

Answer Key: First Terminal Evaluation 2025-26 Physics, Class VIII

Section A: Multiple-Choice Questions (3 out of 4, 1 score each, Total: 3)

1. Which of the following is a derived physical quantity?

(a) Length (b) Mass (c) Area (d) Time

Answer: (c) Area

Explanation: According to the textbook (Page 3-4), fundamental quantities include length, mass, time, electric current, temperature, amount of substance, and luminous intensity. Derived quantities, like area, are expressed in terms of fundamental quantities (e.g., $\text{area} = \text{length} \times \text{breadth}$).

2. A book placed on a table is observed by a person standing still. With respect to the table, the book is in a state of:

(a) Motion (b) Rest (c) Acceleration (d) Friction

Answer: (b) Rest

Explanation: The textbook (Page 19) states that an object is at rest if it does not change its position relative to a reference object. Here, the table is the reference object, and the book does not change position relative to it.

3. Identify the correct unit representation from the following:

(a) 152 m (b) 15 m² (c) 25 kgm (d) 10 pa

Answer: (a) 152 m

Explanation: The textbook (Page 12) emphasizes correct notation for units. Option (a) correctly represents length in meters (m). Option (b) is incorrect as area should be m², not m². Option (c) is invalid as kgm is not a standard unit. Option (d) should be Pa (Pascal) with a capital 'P'.

4. Which of these units does not measure length?

(a) mm (b) km (c) kg (d) cm

Answer: (c) kg

Explanation: The textbook (Page 7) lists mm (millimeter), km (kilometer), and cm (centimeter) as units of length. kg (kilogram) is a unit of mass (Page 9).

Section B: Short-Answer Questions (4 out of 5, 2 scores each, Total: 8)

5. **Based on the fundamental physical quantity mass, answer the following:**

- (a) Which of the masses are fundamental physical quantities? (1)
- (b) What is the SI unit of mass? (1)

Answer:

- (a) Mass is a fundamental physical quantity.
- (b) The SI unit of mass is the kilogram (kg).

Explanation: The textbook (Page 3) lists mass as a fundamental quantity, and Page 9 confirms the SI unit of mass is kilogram (kg).

6. **Calculate the speed of an object that travels 202 meters in 8 seconds. Express the answer in m/s.**

Answer: Speed = 25.25 m/s

Explanation: The textbook (Page 22) defines speed as distance traveled per unit time. Speed = Distance / Time = 202 m / 8 s = 25.25 m/s.

7. **Classify the following into uniform speed or non-uniform speed:**

- (a) A ball rolling down an inclined plane (1)
- (b) A planet orbiting the Sun in a circular path at constant speed (1)

Answer:

- (a) Non-uniform speed
- (b) Uniform speed

Explanation: The textbook (Page 23) defines uniform speed as covering equal distances in equal time intervals. A ball rolling down an inclined plane accelerates, so it has non-uniform speed. A planet orbiting at constant speed covers equal distances in equal times, indicating uniform speed.

8. **Refer to figure (Wooden block, ice block, and rubber piece sliding on an inclined plane):**

- (a) Which object experiences the least friction? (1)
- (b) Why does the nature of the surface affect friction? (1)

Answer:

- (a) Ice block
- (b) The nature of the surface affects friction because smoother surfaces have less frictional force, while rougher surfaces increase friction.

Explanation: The textbook (Page 28) describes an experiment where an ice block, wooden block, and rubber piece slide down an inclined plane. The ice block, being smoother, experiences the least friction. The nature of surfaces influences friction, with rough surfaces causing more friction (Page 26).

9. **"Friction can be both helpful and harmful." Write one advantage and one disadvantage of friction in daily life.**

Answer:

Advantage: Friction helps us walk without slipping.

Disadvantage: Friction causes surfaces in contact to wear out.

Explanation: The textbook (Page 27) lists advantages like helping in walking and disadvantages like wearing out surfaces.

Section C: Long-Answer Questions (3 out of 4, 3 scores each, Total: 9)

10. Refer to figure:

(a) If the odometer shows 2500 km, how many meters has the vehicle traveled? (1)

(b) If the vehicle travels this distance in 3 hours with uniform speed, calculate its speed in m/s. (2)

Answer:

(a) 2,500,000 m

(b) Speed = 231.48 m/s

Explanation:

(a) The textbook (Page 20) states $1 \text{ km} = 1000 \text{ m}$. Thus, $2500 \text{ km} = 2500 \times 1000 = 2,500,000 \text{ m}$.

(b) Speed = Distance / Time. Convert 3 hours to seconds: $3 \times 3600 = 10,800 \text{ s}$. Speed = $2,500,000 \text{ m} / 10,800 \text{ s} \approx 231.48 \text{ m/s}$.

11. A student measures the thickness of 50 sheets of paper as 4 mm:

(a) Calculate the thickness of one sheet of paper. (1)

(b) Express this thickness in micrometers. (1)

(c) Why is a scale not suitable for directly measuring the thickness of a single sheet? (1)

Answer:

(a) Thickness of one sheet = 0.08 mm

(b) Thickness in micrometers = $80 \mu\text{m}$

(c) A scale is not suitable because the least count of a common scale (1 mm) is too large to measure the thickness of a single sheet accurately.

Explanation:

(a) The textbook (Page 14) describes measuring a stack of papers. Thickness of one sheet = $4 \text{ mm} / 50 = 0.08 \text{ mm}$.

(b) $1 \text{ mm} = 1000 \mu\text{m}$ (Page 7). Thus, $0.08 \text{ mm} = 0.08 \times 1000 = 80 \mu\text{m}$.

(c) The least count of a scale is 1 mm (Page 14), which is larger than the thickness of a single sheet (0.08 mm), making direct measurement inaccurate.

12. A car starts from rest and reaches a speed of 20 m/s in 5 seconds:

(a) Is this motion uniform or non-uniform? (1)

(b) Name one lubricant used to reduce friction. (1)

(c) Explain how the shape of an object, like an airplane, helps reduce friction. (1)

Answer:

(a) Non-uniform

(b) Graphite

(c) The streamlined shape of an airplane reduces air resistance by allowing

air to flow smoothly over its surface, minimizing friction.

Explanation:

(a) The textbook (Page 23) defines non-uniform speed as unequal distances in equal time intervals. Since the car accelerates from 0 to 20 m/s, its speed changes, indicating non-uniform motion.

(b) Graphite is listed as a solid lubricant (Page 29).

(c) The textbook (Page 29) explains that the shape of objects like airplanes reduces friction, as seen in experiments with differently shaped objects in water (Page 28).

13. (Not chosen as per instruction to answer 3 out of 4)