



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**

**PHYSICS**

**School Based Assessment**

**Grade 10**

**Written Test Marking Scheme**

# **PHYSICS GRADE 10 MARKING SCHEME**

## **SBA 2026**

**This marking scheme consists of 6 printed pages.**

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### **SECTION A (10 Marks)**

| Qn | Key      |
|----|----------|
| 1  | <b>A</b> |
| 2  | <b>D</b> |
| 3  | <b>C</b> |
| 4  | <b>D</b> |
| 5  | <b>B</b> |
| 6  | <b>B</b> |
| 7  | <b>D</b> |
| 8  | <b>A</b> |
| 9  | <b>B</b> |
| 10 | <b>C</b> |

### **SECTION B (70 Marks)**

***Subject teachers are encouraged to establish marking panels to review the marking scheme and consider and accept any other relevant correct responses***

- 11. (a)**      A: Electricity/Electronics  
                  B: Waves/Electronics  
                  C: Mechanics

**(b)** The claim is incorrect because Physics has contributed significantly to the development of technology and improvements in various aspects of human life. For example:

- (i)**      Physics is applied in the medical field. For example, X-rays are used for diagnosis, while ultrasound uses sound waves to examine internal body structures (✓). These technologies have improved the diagnosis and treatment of diseases, contributing to better health and longer life expectancy (✓).
- (ii)**      Advances in Physics and technology have improved the large-scale generation, transmission and distribution of electrical power (✓), making electricity more widely available and reliable (✓).
- (iii)**      Advances in Physics have contributed to improvements in the construction industry (✓) For example, the design and construction of buildings, bridges and dams apply principles of forces, pressure, stability and equilibrium (✓)
- (iv)**      Meteorological instruments use Physics principles to measure weather conditions. (✓) Accurate measurements support forecasting, planning and disaster preparedness
- (v)**      Household appliances such as refrigerators, fans, cookers and air conditioners apply various Physics concepts (✓) to make domestic activities easier and more efficient (✓)

*(Any 2 well-explained responses – 4 marks) Accept any other relevant and scientifically correct explanation, provided it is not among those depicted in the picture.*

**12. (a) (i)** Since water pressure increases with depth or height difference (✓), homes at the foot of the hill are at a lower elevation than the tank, creating a greater height difference. Therefore, water reaches them at very high-pressure causing pipe bursts. (✓)

**(ii)** Higher ground experiences lower pressure because it is closer to the level of the tank (✓) Therefore, homes near the tank experience lower water pressure due to the smaller height difference from the tank, resulting in a slower flow rate and difficulty filling containers. (✓)

**(b) (i)** I will install *pressure reducing valves* (✓) to reduce excessive pressure and prevent bursting or use stronger pipes that can withstand high water pressure. This will ensure constant water supply to residents living at the lower parts (✓).

**(ii)** Construct booster pumping stations (✓) to increase pressure to homes located higher up. This will ensure constant water supply to residents. (✓)

*Any other scientifically valid measure and reason.*

**(c)** Since the height of water column in the tank reduced, pressure decreases (✓) making water pressure throughout the system to decrease (✓) Residents at the foot of the hill will receive water of low pressure and fewer pipe bursts may occur (✓) at the same time, residents on higher ground will receive little water or may fail to receive water at all (✓).

**13. (a) – Strength** (✓)

- Hardness (✓)

**(b) - Strength:** withstands large forces during impact/accident (✓)

- **Hardness:** resists penetration by sharp objects in case of accident (✓)

**(c) – Assemble** all the materials available for testing, ensuring they are of the same size and thickness as much as possible. (✓)

- Place one material on a hard rigid surface so as to provide a uniform testing condition. (✓)

- Using a standard object of known mass, drop it from a certain height onto the material placed on a hard surface. (✓)

- Observe the extent of damage, such as dent depth, cracking, deformation, or penetration. Then repeat the procedure for other materials under identical conditions and record what is observed. (✓)

- Compare the results of different materials and select the material that shows the least damage while absorbing the greatest amount of impact energy. (✓)

- The material that is able to withstand the impact with minimal damage and absorbed the greatest amount of energy, thereby offering the best protection to the rider is recommended for helmet production. (✓)

**14. (a) (i)** No. (✓)

**(ii)** Sense of touch is subjective therefore, different people may feel the same temperature differently (✓), hence cannot give an accurate or reliable measurement of temperature. (✓)

**(b) (i)** Digital thermometer (✓)

**(ii)** - Gives readings quickly due to its short response time. (✓)

- Is more sensitive, hence gives more accurate readings. (✓)
- Is easier to read because it has no parallax error.

*Any 2 reasons 2 marks*

*Any other valid reason can be accepted*

**(c)** - The reading obtained would not be reliable (✓) since the direct sunlight will heat the thermometer itself, causing it to give a temperature reading higher than the actual air temperature(✓).

**15. (a)** Apparatus (✓) *(Award the mark only if all the first three items are listed.)*

- Retort stand with clamp or any support
- Pin or nail or any straight object
- Plumb line (string with a small weight) or any object attached to a string
- Pencil/ruler

Procedure

1. Make a small hole near the edge of the cardboard and suspend it freely from a support using a pin/nail and suspend a plumb line from the same point and allow it to come to rest. (✓)
2. Draw a line on the cardboard along the direction indicated by the plumb line. (✓)
3. Make another hole at a different position, suspend the cardboard again and draw a second vertical line using the plumb line. (✓)

Diagram (✓) *(Accept any diagram that correctly shows the process.)*



Conclusion

The point at which the two vertical lines intersect is the centre of gravity of the cardboard. (✓)

**(b)** The centre of gravity shifts to side away from the removed section (✓) this is because mass distribution shifts to opposite side (✓)

**16. (a)** Mechanical Advantage (MA)

$$MA = \frac{Load}{Effort} \quad (✓)$$

$$MA = \frac{360}{150} \quad (✓)$$

$$MA = 2.4 \quad (✓)$$

**(b)** Verifying the velocity ratio

1. Mark a reference point on the wheel then turn the it through one complete rotation.
2. Measure the distance moved by the wheel (effort) which is equivalent to the circumference of the wheel. (✓)
3. As the wheel turn, measure the distance moved by the load. This will be equal to the circumference of the axle or the vertical distance moved by the load (✓)
4. Then the velocity ratio is determined using: (✓)

$$VR = \frac{\text{Distance moved by effort}}{\text{Distance moved by load}}$$

**(c)**

$$\begin{aligned} \text{Efficiency} &= \frac{MA}{VR} \times 100 \\ &= \frac{2.4}{3} \times 100 \quad (✓) \\ &= 80\% \quad (✓) \end{aligned}$$

Since 80% is greater than 70% (✓), I would advise the community to continue using the machine (✓)

**(d)** – This is due to frictional force (✓) which opposes the motion of the moving parts making some of the input energy to be lost (✓), so less energy is available for drawing water. Therefore, the efficiency decreases and more effort is required

**17. (a)-** The incident sound waves were reflected (✓) by the rock face which returned to the learner as echo (✓)

**(b)** Apparatus (✓) *(Award the mark only if all three are correctly stated or implied in the procedure.)*

- Measuring tape or metre rule if the distance is not long
- Learner (sound source)
- Sound level meter/Observer

#### Procedure

1. Measure and mark the distance from the rock face and produce the sound e.g. by clapping hands. (✓) and measure or estimate the loudness of the echo heard.
2. Repeat the procedure at different distances while keeping the intensity of sound produced constant. (✓)
3. Compare the loudness of the echoes at the different distances.

#### Conclusion

- The loudness of the reflected sound (echo) decreases as the distance increases distance from the reflecting surface. (✓)

**(c)** Why some surfaces produced clearer echoes (2 marks)

Hard and smooth surfaces reflected more sound waves hence the sound from these surfaces were clearer (✓) while soft and rough or irregular surfaces absorbed/scattered sound, producing weaker echoes. (✓)

**THIS IS THE LAST PAGE**

THE KENYA NATIONAL EXAMINATIONS COUNCIL



GRADE 10 SCHOOL BASED ASSESSMENT, OCTOBER 2026

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

Teacher's Name: .....

PHYSICS SCORE SHEET

*((Record the marks scored by each learner for each task.))*

|               | Strand/Sub-Strand                                              | Question       | Max. Score |
|---------------|----------------------------------------------------------------|----------------|------------|
| <b>Task 1</b> | Introduction to Physics                                        | 11             | 07         |
| <b>Task 2</b> | Pressure                                                       | 1 & 12         | 13         |
| <b>Task 3</b> | Mechanical Properties of Materials                             | 13             | 10         |
| <b>Task 4</b> | Temperature and Thermal Expansion                              | 14             | 08         |
| <b>Task 5</b> | Moments and Equilibrium                                        | 2 & 15         | 09         |
| <b>Task 6</b> | Energy, Work, Power and Machines                               | 5 & 16         | 13         |
| <b>Task 7</b> | Waves and Optics                                               | 3, 4 & 17      | 10         |
| <b>Task 8</b> | Electricity and Magnetism & Environmental and<br>Space Physics | 6,7, 8, 9 & 10 | 05         |



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**2026 PHYSICS GRADE 10 SBA SCORE SHEET**

| S.N | Assessment Number | Learner's Name | Learner's Score per Task |        |        |        |        |        |        |        | Total Score |
|-----|-------------------|----------------|--------------------------|--------|--------|--------|--------|--------|--------|--------|-------------|
|     |                   |                | Task 1                   | Task 2 | Task 3 | Task 4 | Task 5 | Task 6 | Task 7 | Task 8 |             |
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| S.N | Assessment Number | Learner's Name | Learner's Score per Task |        |        |        |        |        |        |        | Total Score |
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**GRADE 10 PHYSICS SBA 2026: Performance Reporting Rubric**

Use the information below to report on the learner's achievement

| Score Range  | Performance Level               | Observable Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>66–75</b> | <b>Exceeding Expectations</b>   | <ul style="list-style-type: none"> <li>• Explains Physics concepts accurately and precisely.</li> <li>• Applies concepts correctly in familiar and unfamiliar contexts.</li> <li>• Performs calculations accurately and interprets results correctly.</li> <li>• Analyses evidence and identifies relationships and patterns.</li> <li>• Makes evidence-based predictions and conclusions.</li> <li>• Justifies decisions and recommendations using relevant evidence.</li> <li>• Designs appropriate investigations, procedures and measurements</li> </ul>                               |
| <b>46–65</b> | <b>Meeting Expectations</b>     | <ul style="list-style-type: none"> <li>• Explains most Physics concepts correctly.</li> <li>• Applies principles appropriately in familiar contexts.</li> <li>• Performs most calculations correctly using appropriate methods.</li> <li>• Interprets information and observations using sound reasoning.</li> <li>• Draws reasonable conclusions from evidence.</li> <li>• Gives relevant reasons for decisions.</li> <li>• Describes appropriate procedures for straightforward investigations</li> </ul>                                                                                |
| <b>26–45</b> | <b>Approaching Expectations</b> | <ul style="list-style-type: none"> <li>• Recalls some relevant Physics facts, terms and concepts.</li> <li>• Explains straightforward situations with some accuracy.</li> <li>• Attempts calculations but makes errors in method or interpretation.</li> <li>• Identifies relevant information but makes limited connections to Physics concepts.</li> <li>• Makes simple predictions or conclusions with limited justification.</li> <li>• Needs guidance in unfamiliar situations.</li> <li>• Identifies some investigation procedures but omits key measurements or controls</li> </ul> |
| <b>0–25</b>  | <b>Below Expectations</b>       | <ul style="list-style-type: none"> <li>• Recalls few relevant Physics facts, terms or concepts.</li> <li>• Gives incomplete or inaccurate explanations.</li> <li>• Struggles to select or apply appropriate calculation methods.</li> <li>• Has difficulty interpreting information and evidence.</li> <li>• Makes unsupported predictions or conclusions.</li> <li>• Struggles to apply Physics concepts to practical situations.</li> <li>• Requires support to identify appropriate investigation procedures and measurements.</li> </ul>                                               |