mechanics. According to me, the whole is equal to the sum of the parts. You call me whenever you determine the electric field or scalar potential at a point due to a collection of stationary charges; who am I?

We submit as follows:

The use of the term "Principle of Superposition" is conventionally interchangeable with "Principle of Linear Superposition". We cited a lot of references from readily available and reputable literature, and your reply **does not categorically** state that those sources are wrong in any way whatsoever, and neither does your reply emphasise authoritative sources that disprove our submissions. Indeed, we are yet to see one single confirmed authority from you that states or suggests that the Principle of Superposition does not relate to linear systems or waves. We shall systemically reproduce the Physics Consultant's responses and address them for the sake of clarity:

Indeed, there are situations where electric fields participate in non-linear processes in which combining two fields produces a field that does not equal the sum of the fields, the associated phenomena constituting a vibrant branch of Physics.

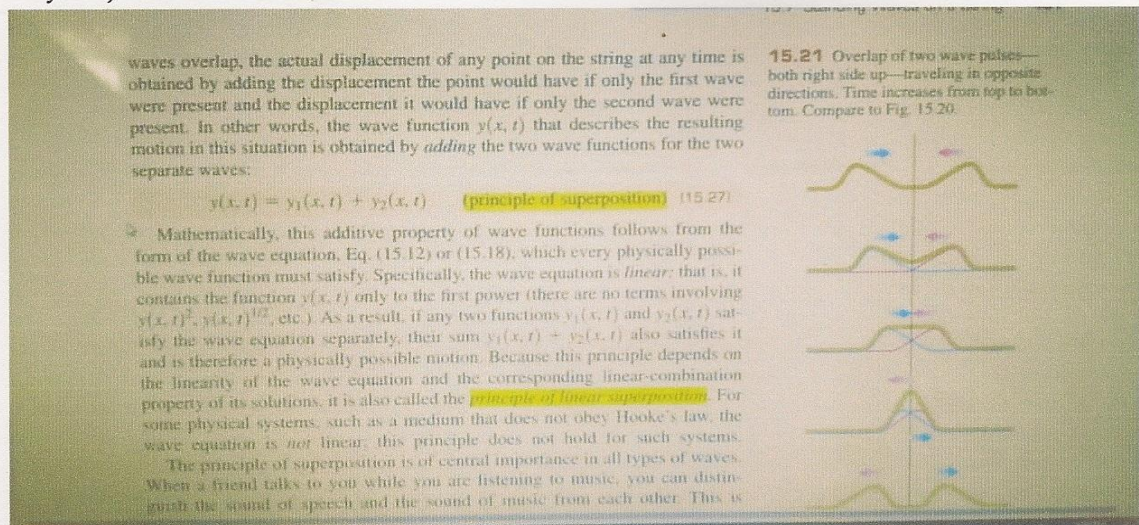
From the above, we ask for the definition of the "Principle of Superposition" as used in Physics with the cited authoritative source. Definitions from all credible sources we have looked into and supplied to Primetime, state that the Principle of Superposition is **inherently linear**. Thus, the resultant is the algebraic sum of the individual parts or components. If this is not satisfied, then one cannot call it the Principle of Superposition. Without ambiguity, nothing else aside Linearity is intended from the use of the term "Principle of Superposition," and hence does not require the addition of the term linear to make it more specific. It is a principle that is clearly defined and characterised by the properties of additivity and homogeneity. We do not know of any conventional literature that makes use of the term "Principle of Superposition" where something else was intended. That does not rule out the possibility of other propositions but obliges strict qualification when something else

2

aside Linearity is intended. So it comes as no surprise as there exists a **proposition** as "Principle of Non-linear Superposition." If this unconventional proposition is intended, strict qualification is required because it does not follow suit with the traditional and conventionally known Principle of Superposition which is a consequence of linearity, and by extension also referred to as the Principle of linear Superposition as an alternative name (not as though adding linear makes it more specific, but rather emphasizes the use of the principle in its original conventional sense only with linear systems). In its application in non-linear systems, there is an approximation of the non-linear to linear.

In your response, we do not find any answers given to point 1 and point 4 of our arguments, which were:

1. There are several sources (**Physics for Scientists and Engineers by Serway, 9th edition, page 534, Physics for Engineers and Scientists, by Hans C Ohanian, 3rd edition, volume 1, page 138**) that show that the principle of superposition when used applies to only linear systems. When applied in the broadest sense the Principle of Superposition is also known as the Principle of Linear Superposition. See the image of Young and Freedman (University Physics) attached below.



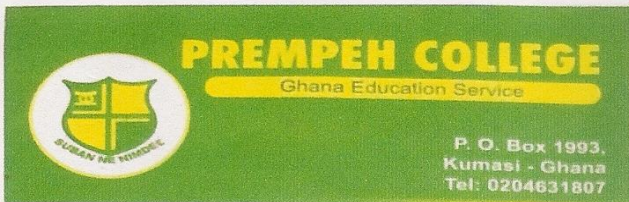
4. What is the Principle of Superposition as defined in the context of physics? How different is its definition as given in conventional literature from the Principle of Linear Superposition? We demand a response referencing authoritative sources that refute point 1 and answer the questions in point 4.

Furthermore, your response seems to suggest that the final decision was the responsibility of the Quiz Mistress; which allowed her to exercise her discretion. We believe that events of that day in particular do not support this assertion given that the Quiz mistress paused to defer to the Physics Consultant before taking a decision on the matter. We are of the considered view that, at that point, she was not exercising discretion but sought to defer to the Consultant to enable her to determine whether to accept the answer.

Should the claim be valid that she was exercising her discretion then she ought not to have referred to the Physics Consultant (and this was seen on live camera) and therefore her reference to the Physics Consultant was in error. Again, it is quite problematic that for an area such as this, when matters come to a head, we defer to the discretion of one person who may also require the support and counsel of others. We therefore believe that this assertion is not technically accurate.

Accusations of Bias

It is quite regrettable that our petition has elicited a response that borders on accusations and counter-accusations with respect to allusions to bias and favouritism. We maintain that nowhere in our petition to Primetime did we allege bias against and favouritism for Prempeh College, neither did we allege the same for or against any other school or academic institution for that matter. We invite you to reconsider these claims. The Protest we filed was strictly in respect of our view on an answer being correct but determined to be wrong; all in the academic interest of contributing to learning Science and Mathematics.



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We were minded to draw your institution's attention to a growing perception that we believe should be curtailed to maintain the integrity of the product we all cherish, and wish to see it grow. As you admitted in your response, we are a five-time Champions and have witnessed it grow from 1993 to date.

We note the tireless efforts your outfit puts into ensuring that the Competition is organized and held annually. We also acknowledge the industry of participants which have made this competition a success. However, we are of the view that the Consultant did not keenly review our protest, and hence the response lent itself to opinions rather than facts that are empirically derived from repeated experimentation.

Smear Campaign on Social Media

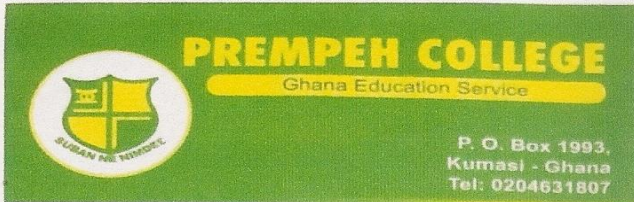
We wish to unequivocally state that we, Prempeh College, have not engaged in any smear campaign against Primetime on any Social Media platform and we will advise that you ignore such issues and **deal with the matters raised in our protest**. We appreciate the work your institution has done for Science and Mathematics in Ghana and beyond since 1993 with the introduction of this National Science and Math Quiz except to add that we disagree with this decision on the riddle in question.

Denial of Acceptance of Consultant's Explanation

Contrary to the assertions in your response, there was no point in time that the team accepted the Physics Consultant's ruling or explanation and it must be pointed out that the consultant did not interact with our lead on the subject matter let alone get a tacit acceptance.

If our team had accepted any purported explanation from the Physics Consultant, we would not have filed the 8-page Protest and supplied so many authorities that suggest unequivocally that the Consultant was wrong in rejecting our right answer.





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We believe we filed the Protest within the permissible time frame as per the NSMQ Rules but it appears Primetime seems to suggest there is another procedure that we did not follow, and are unaware of. We respectfully request a true copy or copies of the competition rules.

We are available to make a further presentation(s) if need be anytime before the final competition to set the records straight. We believe that Primetime cannot rely on the same Physics Consultant who has relied on unconfirmed and unconventional concepts, which is unrelated to the question the competition asked to justify the rejection of the correct answer our contestant gave. Given that we may have reached an impasse we request that an independent Consultant or body be engaged to bring finality to this matter since one cannot be a judge in his own matter.

We are resolute in our minds that our answer is correct, and we will take all available steps and means including legal, if necessary, to ensure that Prempeh College and its contestants are given a fair hearing.

In instances where we have exited the competition, we have supported Primetime and the winning school and congratulated them. This is the first time we have had to engage Primetime on this level because we genuinely believe in the position we have taken.

We will refer this issue to other international institutions and experts, and furnish you with copies of their responses at the appropriate time.

We look forward to hearing favourably from your office.

Yours sincerely

P. B. Damoah (NSMQ Coordinator, Prempeh College)