GRADE 10 PHYSICS

GOLDLITE SUPPLIES NOV/DEC HOLIDAY BOOSTER WORKBOOK

QUESTION PAPER

Name: _____	Admission/Assessment Number: _____
School: _____	Date: _____

INSTRUCTIONS TO CANDIDATES

1. Answer all questions in the spaces provided or in your exercise book where additional space is needed.
2. Show all working clearly in numerical questions and give appropriate SI units.
3. Use a ruler and pencil for diagrams and graphs. Label diagrams clearly where required.
4. For figure-based questions, study the supplied figure or the indicated figure description carefully.
5. Write legibly and organise your responses by question number.
6. The assignment carries 100 marks. Check your work before submitting.

ASSESSMENT RUBRIC

Strand	Maximum Marks	Marks Scored
1. Mechanics and Thermal Physics	47	_____
2. Waves and Optics	18	_____
3. Electricity and Magnetism	21	_____
4. Environmental and Space Physics	14	_____
TOTAL	100	_____

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GRADE 10 PHYSICS

NOVEMBER – DECEMBER 2026 HOLIDAY ASSIGNMENT

Total: 100 marks

1. (a) Define Physics and name four branches of Physics. **[4 marks]**

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(b) State two ways in which Physics contributes to everyday life in Kenya. **[2 marks]**

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(c) Name two career opportunities that use knowledge of Physics and state one relevant task for each career. [2 marks]

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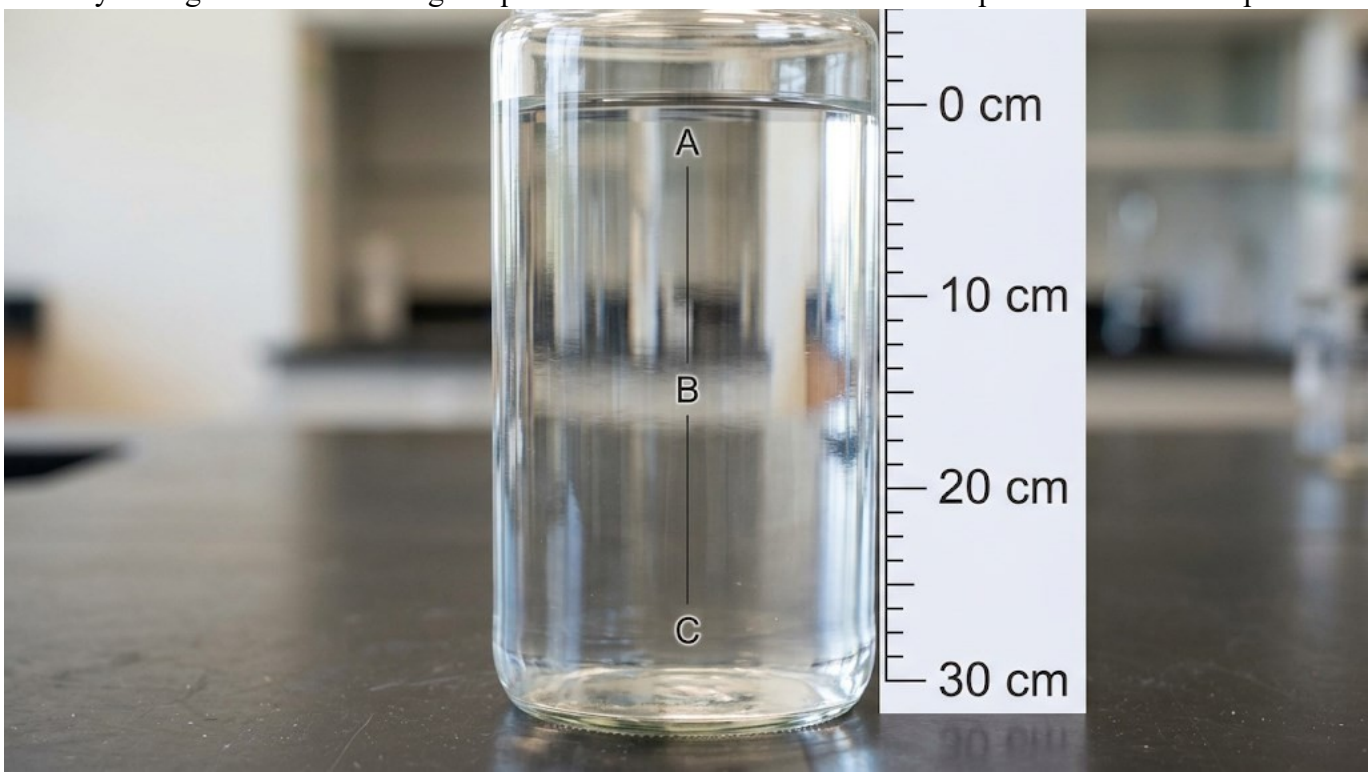
2. Study the figure below showing a liquid in a container with three marked points at different depths.



(a) At which point is the pressure greatest? Explain your answer. **[2 marks]**

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(b) State the relationship used to calculate pressure in a liquid and define each symbol. **[3 marks]**

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(c) Calculate the pressure due to water at a depth of 0.30 m. Take density of water = 1,000 kg/m³ and g = 10 N/kg. **[3 marks]**

3. A wire of original length 2.0 m extends by 1.0 mm when a force of 100 N is applied. Its cross-sectional area is 2.0×10^{-6} m².

(a) Calculate the tensile stress in the wire. **[2 marks]**

(b) Calculate the tensile strain. **[2 marks]**

(c) Determine Young's modulus of the wire. **[2 marks]**

(d) State Hooke's law and give one application of elastic materials. **[2 marks]**

4. (a) Explain why gaps are left between sections of railway lines and why overhead wires may sag more on hot days. **[4 marks]**

(b) A metal rod of length 2.0 m has a linear expansivity of 1.2×10^{-5} °C⁻¹. Calculate its increase in length when its temperature rises by 50 °C. **[3 marks]**

(c) Name one temperature sensor or measuring device and state the physical principle on which it works. **[2 marks]**

5. Study the diagram of a uniform beam balanced on a pivot.

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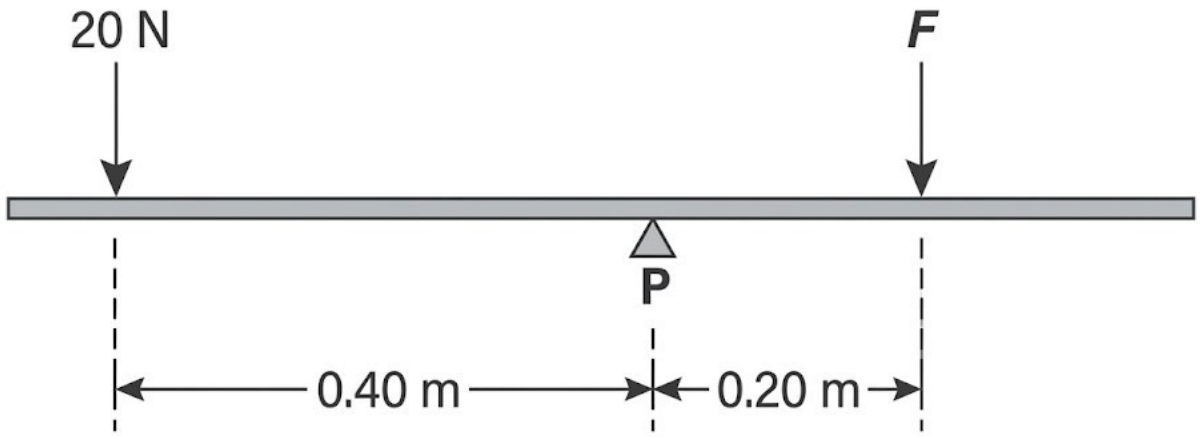

(a) State the principle of moments. **[2 marks]**

(b) Calculate the force F required to balance the beam. **[2 marks]**

(c) State two factors that affect the stability of a body. **[2 marks]**

6. (a) Distinguish between work and power. **[2 marks]**

(b) A 5 kg load is raised vertically through 3 m in 6 s. Calculate the gain in gravitational potential energy and the useful power developed. Take g = 10 N/kg. **[4 marks]**

(c) Name two simple machines and describe how each makes work easier. [2 marks]

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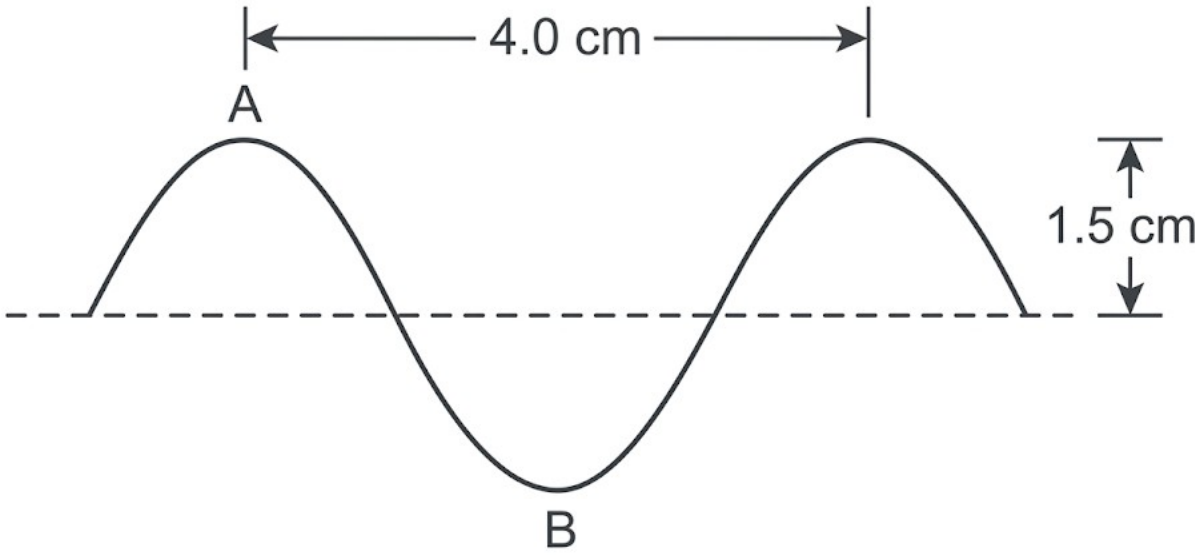
7. Study the wave shown below.



(a) Identify the amplitude and wavelength from the figure. **[2 marks]**

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(b) State two properties of waves and give one example of each. **[4 marks]**

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(c) Explain the Doppler effect using an approaching ambulance as an example. **[2 marks]**

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8. (a) What is meant by radioactive decay? **[2 marks]**

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(b) Complete the nuclear equation: $^{238}_{92}U \rightarrow ^{234}_{90}Th +$ _____. Name the emitted particle. **[2 marks]**

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(c) A radioactive sample has a half-life of 6 hours. If its initial count rate is 800 counts per minute, calculate the count rate after 18 hours. **[3 marks]**

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(d) State two safety precautions when handling radioactive sources and one beneficial use of radioactivity. **[3 marks]**

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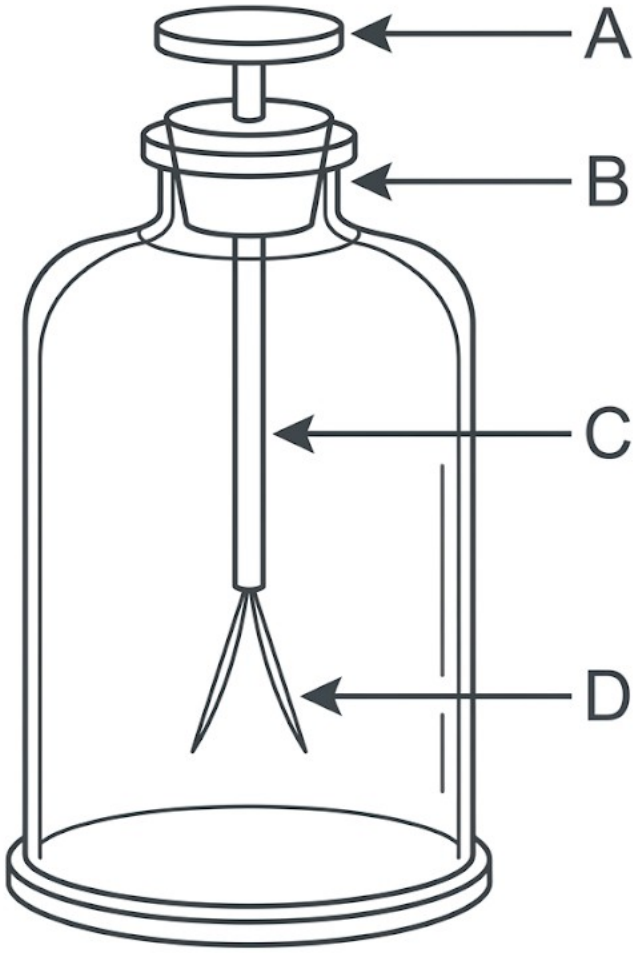
9. Study the diagram showing a simple leaf electroscope.



(a) Identify parts A, B, C and D. **[4 marks]**

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(b) Describe how a charged object can be used to demonstrate charging by induction with the electroscope. **[3 marks]**

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(c) State one everyday application of electrostatics and one associated safety measure. [1 mark]

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10. A 6 Ω resistor is connected across a 12 V battery.

(a) Calculate the current through the resistor. **[2 marks]**

(b) Calculate the electrical power dissipated by the resistor. **[2 marks]**

(c) State Ohm's law and give two factors that affect the resistance of a wire. **[3 marks]**

(d) Explain why a fuse is connected in series with an appliance and state one electrical safety rule. [2 marks]

11. (a) State one difference between a conductor, an insulator and a semiconductor. **[3 marks]**

(b) Name one electronic component that can control current in a circuit and state one use of it. [1 mark]

12. (a) Distinguish between the greenhouse effect and global warming. **[4 marks]**

(b) State three human activities that contribute to climate change and suggest one practical mitigation measure for each. **[6 marks]**

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(c) Describe the Big Bang theory as an explanation for the origin of the universe. **[2 marks]**

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(d) State two ways telescopes or satellites contribute to space exploration. [2 marks]

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