I. **Tick (✓) the most appropriate answer.**

1. The appropriate unit for measuring thickness of a coin is :
   (a) centimetre (b) kilometre  (c) millimetre  (d) micrometre

2. The SI unit of mass is :
   (a) kilogram  (b) gram  (c) milligram  (d) quintal

3. One light year is :
   (a) $9.46 \times 10^{12}$ km  (b) $9.64 \times 10^{12}$ km
   (c) $94.6 \times 10^{12}$ km  (d) $96.4 \times 10^{12}$ km

4. The SI unit of temperature is :
   (a) celsius  (b) kelvin  (c) newton  (d) pascal

5. The SI unit of time is :
   (a) hour  (b) solar day  (c) minute  (d) second

6. The science of measurement is called :
   (a) Chemistry  (b) Physics  (c) Biology  (d) English

7. The temperature of a body is measured with a :
   (a) barometer  (b) ruler scale  (c) thermometer  (d) electrometer

8. The SI unit of length is :
   (a) centimetre  (b) hectare  (c) millimetre  (d) metre

9. One micron is equal to :
   (a) $10^{-3}$ m  (b) $10^{-9}$ m  (c) $10^{-6}$ m  (d) $10^{-2}$ m

10. The length of a curved object can be measured with :
    (a) a scale rod  (b) thread and ruler  (c) a metre rod  (d) none of these

11. Quantity of matter present in a body is called its :
    (a) mass  (b) force  (c) weight  (d) none of these

12. Number of seconds in a solar day is :
    (a) 84600  (b) 80046  (c) 86400  (d) 80064

13. The normal body temperature of a person is :
    (a) 37°C  (b) 33°C  (c) 42°C  (d) 35°C

14. The SI unit of electric current is :  

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**Class-VI Physics Question Bank**
15. The standard scales of measurements are preserved in our country at:
(a) National Physical Laboratory, Mumbai
(b) Geographical Society of India, Delhi
(c) Indian Institute of Technology, New Delhi
(d) National Physical Laboratory, New Delhi

16. The length of a body is measured by:
(a) barometer     (b) ruler scale
(c) thermometer   (d) beam balance

17. Which of the following is treated as the basic unit in physics?
(a) Area    (b) Length    (c) Volume    (d) None of these

18. How many cm$^2$ are there in 1 m$^2$?
(a) 100     (b) 1000     (c) 10000     (d) 100000

19. Normal temperature of a human body is:
(a) 98.4°C  (b) 37 K      (c) 110 K     (d) none of these

20. One micrometre is equal to:
(a) 1000 m  (b) $\frac{1}{1000}$ m (c) 1000000 m  (d) m

21. The SI unit of capacity is:
(a) m$^3$    (b) m$^2$    (c) m$^4$     (d) m$^5$

22. The space occupied by an object is called:
(a) area     (b) length    (c) volume    (d) none of these

23. The SI unit for volume is:
(a) cubic centimetre   (b) cubic millimetre
(c) cubic metre        (d) cubic litre

24. One cubic metre is equal to:
(a) $10^6$ cc   (b) $10^4$ cc   (c) $10^3$ cc   (d) $10^9$ cc

25. The surface occupied by an object is called:
(a) volume     (b) area      (c) length     (d) none of these

26. The SI unit of area is:
(a) m$^2$    (b) cm$^2$    (c) mm$^2$    (d) m$^3$

**Ans.**   1. (c)  2. (a)  3. (a)  4. (b)  5. (d)  6. (b)  7. (c)  8. (d)  9. (c)
II. Fill in the blanks.

1. ________ is the measure of distance between two points.
2. ________ is the quantity of matter in a given body.
3. ________ is the gap between two events.
4. ________ is the degree of hotness or coldness of a body.
5. ________ thermometer measures the temperature of human body.
6. One millimetre is equal to one ________ part of a metre.
7. The unit of mass in SI system is ________.
8. The unit of length is SI system is ________.
9. One milligram is equal to ________ kilogram.
10. 10 m 20 cm = ________ cm.
11. One hour = ________ seconds.
12. ________ watch is used to measure time in a car race.
13. ________ is the SI unit of volume.
14. ________ quintals = one tonne.
15. The SI unit of area is ________.
16. Area of an irregular surface can be found by using a ________.
17. ________ is used in a chemistry laboratory for measuring the volume of a solution flowing out.
18. 1 metric tonne = ________.
19. For measurement, our senses are not always ________.
20. We measure the volume of a small irregular solid by using a ________.
21. The length of a room is 6 m 70 cm. This is the same as ________ cm.
22. Monika needed 4 m 6 cm of cloth. So, she bought ________ cm of cloth.
23. The distance between two houses is 8 km 20 m. It is the same
24. The thickness of a sheet of cardboard is 2 mm. 100 such sheets will have thickness of ________ cm.

25. ________ is the amount of surface occupied by an object.

26. ________ is the space occupied by a substance.

27. Volume of liquids is measured in litres or ________.

28. The liquids which wet the surface of glass have a ________ meniscus.

29. Measuring flask is used for finding the volume of ________.

30. The gases are sold by the ________.


**III. Write true or false (T/F) for each of the statement given below:**

1. The value of standard unit of a physical quantity does not change with place or time.

2. Kilometre is a sub-multiple of metre.

3. The SI unit of length is millimetre.

4. The SI unit of time is second.

5. Water clocks were used to find value of water.

6. Kilogram is multiple of milligram.

7. Kelvin is SI unit of temperature.

8. Normal temperature of human body is 37°C.

9. A quick judgement about the measure of physical quantity is called estimation.

10. 100°C corresponds to 373 K.

11. The SI unit of area is square metre.

12. One square metre is equal to 100 square centimetres.

13. The appropriate unit for finding the volume of a small stone is cm³.

14. The appropriate unit for finding area of 25 paise coin is cm².
15. A measuring cylinder can directly measure the volume of solids.

16. A burette is used for measuring volume of liquids.


IV. Statements given below are incorrect. Write the correct statements.

1. One millimetre is equal to one million metres.
   Ans. One millimetre is equal to one thousandth metres.

2. The distance of stars from the earth is measured in megametres.
   Ans. The distance of stars from the earth is measured in light year.

3. A celsius thermometer can be used to find the temperature of a flame.
   Ans. A celsius thermometer can be used to find the temperature of the day.

4. The SI unit of time is solar day.
   Ans. The SI unit of time is second.

5. Sundials were used to record temperature.
   Ans. Sundials were used to measure time.

6. A pendulum of length 240 cm and swimming freely completes one oscillation in one second.
   Ans. A pendulum of length 140 cm and swimming freely completes one oscillation in one second.

7. Area is the amount of space occupied by an object.
   Ans. Volume is the amount of space occupied by an object.

8. One square kilometre is equal to 1000 hectares.
   Ans. One square kilometre is equal to 100 hectares.

9. The area of rose leaf can be found by using centimetre graph paper.
   Ans. The area of rose leaf can be found by using millimetre graph paper.

10. The meniscus of mercury is concave.
    Ans. The meniscus of mercury is convex.
11. One millilitre is equal to 10 cubic centimetre.
Ans. One millilitre is equal to 1 cubic centimetre.

12. Foot length is the standard unit for measuring length.
Ans. Metre is the standard unit for measuring length.

13. The SI unit of mass is gram.
Ans. The SI unit of mass is kilogram.

14. The SI unit of volume is square metre (m²).
Ans. The SI unit of volume is cubic metre (m³).

15. Clinical thermometer is used to measure temperature of boiling water.
Ans. Clinical thermometer is used to measure temperature of the human body.

16. Gram is a multiple of kilogram.
Ans. Gram is a sub-multiple of kilogram.

17. Space occupied by an object is called its surface area.
Ans. The space occupied by an object is called volume.

18. Metre scale is used for measuring weight.
Ans. Metre scale is used for measuring length.

19. Area is a measure of the space occupied by an object.
Ans. Volume is a measure of the space occupied by an object.

20. The melting point of ice is 100°C.
Ans. The melting point of ice is 0°C.

21. Clocks are more accurate than stopwatches.
Ans. Stopwatches are more accurate than clocks.

22. Kilometre is a sub-multiple of a metre.
Ans. Kilometre is a multiple of a metre.

23. The distance between two cities is measured in metres.
Ans. The distance between two cities is measured in kilometre.

V. Find the odd-one out. Give reasons for your choice.

1. Metre, second, newton, kilogram.
Ans. Newton: All except newton are fundamental units.

2. Multimeter, micron, millimetre, angstrom.
Ans. Multimeter: All except multimeter are sub-multiples to express physical quantities but multimeter is not a sub-multiple.
3. Graduated cylinder, burette, milkman’s measure, beam balance.

   **Ans. Beam balance:** All except beam balance, are standard containers for measuring the volume of liquids. Beam balance is for measuring mass of a body.

4. Clock, wristwatch, wall clock, stopwatch.

   **Ans. Stopwatch:** All except stopwatch run continuously and use to measure daily time. But stopwatch is used to measure short time intervals such as time taken by an athlete to complete 100 m race etc.

5. Day, metric tonne, year, century.

   **Ans. Metric tonne:** All except metric tonne are units of time, but metric tonne is a unit of mass.


   **Ans. Metre:** All except metre are units of time. Metre is a unit of length.


   **Ans. Second:** Second is a unit of time but other are units of mass.


   **Ans. Stopwatch:** Stopwatch is an instrument for measuring time and other are different balances for measuring the mass.

9. Second, minute, hour, light year.

   **Ans. Light year:** Light year is a unit for measuring large distances. Whereas other are units of time.

10. Kilogram, gram, milligram, micron.

    **Ans. Micron:** Micron is a small unit for measuring length but other three are units of mass.

11. Metre, kilometre, micron, milligram.

    **Ans. Milligram:** Milligram is a unit of mass but other three are units for measuring length.

12. Cubic metre, cubic centimetre, cubic millimetre, square metre.

    **Ans. Square metre:** Only square metre is a unit of an area but other are units of volume.
13. Square metre, hectare, square kilometre, litre.

**Ans. Litre:** Only litre is the unit for the volume of liquids but other are units for area.


**Ans. Measuring tape:** Measuring tape is a device for measuring length but other are vessels for measuring the volume of liquids.

VI. **Match the following:**

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Length of an object</td>
<td>(a) Stop watch</td>
</tr>
<tr>
<td>2. SI unit of mass</td>
<td>(b) Thread and ruler</td>
</tr>
<tr>
<td>3. SI unit of time</td>
<td>(c) Metre scale</td>
</tr>
<tr>
<td>4. Measurement of body temperature</td>
<td>(d) Graph paper</td>
</tr>
<tr>
<td>5. Measurement of area of an irregular plane surface</td>
<td>(e) Clinical thermometer</td>
</tr>
<tr>
<td>6. Volume of a liquid</td>
<td>(f) Measuring cylinder</td>
</tr>
<tr>
<td>7. Measurement of mass of gold</td>
<td>(g) Inner volume</td>
</tr>
<tr>
<td>8. Capacity of a container</td>
<td>(h) Physical balance</td>
</tr>
<tr>
<td>9. Time interval</td>
<td>(i) Second</td>
</tr>
<tr>
<td>10. Length of a curved object</td>
<td>(j) Kilogram</td>
</tr>
<tr>
<td>11. Thickness</td>
<td>(k) Callipers</td>
</tr>
<tr>
<td>12. Diameter of a solid</td>
<td>(l) Beam balance</td>
</tr>
<tr>
<td>13. Measurement of mass</td>
<td>(m) Ruler</td>
</tr>
</tbody>
</table>

**Ans.** 1. (c) 2. (j) 3. (i) 4. (e) 5. (d) 6. (f) 7. (h) 8. (g) 9. (a) 10. (b) 11. (m) 12. (k) 13. (l)

VII. **Give reasons for the following:**

1. In laboratory we prefer digital balance to measure mass of an object.

**Ans.** Digital balance can be used very easily and is most sensitive and accurate. So, in laboratory it is preferred to measure mass of an object.

2. Stopwatch is used in athletic meet to measure time instead of a wrist watch.
Ans. Stopwatch can be started or stopped at precise moments. So, it is used in athletic meet to measure time instead of a wrist watch.

3. We cannot take arm length as the unit of length.
Ans. The arm length of the humans are different in length for different people. So, it is not a reliable unit of length.

4. All distances are not measured in metres.
Ans. All distances are not measured in metres as some distances are very long and some are very small. So, we use multiples of metre to measure long distances and sub-multiples of metre to measure small distances.

5. Mass of all the objects are not measured in kilograms.
Ans. Some bodies are very heavy and some are very light. So, we use multiples and submultiples of kilogram to measure heavy and light objects respectively.

6. Pendulum is not used for measuring time.
Ans. Pendulum is not used for measuring time as the oscillation of bob is not continuous.

7. Clinical thermometer cannot be used in laboratory.
Ans. Clinical thermometer cannot be used in laboratory because the temperature range that is marked on a clinical thermometer is about 35°C to 43°C, so it is not be able to measure the temperature below 35°C or above 43°C.

8. A Goldsmith uses a digital or a physical balance but not the ordinary beam balance.
Ans. Digital balance or a physical balance is very sensitive and accurate. So, Goldsmith uses a digital or physical balance but not the ordinary beam balance.

9. Multiples and submultiples of a kilogram are used in the measurement of mass.
Ans. To measure the mass of heavy bodies or the mass of small objects, kilogram is not a convenient unit. So, multiples and submultiples of a kilogram are used in the measurement of mass.
10. In the laboratory, we use a physical balance to measure the mass of an object.

**Ans.** Physical balance is very sensitive and accurate. So, it is used in laboratory to measure the mass of an object.

11. We cannot accept the length of the outstretched palm of a person as a unit of measurement.

**Ans.** The length of the outstretched palm is different for different persons. So, we cannot accept the length of the outstretched palm as a unit of measurement.

**VIII. Name the units in which you need to express the following.**

1. Distance from Kolkata to New Delhi.
2. Thickness of a coin.
3. Your age.
4. Buying sugar from grocer’s shop.
5. Buying oil from grocer’s shop.
6. Speed of your school bus.
7. Time taken in 100 m race.
8. Time taken to reach to have your lunch.
9. Duration of winter vacation.
10. Weighing a gold ring.
11. Weighing a sack of rice.
12. Distance between earth and sun.


**IX. Differentiate between:**

1. Area and volume

**Ans.** Area of a plane figure is the measure of the surface enclosed by its boundary.

Volume of an object is the space occupied by it.

2. Wrist watch and stopwatch

**Ans.** A wrist watch runs continuously. But stopwatch is used to measure short time intervals.
3. Clinical thermometer and laboratory thermometer
Ans. Clinical thermometer is used for measuring person’s body temperature. The temperature range that is marked on a clinical thermometer is about 35°C to 43°C. Laboratory thermometer is used to measure temperature in the laboratory. The temperature range marked is from –10°C to 110°C.

Ans. Beam balance is used commonly by people who have to weigh things in bulk. Digital balance is most sensitive and accurate, so it is used in laboratory, jeweller’s shop etc.

5. Ordinary clock and 24 hours clock
Ans. In ordinary clock, the same time is repeated twice in a day and a.m. or p.m. is used. But in 24 hours clock the same time is not repeated in a day and no a.m. or p.m. is used.

6. Tailor’s tape and student’s scale.
Ans. Tailor’s tape is used for measuring longer, straight or curved distances. But student’s scale are mainly used to measure short or straight distances like length of the line or sides of the plane figures.

X. Define the following:
1. One metre
2. One kilogram
3. Lower fixed point and Upper fixed point of a thermometer
4. Temperature
5. Clinical thermometer
6. Surface area
7. Capacity of a container
8. Mass
9. Length
10. Time

Ans. 1. **One metre:** It is defined as the distance between two fine lines engraved on a platinum-iridium bar kept at International Bureau of Weights and Measures in Paris maintained at 0°C.

2. **One kilogram:** It is defined as the mass of a cylinder of platinum-iridium alloy kept at International Bureau of Weights and Measures in Paris.
3. **Lower fixed point and Upper fixed point of a thermometer.**
   Lower fixed point of a thermometer is the temperature of pure melting of an ice i.e. 0°C. The upper fixed point of a thermometer is the temperature of pure boiling water i.e. 100°C.

4. **Temperature:** It is the degree of hotness or coldness of a body.

5. **Clinical thermometer:** It is a thermometer used for measuring person’s body temperature. The temperature range that is marked on a clinical thermometer is about 35°C to 43°C.

6. **Surface area:** The surface area of a plane figure is the measure of the surface enclosed by its boundary. Its SI unit is square metre (m²).

7. **Capacity of a container:** It is the volume or space inside a container. It is expressed in litres (l) and millilitres (ml).

8. **Mass:** The mass of a body is the quantity of matter it contains.

9. **Length:** It is the distance between any two points or places.

10. **Time:** It is the interval between the two events.

**XI. Answer these questions.**

1. Name four early units of measurement of length.
   **Ans.** Four early units of measurement of length are
   (i) outstretch palm (ii) foot length
   (iii) arm length or cubit length, and (iv) a yard length.

2. Why do we need standard units of length for measurement?
   **Ans.** The length of the parts of the body used to measure length are different for different people. So, we need standard units for measurement.

3. What are standard International units of measurements? State the unit of length, mass and time in this system.
   **Ans.** The Standard International units of measurements are the units which are acceptable to majority of the people as a basic unit of measurement.
   The unit of length, mass and time in SI system are metre, kilogram and second respectively.
4. Define the term metre. Name two submultiples and one multiple of metre.

Fig. given below shows a pencil, whose length is measured by placing eye at A, B and C. In which position of eye is the accurate measurement of length recorded? What is the magnitude of accurate length? What is the magnitude of length when eye is placed in other positions?

Ans. The term metre is the length between two fine marks on a metal bar made of platinum-iridium alloy kept at International Bureau of Weights and Measures in Paris maintained at 0°C.
Two submultiples of metre are centimetre and millimetre and one multiple of metre is kilometre.
Position B of eye is the accurate measurement of length.
The magnitude of accurate length is 8 cm. The magnitude of length when eye is placed at A is 8.1 cm, at B is 8 cm and at C is 7.9 cm.

5. What do you understand by the term mass?
Ans. Mass is the amount of matter contained in a substance.

6. Name the SI unit of mass. State two multiples and two submultiples of mass.
Ans. The SI unit of mass is kilogram. Two multiples of mass are quintal and metric tonne. Two sub-multiples of mass are gram and milligram.

7. (a) How many decades make one millennium?
(b) How many centuries make one millennium?
(c) How many years make one millennium?
14. What is meant by the term mean solar day? How many hours are in one mean solar day?

Ans. The average of all solar days in which earth completes one revolution around the sun is called mean solar day. There are 24 hours in one mean solar day.

8. State the fundamental unit of time. State the fractional value of this unit in terms of mean solar day.

Ans. The fundamental unit of time is second.

The fractional value of 1 second in terms of mean solar day is,

1 second = part of mean solar day.

9. What is a 24 hour clock?

Ans. (a) A 24 hour clock is a system of representing time such that the same time is not repeated and no a.m. or p.m. is used.

(b) Airport and Railway use 24 hour clock.

10. (a) What is a 24 hour clock?

(b) Which two organisations use 24 hours clock?

Ans. (a) A 24 hour clock is a system of representing time such that the same time is not repeated and no a.m. or p.m. is used.

(b) Airport and Railway use 24 hour clock.

11. The time on the 24 hour clock is

(a) 08 h – 37 min
(b) 23 h – 48 min. Express the time on 12 hour clock.

Ans. (a) 08h – 37 min = 08 h – 37 min = 8:37 am
(b) 23 h – 48 min = (23 : 48 – 12 : 00) h = 11 h 48 min = 11:48 pm

12. A brass bob is suspended by a thin strong thread and allowed to oscillate, such that length of the pendulum is 1 m.

(a) In how many seconds will this pendulum complete one oscillation?

(b) If a boy finishes a race, when this pendulum makes 11 oscillations, how much time does the boy takes in finishing the race?

Ans. (a) The pendulum completes one oscillation in 2 seconds.

(b) Time taken for 1 oscillation = 2 seconds.
So, the time taken in finishing the race
\[ = 11 \times 2 \text{ seconds} \]
\[ = 22 \text{ seconds}. \]

13. (a) What do you understand by the term temperature?
(b) Name a device used for measuring temperature.
(c) Name the scale in which temperature is measured.
(d) What is the temperature of (i) pure boiling water (ii) pure melting ice?

**Ans.**
(a) Temperature is the degree of hotness or coldness of a body.
(b) Thermometer
(c) Kelvin or degree celsius (°C)
(d) (i) The temperature of pure boiling water = 100°C
(ii) The temperature of pure melting ice = 0°C

14. (a) State SI unit of temperature.
(b) What is the magnitude of temperature in SI scale for:
   (i) Lower standard point? (ii) Upper standard point?

**Ans.**
(a) Kelvin
(b) (i) Lower standard point = 273 K
(ii) Upper standard point = 373 K

15. Draw a neat and labelled diagram of a laboratory thermometer.

**Ans.**

16. (a) What is a clinical thermometer?
(b) Why is this thermometer marked between 35°C and 43°C?
(c) What is the normal temperature of the human body?
(d) What conclusions can be drawn if the temperature of a patient is (i) 39.4°C (ii) 35.2°C?

**Ans.**
(a) The thermometer which is used to measure the temperature of a human body is called clinical thermometer.
(b) It is marked between 35°C to 43°C because the
temperature of the human body does not fall below 35°C and rise above 43°C.
(c) The normal temperature of the human body is 37°C.
(d) (i) If the temperature of a patient is 39.4°C, it means the person is running fever.
(ii) If the temperature of a patient is 35.2°C, it means the person is weak and his body is not generating enough heat energy.

17. Draw a neat and labelled diagram of clinical thermometer.
Ans.

18. What do you understand by the term estimation?
Ans. Estimation is a quick judgement about a measurement of some particular quantity.

19. The figure below shows four identical wooden rods, placed side by side, such that their total thickness is 5 cm. Find the thickness of a single rod, correct to two decimal places.

Ans. Total thickness of 4 rods = 5 cm
∴ Thickness of 1 rod = \( \frac{5}{4} \) cm = 1.25 cm.

20. 24 coins are placed one upon another and their total thickness is recorded by a half metre scale. The thickness is found to be 4.8 cm. Find the thickness of each coin in millimetres.
Ans. Total thickness of 24 coins = 4.8 cm = 4.8 × 10 mm = 48 mm
Number of coins = 24

\[
\text{The thickness of 1 coin} = \frac{48}{24} \text{ mm} = 2 \text{ mm}
\]

21. What is meant by measurement?
Ans. Measurement of a physical quantity is its comparison with a known standard quantity.

22. What do you understand by the term unit?
Ans. By the term unit we mean the each accepted standard quantity, used for comparison.

23. State two characteristics of a standard unit.
Ans. Two characteristics of a standard unit are
(i) it is of a convenient size,
(ii) its value does not change with respect to place or time.

24. What is time? What is its SI unit?
Ans. The interval between the two events is called time. The SI unit of time is second.

25. Name two devices used to measure time.
Ans. Two devices used to measure time are
(i) Wrist watch, and (ii) Stopwatch

26. Name three devices used for measuring length.
Ans. Three devices used for measuring length are measuring tape, metre scale, screw gauge.

27. Write three precautions one should take while measuring length.
Ans. Three precautions one should take while measuring length are
(i) place the eye at the correct position, vertically above the end where the reading is to be taken.
(ii) the ruler should be kept exactly along the length to be measured, and
(iii) the ends of the ruler must not be worn out.

28. (a) What do you understand by the area of an object?
(b) State the Standard International unit of area.
(c) How can we find the area of a rectangular body if we know its length and breadth?
Ans. (a) The area of object is the measure of the surface enclosed by the object.
(b) The Standard International unit of area is m² (square metre).
(c) If we know the length and breadth of a rectangular body, then the area of rectangular body = length \times breadth.

29. A school hall measures 20 m in length and 12 metres in breadth. Find its area.
Ans. Length of the school hall = 20 m
      Breadth of the school hall = 12 m
\therefore \quad \text{Area} = \text{Length} \times \text{Breadth}
= 20 \text{ m} \times 12 \text{ m}
= 240

30. Name two sub-multiples and two multiples of Standard International unit of area.
Ans. Two sub-multiples of Standard International unit of area are square centimetre and square millimetre.
      Two multiples of Standard International unit of area are hectare, and square kilometre.

31. Name the units in which you will measure the area of the following objects:
    (i) A 24 paise coin (ii) A playing card
    (iii) Area of your classroom
    (iv) Area of a big agricultural field
    (v) Area of a district.
Ans. (i) Square millimetre  (ii) Square centimetre  (iii) Square metre  (iv) Square kilometre hectare.

32. The length of a school compound is 450 m and breadth is 145 m. Find the area of compound in (i) m² (ii) hectares.
Ans. Length of the school compound = 450 m
      Breadth of the school compound = 145 m
      (i) Area of compound = 450 \times 145 = 65250 \text{ m}^2
      (ii) 1 \text{ hectare} = 10000 \text{ m}^2
... Area of compound \( = 65250 \text{ m}^2 = \frac{65250}{10000} \) hectares

\[ = 6.525 \text{ hectares}. \]

33. (a) What do you understand by the term volume of a substance?
   (b) State the unit of volume in Standard International system.
   (c) Define the unit of volume in Standard International system.

Ans. (a) Volume of a substance is the space occupied by a substance.
   (b) The unit of volume in Standard International system is cubic metre or \( \text{m}^3 \).
   (c) The unit of volume in Standard International system is cubic metre.
       One cubic metre (1 \( \text{m}^3 \)) is the volume occupied by a cube whose each side is equal to 1 m.

34. (a) Why the volume of a match box is not measured in Standard International system?
   (b) Name and define the unit in which the volume of match box is measured.
   (c) Describe in detail how will you find the volume of match box using a centimetre ruler.

Ans. (a) The dimensions of a match box are very small. So, the volume of a match box is not measured in Standard International System.
   (b) The volume of match box is measured in cubic centimetre (cm\(^3\)).
       One cubic centimetre is the volume occupied by a cube whose each side is equal to 1 cm.
   (c) First measure the length, breadth and thickness or height of the match box using a centimetre ruler.
       Let, length \( = l \) cm
       breadth \( = b \) cm
       height \( = h \) cm
Then volume of the match box = \( l \ cm \times b \ cm \times h \ cm \)
\[ = (l \times b \times h) \ cm^3 \]

35. By using overflow jar, how will you measure volume of a glass stopper?

**Ans.** To measure the volume of a glass stopper, first fill the overflow jar completely with water. Place a measuring cylinder under the spout of the overflow jar. Gently lower the glass stopper in the overflow jar. The displaced water by the solid will flow out from the spout into the measuring cylinder. The volume of this displaced water is the volume of the glass stopper.

36. Amongst the units of volume (i) \( \text{cm}^3 \) (ii) \( \text{m}^3 \) (iii) litre (iv) millilitre, which is most suitable for measuring:
   (a) Volume of a swimming tank,
   (b) Volume of a glass filled with milk,
   (c) Volume of an exercise book,
   (d) Volume of air in a room?

**Ans.** (a) litre (b) millilitre (c) cubic centimetre (d) cubic metre

37. Find the volume of a book of length 25 cm, breadth 18 cm and height 2 cm.

**Ans.**
Length of the book = 24 cm
Breadth of the book = 18 cm
Height of the book = 2 cm
\[ \therefore \text{Volume of the book} = \text{length} \times \text{breadth} \times \text{height} \]
\[ = 25 \ \text{cm} \times 18 \ \text{cm} \times 2 \ \text{cm} \]
\[ = 900 \ \text{cm}^3. \]

38. The level of water in a measuring cylinder is 12.5 ml. When a stone is lowered in it, the volume is 21.0 ml. Find the volume of the stone now.

**Ans.**
Volume of water in the cylinder without stone = 12.5 ml
Volume of water in the cylinder with stone = 21.0 ml
\[ \therefore \text{The volume of the stone} = (21.0 - 12.5) \ \text{ml} = 8.5 \ \text{ml}. \]

39. A bottle of tonic contains 240 ml of the medicine. David has
been told by the doctor that he should take two teaspoons, thrice a day. Each teaspoon measures 5 ml. For how many days will he take the tonic?

**Ans.**
- Tonic contained in a bottle = 240 ml
- Tonic used in 1 day = 5 × 2 × 3 ml = 30 ml

∴ Number of days he will take the tonic = \( \frac{240\text{ ml}}{30\text{ ml}} \) = 8 days.

**40.** Amit bought 110 pieces of sweets. The total weight of the sweets was 7 kg 40 g. What was the weight of each piece?

**Ans.**
- Total weight of 110 sweets = 7 kg 40 g
- \( = 7 \times 1000 + 40 \text{ g} = 7040 \text{ g} \)

∴ Weight of 1 piece of sweet = \( \frac{7040\text{ g}}{110\text{ g}} \) = 64 g.

**41.** 1 kilogram is equal to how many micrograms?

**Ans.**
- 1 kilogram = 1000 g
- \( = 1000 \times 1000 \text{ mg} = 10^6 \times 1000 \mu\text{g} \)
- \( = 10^9 \mu\text{g} \)

**42.** 8 days and 4 hours is equal to how many hours?

**Ans.**
- 1 day = 24 hours
∴ 8 days and 4 hours = \( (8 \times 24 + 4) \text{ hours} \)
- \( = 192 + 4 \text{ hours} \)
- \( = 196 \text{ hours} \).

**43.** The length of your classroom is 10 m and breadth 8 m. What is the area of the floor of the room?

**Ans.**
- The length of classroom = 10 m
- The breadth of classroom = 8 m
∴ The area of the floor of the room
- \( = \text{length} \times \text{breadth} \)
- \( = 10 \text{ m} \times 8 \text{ m} = 80 \text{ m}^2 \)

**44.** The length, breadth and height of a glass slab are respectively
25 cm, 10 cm and 5 cm. Find the volume of the slab in SI unit.

**Ans.** Length of glass slab = 25 cm  
Breadth of glass slab = 10 cm  
Height of glass slab = 5 cm  
∴ Volume of the slab in SI Unit

\[ \text{Volume} = \text{length} \times \text{breadth} \times \text{height} \]

\[ = \frac{25 \times 10 \times 5}{100 \times 100 \times 100} \text{ m}^3 \]

\[ = \frac{125}{100000} \text{ m}^3 \]

\[ = 1.25 \times 10^{-3} \text{ m}^3. \]

45. A pendulum completes 20 oscillations in 38 secs. What is its time period?

**Ans.** Total time taken to complete 20 oscillations = 38 second

∴ Time period of pendulum = \[ \frac{38}{20} \] seconds = 1.9 seconds.

46. The mass of 20 one rupee coin is 198 g. Find the mass of each coin in SI unit.

**Ans.** Total mass of 20 one rupee coins = 198 g

∴ Mass of 1 one rupee coin = \[ \frac{198}{20} \] g = 9.9 g

\[ = 0.0099 \text{ kg} \]

\[ = 9.9 \times 10^{-3} \text{ kg} \]