

# Unit 1: Physical quantities and units

## Subunit 1.1: Physical quantities:

### Topical Question No: 1

- 5 A student wishes to measure a distance of about 10 cm to a precision of 0.01 cm.

Which measuring instrument should be used?

- A metre rule
- B micrometer
- C tape measure
- D vernier calipers

### Topical Question No: 2

- 2 A byte (b) comprises 8 bits.

How many bits are there in 1 terabyte (1Tb)?

- A  $1 \times 10^9$       B  $8 \times 10^9$       C  $1 \times 10^{12}$       D  $8 \times 10^{12}$

### Topical Question No: 3

- 1 What could **not** be a measurement of a physical quantity?

- A 10K      B  $11 \text{ J N}^{-1} \text{ m}^{-1}$       C  $17 \text{ Pa m}^3 \text{ N}^{-1}$       D 25 T m

### Topical Question No: 4

- 2 A computer memory stick is labelled as having a storage capacity of 128 GB.

The letter B stands for byte, which is a unit.

What is the equivalent storage capacity?

- A  $1.28 \times 10^8 \text{ B}$
- B  $1.28 \times 10^{11} \text{ B}$
- C  $1.28 \times 10^{14} \text{ B}$
- D  $1.28 \times 10^{17} \text{ B}$

*Topical Question No: 5*

- 2 Which definition is correct and uses only quantities rather than units?
- A Density is mass per cubic metre.
  - B Potential difference is energy per unit current.
  - C Pressure is force per unit area.
  - D Speed is distance travelled per second.

*Topical Question No: 6*

- 9 What describes the mass of an object?
- A the force the object experiences due to gravity
  - B the momentum of the object before a collision
  - C the resistance of the object to changes in motion
  - D the weight of the object as measured by a balance

*Topical Question No: 7*

- 1 Which estimate is reasonable?
- A  $1 \times 10^{-3}$  kg for the mass of a grain of sand
  - B  $1 \times 10^{-2}$  m<sup>3</sup> for the volume of a tennis ball
  - C  $1 \times 10^0$  J for the work done lifting an apple from waist height to head height
  - D  $1 \times 10^4$  W for the power of a light bulb in a house

*Topical Question No: 8*

- 1 What must all physical quantities have?
- A a direction and a magnitude
  - B a direction and a unit
  - C a magnitude and a prefix
  - D a magnitude and a unit

## Answer Key

1. N/A
2. D
3. B
4. B
5. N/A
6. N/A
7. C
8. D