THE KENYA NATIONAL EXAMINATIONS COUNCIL

ST104
PHYSICS
School Based Assessment
Grade 10
Project
2026

Scoring Guide

Group Members	
Assessment Number	**Name**
1.	
2.	
3.	
4.	
5.	

Total Score for the Group: /90

SCORING GUIDE

Instructions on How to Score

1. Read this scoring guide carefully before using it.
2. For each criterion, tick (√) only one Performance Level (PL4 – PL1) that best matches the learner's work.
3. Score learners using:
    - what you observe as they carry out the project, and/or
    - evidence in the learner's portfolios such as notes, drawings, photographs, construction steps, the completed device, and the project report.
4. Make sure the evidence used for scoring is relevant, genuine, and matches the task requirements.
5. Each performance level has its own marks. Award only the marks shown for the selected level.
6. Use the same standards when scoring all learners/groups to ensure fairness.
7. Use the rubrics provided to rate the learners' performance.
8. This project is assessed out of **90 marks**.
9. Before awarding a score, ask yourself: "***What evidence can you see?***" Then choose the level that best matches the evidence presented.
10. Assess and score the learners work progressively as they undertake the tasks.

SCORING RUBRICS

TASK 1: RESEARCH (10 Marks)

Tick what is provided or Observed

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(a) Research evidence and sources (Individual task) (Max 4)	☐ PL4 (4 marks)	• Uses a wide variety of relevant print and digital sources. • Notes are well summarized and written fully in learner's own words. • Information clearly explains different sources and energy transformations. • All references are properly provided and match the information presented
	☐ PL3 (3 marks)	• Uses several relevant sources. • Notes are mostly summarized in the learner's own words, with minor copying. • Information explains some sources and transformations, though a few details are unclear. • Most references are provided but some are incomplete.
	☐ PL2 (2 marks)	• Research evidence is limited and uses only a few sources. • Notes contain some relevant ideas but are poorly summarized or partly copied. • Explanation of energy sources and transformations is incomplete or unclear. • Few references are provided, and some do not match the notes
	☐ PL1 (1 mark)	• Very little or no research evidence provided. • Notes are mostly copied directly or contain very few relevant ideas. • Energy sources and transformations are not explained correctly. • References are missing

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(b) Brainstorming on Energy Sources, Energy Transformation, and Devices (Group Activity) **(Max 4)**	☐ PL4 (4 marks)	• Identifies at least 5 correct energy sources, 5 correct forms of energy transformation and at least 5 correct devices that match the transformations. • All devices correctly show clear energy conversion relationships. • Scientific terms are used correctly with no errors. • All ideas are logically linked and fully consistent
	☐ PL3 (3 marks)	• Identifies at least 4 correct energy sources, 4 correct forms of energy transformation and at least 4 correct devices that match the transformations. • Most links between energy and devices are correct, but minor gaps or unclear connections exist. • usage of Scientific terms are mostly correct with minor errors.
	☐ PL2 (2 marks)	• Identifies only 3 correct energy sources, 3 correct energy transformations and 3 devices, but some devices are incorrectly linked to energy transformation. • Understanding of energy conversion is partial and inconsistent. • usage of Scientific terms are limited or sometimes incorrect
	☐ PL1 (1 mark)	• Identifies only 1 or no correct energy source, only 1 or no correct energy transformation; only 1 or no correct device, or devices are not related to energy conversion. • Shows little understanding of energy transformation. • Scientific terms are absent or incorrect throughout

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(c) Justification of the device chosen (group decision) (Max 4)	☐ PL4 (4 marks)	• The group selects a clearly appropriate and workable device. • Provides at least 3 well-developed reasons supporting the choice. • All reasons are clearly linked to a real-life community energy need. • Justification includes multiple relevant factors such as availability of materials, safety, cost, practicality, and energy transformation. • Explanation is clear, logical, and fully connected to context.
	☐ PL3 (3 marks)	• The group selects an appropriate device. • Provides exactly 2 relevant reasons supporting the choice. • At least one reason is linked to a community need or energy transformation. • Some supporting factors are mentioned but not fully developed. • Explanation is generally clear but lacks depth.
	☐ PL2 (2 marks)	•The group selects a device, but it is not fully appropriate or not well justified. • Provides only 1 reason, which is simple and weakly explained. • Connection to community needs or energy transformation is unclear or minimal. • Justification lacks supporting details.
	☐ PL1 (1mark)	• No clear or appropriate device is selected. • No valid justification is provided. • Response shows no meaningful link to community needs or energy transformation.

TASK 2: DESIGNING THE DEVICE (15 Marks)

Tick what is provided/Observed

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(a) **Diagram accuracy, labelling and completeness (Max 6)**	☐ PL4 (6 marks)	• Diagram is neat, fully complete, and accurately drawn. • Shows all essential components (100%) of the device. • All connections are correctly shown with clear flow direction (arrows where required). • Diagram exactly matches the intended design. • All parts are correctly and fully labelled
	☐ PL3 (4 marks)	• Diagram is clear and mostly accurate. • Shows at least 75% of essential components. • Most connections are correct, with minor omissions or small errors that do not affect overall understanding. • Diagram is labelled, but some labels are incomplete or unclear.
	☐ PL2 (2 marks)	• Diagram is present but less than 75% of essential components are shown. • Several important connections are missing or unclear. • The device function can be partly understood only with difficulty. • Labelling is incomplete or inconsistent
	☐ PL1 (1 mark)	•Diagram is very basic and poorly presented. • Less than half of the essential components are shown. • Connections are unclear or missing. • Labelling is missing or incorrect.

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(b) **Description of how the device works (Max 4)**	☐ PL4 (4 marks)	• Gives a clear, correct step-by-step explanation from start to output. • Explains the function of all major parts correctly. • Shows how all parts work together logically. • Includes operating conditions and safety considerations
	☐ PL3 (3 marks)	• Gives a generally correct description of operation. • Steps are mostly correct but not fully in logical sequence. • Explains functions of most parts but some are unclear or missing. • Limited mention of safety or operating conditions.
	☐ PL2 (2 marks)	•Gives a partially correct but unclear description. • Several key steps are missing or wrongly ordered. • Functions of parts are poorly explained. • Requires prompting to explain correctly
	☐ PL1 (1 mark)	• Gives a very basic description. • Mentions only start and output. • Does not explain how the device works internally. • Explanation is incomplete and unclear.

Criteria	Performance level (PL)	Descriptors (Observable Indica tors)
(c) **Energy transformation description (input→mecha nical output) (Max 5)**	☐ PL4 (5 marks)	• Correctly identifies input energy, all intermediate transformations, and final mechanical output. • Energy flow is fully consistent with the designed device. • Includes clear explanation of energy transfer and efficiency considerations (where relevant)
	☐ PL3 (3 marks)	• Correctly identifies input and final output energy. • Includes at least one correct intermediate energy transformation. • Minor omissions or weak explanation of energy losses. • Mostly consistent with the device design.
	☐ PL2 (2 marks)	• Identifies either input or output energy correctly, but not both clearly. • Energy transformation chain is incomplete or partially incorrect. • Some confusion between forms of energy. • Weak link to device design.
	☐ PL1 (1 mark)	• States only input or output energy correctly. • No clear transformation chain. • Explanation is mostly incorrect or unrelated to the device

TASK 3: CONSTRUCTING THE DEVICE (40 Marks)

Tick what is provided/Observed

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(a) **(i) Materials/tools suitability (Max 4)**	☐ PL4 (4 marks)	• Provides a complete list of all required materials and tools (100%). • All items are correctly matched to the design. • All materials and tools are appropriate and safe for use. • Clear justification is given for every key item.
	☐ PL3 (3 marks)	• Provides at least 75% of required materials and tools. • Most items are correctly matched to the design. • Materials are appropriate and safe. • Justification is given for some items but not all.
	☐ PL2 (2 marks)	• Provides at least 50% of required materials and tools. • Some items are inappropriate or poorly matched to the design. • Limited or unclear justification is provided. • Several important items are missing.
	☐ PL1 (1 marks)	• Provides less than 50% of required materials and tools. • Many items are missing or unsuitable. • No meaningful justification is provided

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(ii) Use of local/affordable/environment-friendly materials (Max 4)	☐ PL4 (4 marks)	• At least 80% of materials used are locally sourced or recycled. • Cost is clearly considered in all major choices. • Waste is minimised through reuse or recycling. • Environmental responsibility is clearly demonstrated throughout
	☐ PL3 (3 marks)	• At least 60% of materials are local or recycled. • Some consideration of cost is shown. • Basic effort is made to reduce waste
	☐ PL2 (2 mark)	• Less than 50% of materials are local or recycled. • Costly or imported materials are used without clear justification. • Little evidence of waste reduction
	☐ PL1 (1 mark)	• Very few or no local materials used. • Cost and environmental impact are not considered. • No evidence of waste management

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(b) (i) **Construction process: procedure, measurements and assembly (Max 5)**	☐ PL4 (5 marks)	• Construction follows a clear step-by-step procedure (all stages shown). • Accurate measurements are used throughout. • Assembly is strong, stable, and well-finished. • Clear photographic evidence showing progress from start to the final intended device
	☐ PL3 (3 marks)	• Construction follows a mostly logical procedure with some stages shown. • Measurements are generally correct with minor errors. • Assembly is functional but has small workmanship issues. • Some evidence of construction is provided
	☐ PL2 (2 marks)	• Construction process is unclear or missing several stages. • Measurements are inconsistent or poorly applied. • Assembly is weak with noticeable errors. • Limited or unclear evidence of work done
	☐ PL1 (1 mark)	• Construction process is unclear or not followed properly. • Measurements are missing or incorrect. • Assembly is very weak or incomplete. • No evidence or irrelevant device shown

Criteria	Performance level	Descriptors (Observable Indicators)
(ii) **Functionality (Max 7)**	☐ PL4 (7 marks)	• Device functions fully and consistently as intended. • Produces stable mechanical output without interruption. • Can operate repeatedly without adjustment. • Safe during operation
	☐ PL3 (4 marks)	• Device functions but with minor inconsistencies. • Output is visible but sometimes unstable. • Requires small adjustments to operate well
	☐ PL2 (3 marks)	• Device functions partially. • Output is weak, unstable, or irregular. • Requires frequent support or adjustment to operate.
	☐ PL1 (2 marks)	• Device shows very limited operation. • Output is very weak or intermittent. • May fail to function for extended periods or requires full assistance.

Performance level	Performance level (PL)	Descriptors (Observable Indicators)
(iii) **Durability/ strength (Max 7)**	☐ PL4 (7 marks)	• Device is strong, stable, and well reinforced. • All joints are secure and properly fastened. • Withstands repeated use without damage. • All parts are safely fixed with no hazards.
	☐ PL3 (4 marks)	• Device is generally strong and stable. • Minor weak points exist but do not affect normal use. • Most parts remain secure during use.
	☐ PL2 (2 marks)	• Device has visible weak points. • Some parts loosen or instability is evident. • Requires repairs or adjustments during use.
	☐ PL1 (1 mark)	• Device is fragile and unstable. • Parts easily detach or fail. • Not suitable for repeated use

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(iv) **Innovativeness** **(Max 7)**	☐ PL4 (7 marks)	• Design shows a clear original idea or strong improvement of an existing device. • Demonstrates creative problem-solving. • Includes clear, realistic improvement or scale-up ideas
	☐ PL3 (4 marks)	• Design shows some creativity or modification of an existing idea. • Includes improvement ideas, but they are not fully developed.
	☐ PL2 (3 marks)	• Design is mostly common with minimal modification. • Innovation is limited or unclear. • Improvement ideas are vague
	☐ PL1 (2 marks)	• Design is copied or shows very minor changes. • Little or no evidence of innovation. • No clear improvement ideas.

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(v) **Neatness/ aesthetic value (Max 6)**	☐ PL4 (6 marks)	• Device is very neat, well arranged, and professionally finished. • All parts are cleanly assembled and securely fixed. • Device is safe and visually appealing
	☐ PL3 (4 marks)	• Device is neat with minor finishing issues. • Parts are mostly well arranged. • Device is safe and presentable.
	☐ PL2 (3 marks)	• Device shows basic neatness. • Some parts are poorly arranged or unfinished. • Appearance affects clarity of use
	☐ PL1 (2 marks)	• Device is poorly finished and untidy. • Parts are loosely arranged. • Appearance affects usability and safety.

TASK 4: DEMONSTRATING HOW THE DEVICE WORKS (10 Marks)

Tick what is provided/Observed

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
(a) (i) **Scientific explanation during demonstration (Max 5)**	☐ PL4 (5 marks)	• Correct step-by-step explanation of how the device works • Correctly links all device parts to their functions • Correct energy transformation chain stated • Uses correct scientific terms consistently • Mentions energy losses (heat/friction)
	☐ PL3 (3 marks)	• Mostly correct explanation of how the device works • Correct energy transformation chain stated • Minor gaps in linking parts to functions • Does not mention energy losses
	☐ PL2 (2 marks)	• Partial explanation of how the device works • Some misconceptions in linking parts and energy flow • Energy transformation chain incomplete or unclear
	☐ PL1 (1 mark)	• Only basic explanation only • Several missing links or incorrect ideas • Weak use of scientific terms

	Performance level (PL)	Descriptors (Observable Indicators)
(ii) **Applications in daily life and contribution to energy solutions (Max 5)**	☐ PL4 (5 marks)	• Clear real-life applications of the device • Explains how it reduces reliance on fossil fuels • Links clearly to community or school energy needs • States both benefits and limitations
	☐ PL3 (3 marks)	• At least one relevant application stated • Basic explanation of how it helps solve energy problems • Limited detail on impact
	☐ PL2 (2 marks)	• Vague or general application • Weak or unclear link to energy solution
	☐ PL1 (1 marks)	• Application mentioned but unclear • No clear link to energy solution

TASK 5: WRITING THE PROJECT REPORT (13 Marks)

Tick what is provided/Observed

Criteria	Performance level (PL)	Descriptors (Observable Indicators)
1. Report submitted **(Max. 10)**	☐ PL4 (10 marks)	• Energy problem is specific, clearly explained, and fully linked to real-life context • Device is clearly identified AND supported by more than one strong reason • Construction process is fully complete with all steps clearly and logically presented • Testing includes clear observations + clear challenges + clear improvements (ALL THREE present) • Applications are clear and explicitly linked to reducing fossil fuel dependence • Photo evidence included.
	☐ PL3 (6 marks)	• Energy problem is clearly stated but general (not specific) • Device is identified with only one clear reason • Construction process is mostly complete but missing minor steps/details • Testing includes clear observations BUT only ONE of the following: challenges OR improvements • Applications are clear but only generally linked to fossil fuel reduction • Most of the Photo evidence is provided
	☐ PL2 (4 marks)	• Energy problem is unclear but mentioned • Device is mentioned but reasons are weak or unclear

		• Construction process is incomplete (missing key steps or unclear sequence) • Testing includes only brief or unclear observations (no clear challenges or improvements) • Applications are vague and weakly linked to fossil fuel use • No or scanty photo evidence provided
	☐ PL1 (2 marks)	• Energy problem is missing or not stated • Device is not clearly identified or no reason is given • Construction process is missing or not understandable • Testing is missing or not meaningful. • No photo evidence. • Applications are missing or unrelated to energy use

	Performance level (PL)	**Descriptors (Observable Indicators)**
What to receive from the learners. **(Max 5)**	☐ PL4 (3 marks)	(i) The device constructed (ii) The design's drawing and description on how it works. (iii) The project report with a photo of the device on the cover page.

Assessment Rubrics

	Tasks	**Max. Score**	**Score's Range**	**Performance Level**	**Description**
1	Task 1: Conducting Research on the Device to make.	12	11-12	4	Exceeding Expectation
			9–10	3	Meeting Expectation
			7-8	2	Approaching Expectation
			0-6	1	Below Expectation
2	Task 2: Designing the Device	15	14-15	4	Exceeding Expectation
			9-13	3	Meeting Expectation
			5-8	2	Approaching Expectation
			0-4	1	Below Expectation
3	Task 3: Constructing the Device	40	37-40	4	Exceeding Expectation
			25–36	3	Meeting Expectation
			12-24	2	Approaching Expectation
			0–11	1	Below Expectation
4	Task 4: Demonstrating how the Device Works	10	09-10	4	Exceeding Expectation
			07-08	3	Meeting Expectation
			04-06	2	Approaching Expectation
			0–03	1	Below Expectation
5	Task 5: Writing the Project Report	13	12-13	4	Exceeding Expectation
			9-11	3	Meeting Expectation
			6-8	2	Approaching Expectation
			0–5	1	Below Expectation

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PHYSICS SBA 2026

Score Sheet

Name of the School: ……..……...School Code: ……..……

Teacher's Name: ……..……..……..……

(Record the marks scored by the learner in each task)

S.n	Assessment No.	Learner's Name	Task 1	Task 2	Task 3	Task 4	Task 5

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