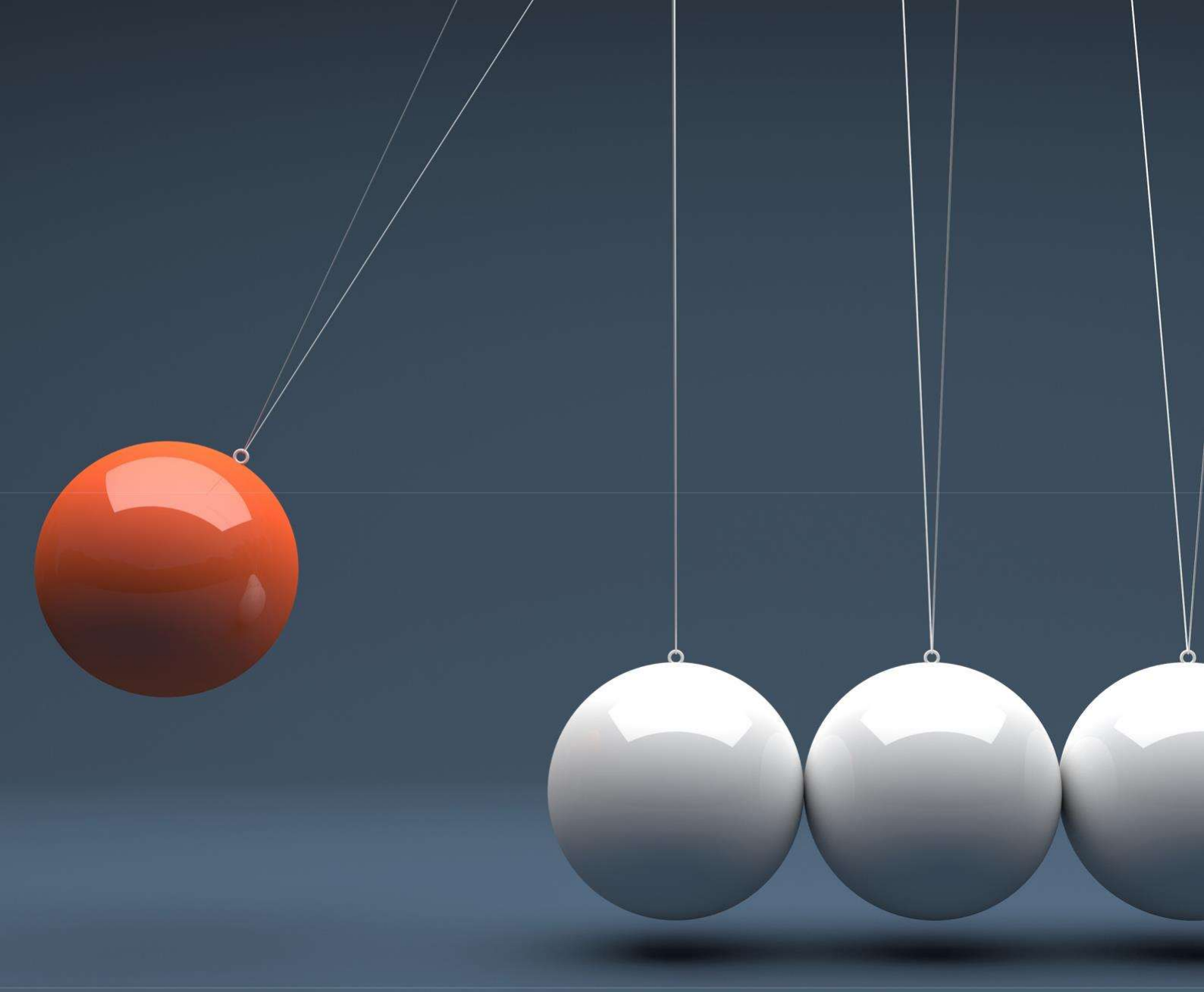

CHAPTER (1)

PHYSICS

Physics in science method

- Physics: is the study of energy, matter and how they are related.
- Note: the equation can be written in many forms to find the missing variables, as shown in the example:

$$T = \frac{V \bullet S}{m^2} \qquad m = \sqrt{\frac{V \bullet S}{T}} \qquad V = \frac{T \bullet m^2}{S} \qquad S = \frac{T \bullet m^2}{V}$$

- Scientific way: A method for answering scientific questions in order to explain natural phenomena, begins with asking questions.
- Hypothesis: A scientific guess about how the variables are related to each other, the validity of the hypothesis can be tested by designing scientific experiments.
- Scientific law: A natural rule that collects related observations to describe a recurring natural phenomenon.
- Scientific theory: A frame that collects all constructed elements of any specific subject in science and can be used to explain observations and notes.

Measurement, precision and accuracy

- Measurement: comparing an unknown quantity with standard quantity.
- Precision: the perfection of measurement.
- The precision of measurement depends on: the tool (device) and the method of measuring.
- Calibration is taken vertically using one eye.
- The precision of device measurement equals the half of the less calibration.
- Accuracy: the adjustment between the measuring results with the accepted value.
- The most common way to test the configuration of a device is “two points calibration”.

CHAPTER (1) PHYSICS

1. A section of science related to studying matter, energy and the relation between them.

A chemistry B biology
C physics D geology

2. Which variable equation equals this relation $T = \frac{V \bullet S}{m^2}$

A $m = \sqrt{\frac{T}{V \bullet S}}$ B $m^2 = T \bullet V \bullet S$

C $m^2 = \frac{T}{V \bullet S}$ D $m = \sqrt{\frac{V \bullet S}{T}}$

3. First step of scientific method

A hypothesis B law
C asking questions D conclusion

4. Testable explanation

A hypothesis B law
C principle D theory

5. To prove the hypothesis, you need

A experiment B note
C analysis D conclusion

6. "Energy cannot be created or destroyed " is a:

A theory B law
C conclusion D hypothesis

7. An explanation of natural phenomenon based on observations and investigations over time.

A scientific theory B hypothesis
C conclusion D scientific low

8. The most common way to test the configuration of a device is.

A Viewing angle B One points calibration
C Two points calibration D Device changing

Vector quantity:

A physical quantity that is determined by magnitude and direction, such as displacement, acceleration and force.

Scalar quantity:

A physical quantity that is determined by magnitude only, such as distance, time, mass, temperature, power and pressure.

Basic and derivative units.

The International System of Units (SI):

QUANTITY	symbol	Unit
Amount of substance	mol	Mole
Electric current	A	Ampere
Temperature	K	Kelvin
Luminous intensity	Cd	Candela
Length	m	Meter
Mass	kg	Kilogram
Time	s	Second

Derivative Units:

Units that are derived from the basic units, such as Joule (J) and Coulomb (C).

Prefixes of International System.

Prefix	Symbol	Decimal Equivalent	Power of 10
mega-	M	1,000,000	Base x 10^6
kilo-	k	1,000	Base x 10^3
deci-	d	0.1	Base x 10^{-1}
centi-	c	0.01	Base x 10^{-2}
milli-	m	0.001	Base x 10^{-3}
micro-	μ or mc	0.000 001	Base x 10^{-6}
nano-	n	0.000 000 001	Base x 10^{-9}
pico	p	0.000 000 000 001	Base x 10^{-12}

Example:

Saad listens to broadcasting waves 4.5MHz, so frequency in Hz equals.

A 4.5×10^3 B 4.5×10^4
C 4.5×10^6 D 4.5×10^9

Answer:

multiple 4.5 by 10^6, so (c) is the correct answer.

9. Which of the following is vector quantity?

A Car moves with speed of 30 km/h. B pushing a cart with force of 70 N.
C A swimmer covers a distance of 800 m. D A marble falls vertically downward with speed of11m/s.

10. Which of the following is not scalar quantity?

A Time B Force
C Temperature D Volume

11. The international system of units can be represented by:

A SI B MI
C Tr D GI

12. Which of the following is a unit for a basic quantity in the international system of units?

A Tesla (T) B Volt (V)
C Ampere ((A) D Ohm (Ω)

13. The SI unit of length is

A cm B m
C km D mm

14. The area is ---------- quantity

A Basic B Original
C Derived D Neutral

15. 6 μm = ---------- m

A 6×10^{6} B 6×10^{-6}
C 6×10^{9} D 6×10^{-9}

16. Which of the following is a derived quantity?

A Current B Potential difference
C Time D Luminous intensity

17. Salem has drunk 4 dL of milk, this quantity of milk in liters is:

A 4 B 0.4
C 0.004 D 0.0004

1 dL = 10-1 L
So, multiply 4 by 10-1 to convert from dL to L
1 dL = 4 x 10-1 = 0.4 L
The right answer is B

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Ans	C	D	C	A	A	B	A	C	D	B	A	C	B	C	B	B	B