END TERM 3 2026

GRADE 10

PHYSICS

SUMMATIVE ASSESSMENT

TIME: 2 HOURS

Name: _____

Assessment Number: _____

Class / Stream: _____

Date: _____

INSTRUCTIONS

1. Answer ALL questions.

2. Show all working for numerical calculations.

3. Use appropriate SI units and give answers to the required degree of accuracy.

4. Where a diagram is provided, study it carefully before answering.

5. Draw clear labelled diagrams where required.

6. Use the spaces provided for your answers.

SECTION A — MECHANICS AND THERMAL PHYSICS (30 MARKS)

1. Pressure and its applications are important in everyday life. **(10 marks)**

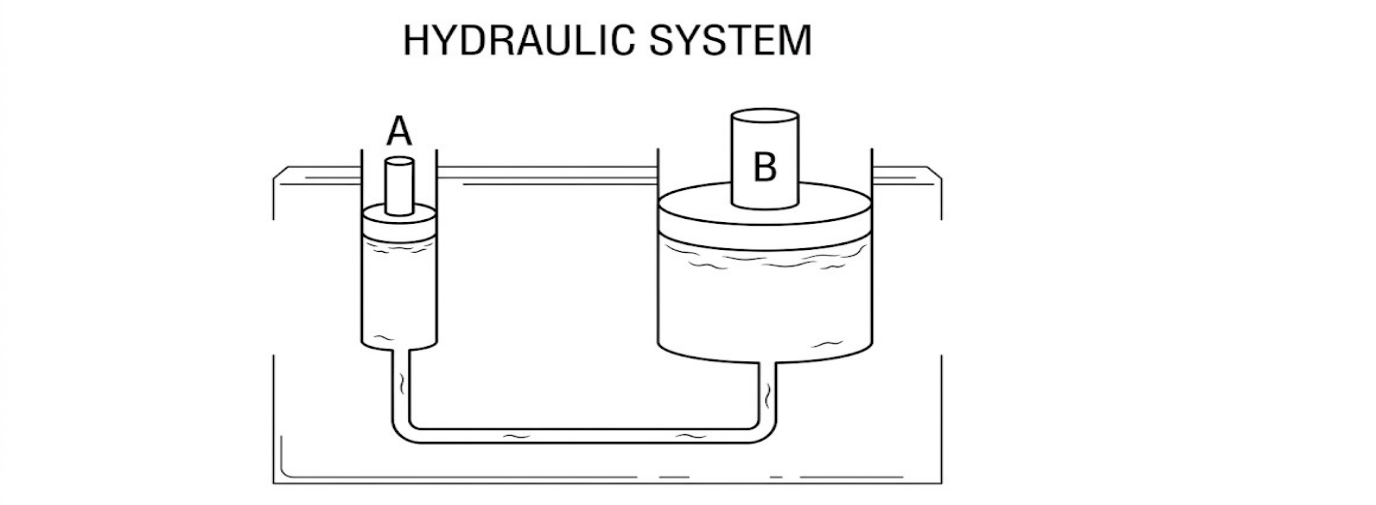
(a) State two factors that affect pressure in a liquid. **(2 marks)**

(b) A liquid has density 800 kg m^{-3} and a depth of 2.5 m. Calculate the pressure due to the liquid. Take g = 10 N kg^{-1}. **(3 marks)**

(c) Explain two applications of atmospheric pressure in everyday life. **(2 marks)**

(d) Explain why pressure in a liquid increases with depth. **(3 marks)**

2. Study the hydraulic system below. **(10 marks)**



(a) State the principle on which the hydraulic system operates. **(2 marks)**

(b) Explain how a small force applied at A can produce a larger force at B. **(3 marks)**

(c) Give two applications of hydraulic systems. **(2 marks)**

(d) State three safety considerations when using hydraulic equipment. **(3 marks)**

3. Mechanical properties and thermal expansion affect the choice and use of materials. **(10 marks)**

(a) Define ductility, malleability and elasticity. **(3 marks)**

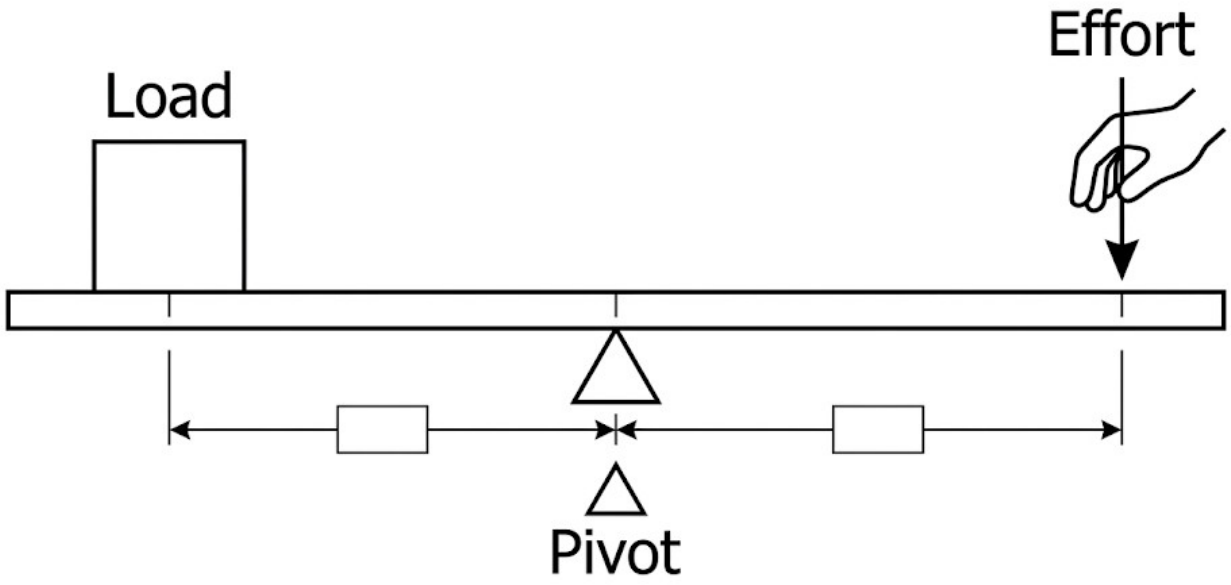
(b) A wire of cross-sectional area 2.0×10^{-6} m² carries a tensile force of 100 N. Calculate its tensile stress. **(2 marks)**

(c) State two applications of thermal expansion in solids. **(2 marks)**

(d) Explain why a gap is left between sections of railway tracks or bridges. **(3 marks)**

SECTION B — MECHANICS, WAVES AND RADIOACTIVITY (30 MARKS)

4. Study the lever diagram below.



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

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(b) A 40 N load acts 0.20 m from the pivot. Calculate the moment of the load about the pivot. **(2 marks)**

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(c) State two factors that affect the stability of an object. **(2 marks)**

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(d) Describe how kinetic and potential energy are transformed when a raised object falls. **(4 marks)**

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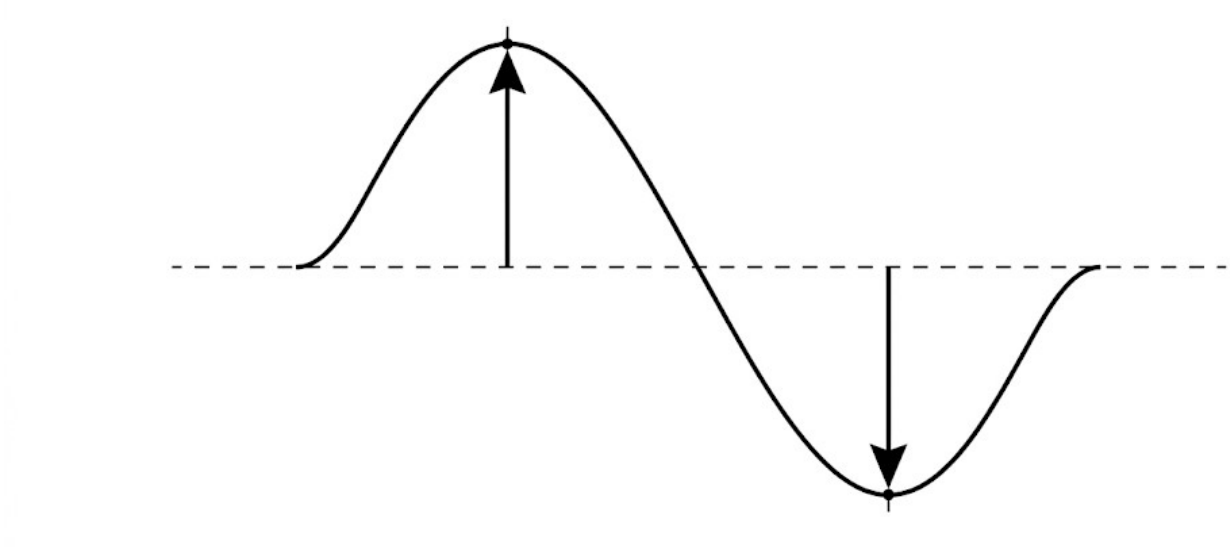
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5. Study the wave diagram below.



(a) Name the two measurable quantities indicated by the vertical arrows and the horizontal distance between successive similar points. **(3 marks)**

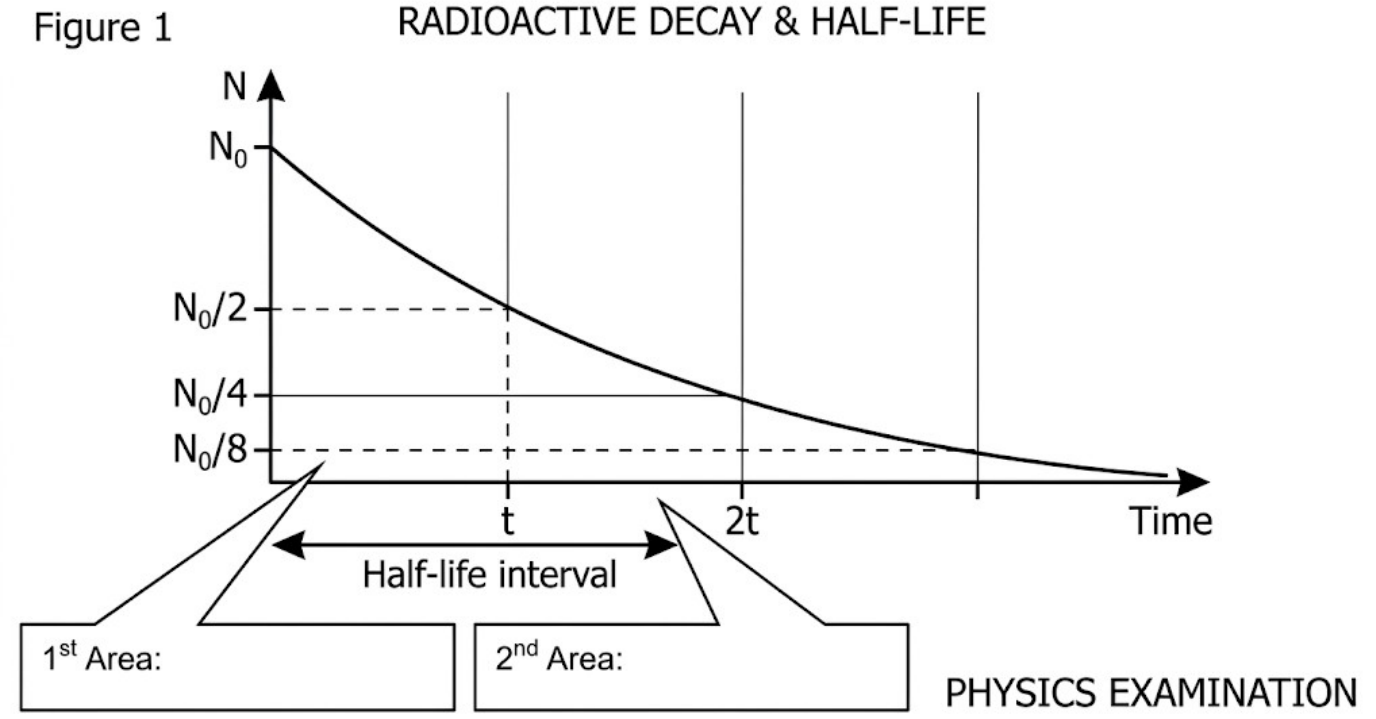
(b) State two properties of waves included in the Grade 10 curriculum. **(2 marks)**

(c) Explain the Doppler effect using a moving sound source as an example. **(3 marks)**

(d) State two applications of stationary waves or resonance. **(2 marks)**

6. Radioactivity involves unstable nuclei, radiation and safety precautions.

Figure 1



(a) Define half-life. **(2 marks)**

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(b) Describe how the graph can be used to determine the half-life of a radioactive substance. **(3 marks)**

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(c) State three safety precautions when handling radioactive substances. **(3 marks)**

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(d) Distinguish between nuclear fission and nuclear fusion. **(2 marks)**

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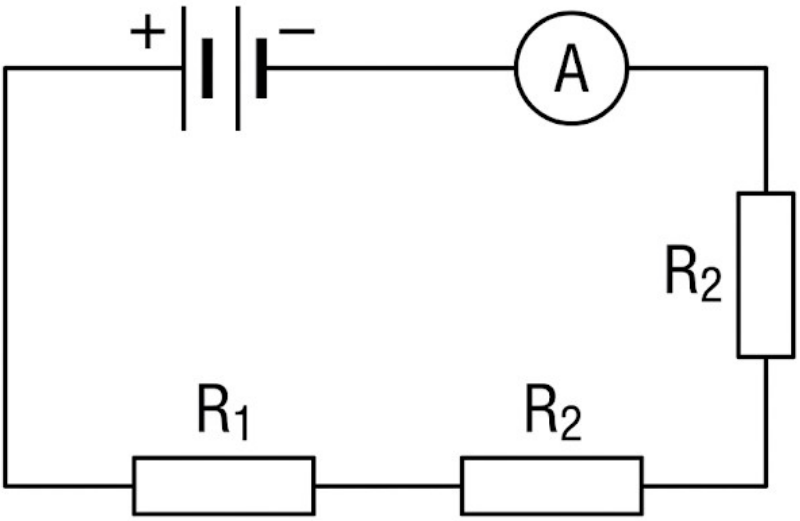
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SECTION C — ELECTRICITY, MAGNETISM AND ENVIRONMENTAL PHYSICS (20 MARKS)

7. Study the simple circuit below.



(a) State the relationship between current, potential difference and resistance for an ohmic conductor. **(2 marks)**

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(b) A resistor has a potential difference of 12 V across it and a current of 3 A through it. Calculate its resistance. **(2 marks)**

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(c) State two methods of determining resistance experimentally. **(2 marks)**

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(d) Give two applications or uses of resistors in electrical circuits. **(2 marks)**

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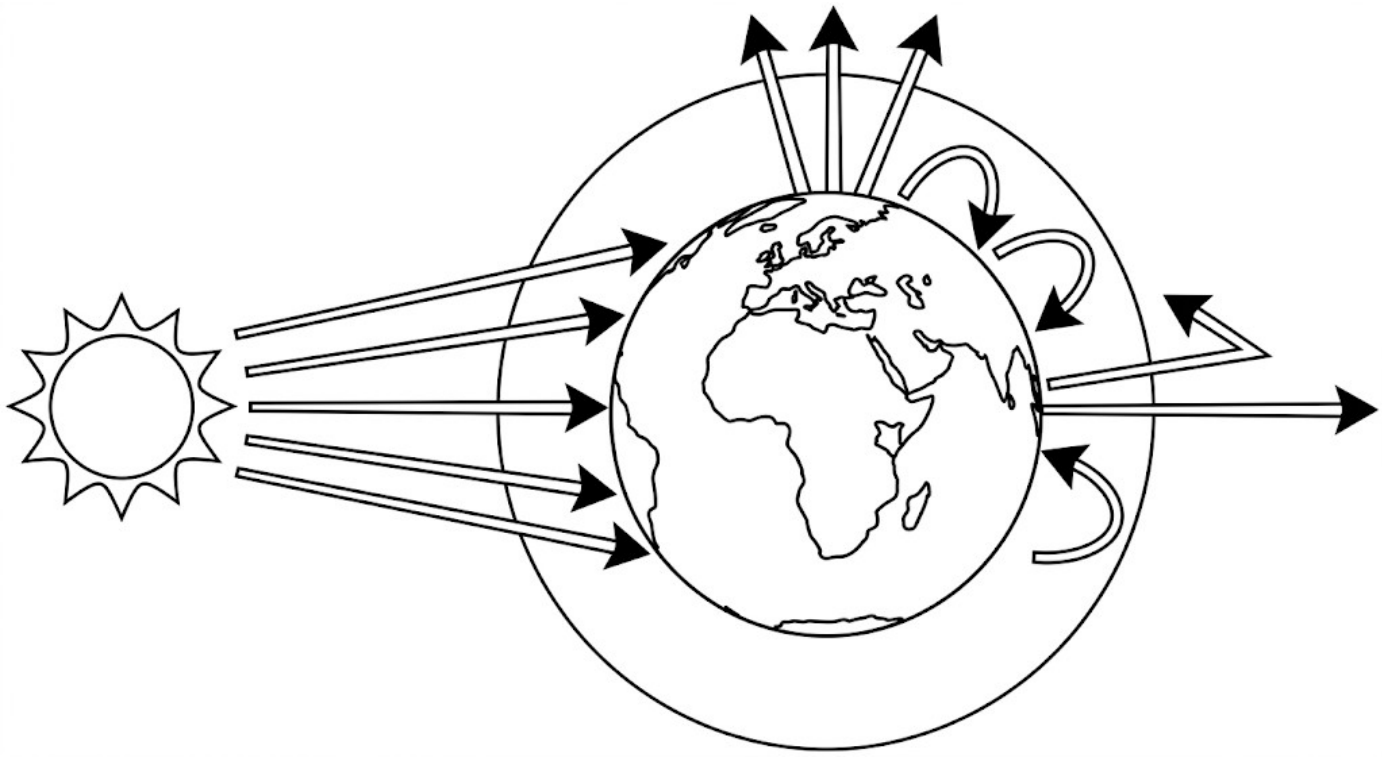
(e) State two electrical safety precautions. **(2 marks)**

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8. Study the greenhouse-effect diagram below. **(10 marks)**



(a) Explain the greenhouse effect as represented in the diagram. **(3 marks)**

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(b) State two factors that can contribute to climate change. **(2 marks)**

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(c) Explain one environmental effect of climate change. **(2 marks)**

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(d) State two benefits of space technology or planetary observation to society. **(2 marks)**

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(e) Name one career related to space exploration or space flight and state one role associated with it. **(1 marks)**

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END OF QUESTION PAPER