Year 10 | Physics

IGCSE-pathway diagnostic assessment • Motion, energy, electricity and waves

Student name: _____ Date: _____

Suggested time: 55 minutes. Show working and explain your reasoning. This is an independent diagnostic, not an official examination paper.

1. A cyclist travels 180 m in 12 s. Calculate average speed and give the correct SI unit. [4 marks]

2. A car increases speed from 4 m/s to 16 m/s in 6 s. Calculate acceleration. [5 marks]

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3. A 2.0 kg object is lifted vertically by 3.0 m. Calculate its gain in gravitational potential energy (g = 9.8 N/kg). [5 marks]

4. A 12 V battery is connected across a 4 Ω resistor. Calculate current and power dissipated. [7 marks]

5. Explain why a passenger continues moving forward when a bus brakes suddenly. Name the relevant principle. [6 marks]

6. A wave has frequency 50 Hz and wavelength 0.40 m. Calculate its speed and explain what frequency means. [6 marks]

7. Design a simple investigation to determine the density of an irregular solid. Name measurements, apparatus and calculation. [8 marks]

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Parent / Tutor Guide | Physics

Keep this section separate from the student during the assessment. The marks are diagnostic prompts, not an official IGCSE mark scheme.

Suggested responses and assessment notes

1. (4 marks) 15 m/s.

2. (5 marks) (16-4)/6 = 2 m/s².

3. (5 marks) mgh = 58.8 J.

4. (7 marks) I = V/R = 3 A; P = VI = 36 W.

5. (6 marks) Inertia/Newton's first law; motion persists unless resultant force acts.

6. (6 marks) v = fλ = 20 m/s; 50 oscillations per second.

7. (8 marks) Mass by balance, volume by water displacement, density = mass/volume; repeat measurements.

What to observe

Look for subject knowledge, accuracy, use of appropriate terminology, clarity of reasoning, interpretation of command words, and ability to justify or evaluate when asked.

Suggested diagnostic approach

Record which questions were attempted independently, which required prompts, and whether difficulties arose from concepts, literacy, calculations or time management. Plan follow-up teaching around recurring misconceptions.

Curriculum note

This is a general Year 10 IGCSE-oriented diagnostic. It is not endorsed by Cambridge, Pearson Edexcel or the IB. Topic order and examination demands differ by board and school; adjust to the student's actual specification.

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