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**ACADEMIC OFFICE  
SCIENCE HUB**

**PLE INTEGRATED SCIENCE: TEACHING, LEARNING AND PASSING GUIDE  
(TIPS FOR TEACHERS AND LEARNERS/CANDIDATES)**

**PREAMBLE**

Passing a formative or a summative exam is not an event, but a well-planned, a well-implemented, well monitored, well supported/directed, well assessed and well evaluated set of complimentary activities(functions). When one activity fails, it affects the success of all other functions. To summarize this statement, we will apply the TQM principle of management: Total Quality Management (total quality control), thus;  
 $\text{Inputs} + \text{Processes} = \text{Outputs}$ .

**SECTION A: TIPS FOR TEACHERS**

No	DO'S	DON'TS
1	A copy of the curriculum P1-P7 is a must have: to guide planning, execution and assessment	
2	Read the curriculum wholly and comprehensively, and interpret it well	
3	Pay attention to the intended competencies per topic and align content with competences	
4	Break down the topical content according to the topical competences	
5	Pay attention to topical language competences, topical word list (vocabulary): meaning, spelling and usage	
6	Plan and prepare what to teach/revise/review/experiment	
7	Science is a practical subject; employ practical activity-based learner centered methods using a variety and a hybrid of instructional (T/L) aids	
8	Teach/revise effectively: competences must be achieved and mastered; relate competences to learners' daily life experiences.	
9.	Assess sub-topically and topically: at the end of every topic administer a comprehensive topical test	
10	Review the topic after its assessment and consolidate the competences/content.	

11	Regularly revise all covered topics to ensure learners do not forget acquired knowledge, skills and knowledge.	
12	In assessment, be it formative or summative, the three questioning levels (taxonomy) must be well catered for: KCA;	
	a. Knowledge questions: recall facts	
	b. Comprehension questions: test reasoning, you fully understood the concept and you can reason based on the knowledge/skill gained	
	c. Application questions: use of gained competences in problem solving in everyday life experiences:	
	NB:	
	i. In integrated science, quite often we stretch to five levels, two more in addition to the above:	
	d. Synthesis questions: test your ability to put together/combine/assemble parts to form one whole unit, e.g. making a circuit (inductive reasoning)	
	e. Analytical questions: test your ability to dismantle/breakdown a whole thing into its constituent parts (deductive reasoning)	
	ii. A teacher who cannot assess a topic/concept covered using this primary taxonomy, cannot produce excellent results	
13	The effectiveness of a teacher is reflected in the results/performance other factors kept constant. It is therefore the cardinal role of the teacher to properly equip learners with scientific vocabulary, competences (knowledge & skills), content, scientific reasoning and the application of all these in everyday life experiences	
14	Technically guide learners how to scientifically interpret questions and answer them as required: question approach - exam/test passing tips.	
15	Offer constructive, rehabilitative, and motivational feedback in return to learners' work/their challenges	
	Be it noted that no matter how well you teach the learners, if these last three requirements are not well handled, results can never be good: and at all times, the candidate must:	Fear/anxiety/panic... lead to misinterpretation of questions/failure
6	Compose him/herself, gather confidence, be calm and maintain a positive attitude before, during and after the paper.	



17	Exercise discipline and exhibit the highest degree of self-control and carefulness	Indiscipline & carelessness

# SECTION B: TIPS FOR CANDIDATES ON QUESTION APPROACH:

01	Carefully read the general instructions for the paper and follow them as required.	
02	Carefully and thoroughly read the question and understand/interpret it well. Identify the key-words(answer-determiners). It is not an offence to underline such words before you write your answer	
03	Write a clear precise and an undebatable answer Long answers/sentences not recommended	
04	Use scientific vocabulary and scientific expressions when writing your answer. You must be familiar with the science words used in each of the topics we cover. Remember, even if you know the answer yet you cannot spell it right, your responses shall be marked wrong! Master the correct spelling of words (words, spelling, meaning and correct usage)	
05	For questions that require you to give reason, please reason scientifically	
06	Diagrams and Questions about them:	
	Diagrams can be picture, illustration, table, graph, card, etc	
	Before you answer any questions about the diagram, do the following as a must:	
	Read the instructions first and understand what they tell you to do	
	Keenly study/observe the diagram and determine what it is of or it is about.	
	Questions about a diagram are related(stem type of questions), so it is advised that you read all questions about that diagram, and understand them well before you answer them	
	It is advisable to answer those questions in order from the first to the last, why? Usually, one question leads to the next!	
	When required to show or label a part on the diagram, observe the following:	

	i. Do not use head-arrows	
	NB: Arrow heads are used when asked to show movement of energy (eg electric current), heat, flow of blood, direction	
	Labelling lines and (or arrows when required) must be in pencil, NOT INK/PEN!	
	(c). When asked to draw a diagram:	
	❖ All drawings/diagrams must be in pencil	
	❖ All diagrams must have complete outlines, that is:	
	❖ No part/component should be detached or left hanging	
	❖ Each part should be attached to its base	
	❖ Do not shade or make bold any part of the diagram (unless required to do so)	
	d. When asked to use letter 'K' a part on a diagram:	
	❖ Draw a line and ensure it touches the exact part asked/	
	❖ Then at end of the line label it with letter K	
07	Comparison Questions: these are questions that assess similarities and differences. How to answer such questions:	
	Read and comprehend the question	
	Identify the comparison element/technique wanted, i.e is it a difference(s) or a similarit(y)ies?	
	For comparison whether differences or similarities, please, mention both subjects ( A bee and a housefly,...	
	Avoid using pronouns like It, They, He, She, where the subjects/items as in (07)iii above	
	To give the differences, use the conjunction whereas or while	
	i. When you give differences in comparison questions, please, use the same features, e.g. Compare the number of legs to number of legs Compare body parts to body parts Compare breathing organs to breathing organs Size of comb to size comb (cock versus hen) Dispersal method, etc	
	ii. Do not use negative statements in comparison, eg: A housefly is an insect whereas a spider is not.(so what is the spider? That is an incomplete comparison, please, state what the spider is)	
08	Questions that ask you to name, mention, give, state, list, outline or to identify:	



	Read and understand what it is that you are asked to name or identify,...	
	Be brief to the point - such questions require a word or two or a precise statement (not a long useless sentence)	
	Spell the required answer correctly	
	It must be a scientific response	
09	Questions that require definition/meaning of/description of:	
	These must be the meaning, procedure, process that is factual and is conventionally acceptable:	
	First read the term given properly	
	i. Recall/memorize the definition as studied/or given in authentic sources/textbooks Don't add your own words into a definition	
10	Questions that require you to suggest or to give a solution(s):	
	These are questions that assess your ability to apply your gained knowledge to solving problems in everyday life:	
	Relate the question to the topic in which you studied that concept	
	Suggest or give the solution that is scientific	
	Use scientific language and scientific reasoning	
11	Stem Questions:	
	These are numbers where the first question determines the next question:	
	<ul style="list-style-type: none"> <li>Name the group of crops that are harvested year after year?</li> <li>Give two examples of the crops mentioned above.</li> </ul>	
12	Space utilization: misuse of given space leads to loss of marks, how?	
	<ul style="list-style-type: none"> <li>❖ Give any two causes of soil erosion</li> <li>❖ (i) _____</li> <li>_____</li> <li>(ii) _____</li> <li>_____</li> </ul> <p>Note: if you write two responses in the space provided for one response, the two responses are regarded as one(combined), and should one of the combined responses be wrong, the entire answer is considered wrong (loss of marks)</p>	
3	Confusing words: such words sound alike or may even be spelt alike but mean different things - homophones/homonyms: be careful; ❖ bare - bear	

	<ul style="list-style-type: none"> <li>❖ lava - larva</li> <li>❖ heir - hair</li> <li>❖ flour - flower</li> <li>❖ living - leaving</li> </ul>	
14	<p>Short forms of words: these are abbreviations and contractions;</p> <ul style="list-style-type: none"> <li>✓ use only conventionally accepted(standard) short forms, in capital or small letters as required: cm, m, cc, ml, j(joules),</li> <li>➤ Do not create your own abbreviations except standard ones</li> </ul>	
15	<p>Calculation Questions: these require a logical operation (+, ×, -, ÷) following prescribed procedure(steps) to arrive at the answer:</p>	
	<ol style="list-style-type: none"> <li>i. First state the formula, eg <math>l \times w \times h = v</math></li> <li>ii. Proceed logically</li> <li>iii. Use the given units; e.g. cc</li> </ol> <p>NB: Be mathematical here!</p>	
16	<p>Matching Questions: usually given in a table or in a list;</p>	
	<ul style="list-style-type: none"> <li>✓ First, read the instructions before the table or list</li> <li>✓ Read the the two lists of words or statements in either partition of the table or list</li> <li>✓ Interpret/understand what they are about</li> <li>✓ First match those words or statements you are conversant with</li> <li>✓ Then lastly, carefully transfer the words/statements plus their corresponding words/statements into the provided spaces, as your final answers (DON'T MISSPELL OR MISFIRE WORDS/STATEMENTS)</li> </ul>	
17	<p>Time management:</p>	
	The paper lasts 02 hours and 15 minutes, which cover:	
	Reading the instructions	
	Reading the questions thoroughly 1 to 3 times before you answer	
	Planning your answer(thinking before writing)	
	Carefully and neatly writing your responses	
	Proofreading all your answers before you hand in your booklet	
	Don't rush to finish, take your time and progress thru the paper systematically	
	NB: Taking your time doesn't mean being slow, careless or complacent: just use your time right	
18	Handwriting and writing tools:	

	(i) In Science we discourage fountain pens and instead, we encourage the use a ball pen - blue or black but you have to choose only one of the two. Do not mix blue and black in the same booklet. It may be mistaken for external assistance(malpractice).	
	(ii) The pencil must only be used for diagrams/drawings	
	(iii) The ruler is for drawing straight lines of a drawing or angle(as in reflection or refraction, etc)	
	Note: the writing tools for a science exam are; a ball pen (not fountain), pencil and ruler..	
	iii. Candidate's handwriting must be neat and readable (legible). Crooked handwriting may lead to loss of marks	
19	Caution on language: write your answers in simple clear correctly spelt scientific English, please, avoid bombastic English, such shall only result in your loss of marks!	

## CONCLUSION

Advice to teachers, tips for learners/candidates: emphasize the do's, don'ts are directly implied.  
Make Science a subject of excellence; best of luck and divine blessings.

SIGNED,

**WANDERAH EDWARD**

**SENIOR EDUCATION MANAGER CURRICULUM, (SCIENCE)**