1. QUESTIONS AND ANSWERS

Q.1. Fill in the blanks

(1) System International (SI), is currently used all over the world. It is also called the ..... .

(2) .....is the qualitative measure of the inertia of an object.

(3) A quantity that can be completely expressed by its .....alone is called a scalar quantity.

(4) .....are vector quantities .

(5)..... means one thousand million cubic feet.

(6) In the CGS System distance is measured in .....mass in .....and time in seconds.

(7) In Egypt in ancient times, the distance from a man's elbow to the tip of his middle finger was called a .....

(8) In the MKS System of measurement, distance, mass, and time are accepted as the..... .

Answer : i) metric system. ii) Mass iii) magnitude iv) Displacement, velocity v) 1 TMC vi)centimetres, grams vii)'cubit' viii)fundamental quantities

Q 2. Who is my companion ?

1.

Group 'A'	Group 'B'
(1) Velocity	(a) litre
(2) Area	(b) Kilogram
(3) Volume	(c) Metre/second
(4) Mass	(d)Kilogram/cubic metre
(5) Density	(e) square metre

Answer :

Group 'A'	Group 'B'	Answer
(1) Velocity	(a) litre	Metre/second
(2) Area	(b) Kilogram	square metre
(3) Volume	(c) Metre/second	litre
(4) Mass	(d)Kilogram/cubic metre	Kilogram
(5) Density	(e) square metre	Kilogram/cubic metre

2.

Group 'A'	Group 'B'
(1) MKS	(a) Fundamental quantities
(2) Hand	(b) Vector
(3) Metre	(c) Standardized measure
(4) Displacement	(d) Inaccurate measure
(5) Time	(e) Kilogram

Answer :

Group 'A'	Group 'B'	Answer
(1) MKS	(a) Fundamental quantities	Kilogram
(2) Hand	(b) Vector	Inaccurate measure
(3) Displacement	(c) Standardized measure	Vector
(4) Metre	(d) Inaccurate measure	Standardized measure
(5) Time	(e) Kilogram	Fundamental quantities

Q.3. Write answer to the following questions in your own words.

(a) Why is the weight of the same object different on different planets ?

Ans: The weight is define as 'the gravitational force that acts on this mass'. The gravitational force by which the earth attracts as object towards its centre is called the weight of the object on the earth. But on different planets the gravitational force may be of different magnitude. Therefore, the weight of the same object will be different on different planets.

(b) What precautions will you take to make accurate measurements in day-to-day affairs?

Ans : (1) Before buying the We must check that the things which we buy have been weighed properly by standardized weights and balance. (2) The shopkeepers and the hawkers use balances. We must confirm that these balances carry the stamp of standardization (3) Proper instruments should be used while taking any measurements.(4) These instruments should be used by proper and scientific procedure. (5) The balance should be stable. With its pointer in upright position. (6) The underside of the balance should be checked for any tempering done. (7) The weight used should be of proper metals.

(c) What is the difference between mass and weight ?

Ans:

Mass	Weight
1. Mass is a scalar quantity.	1. Weight is a vector quantity.
2. Mass remains the same everywhere.	2.Weight may differ in different places and in different conditions.
3. The amount of matter present in a substance is called mass.	3. The gravitational force that acts on this mass is called its weight.

Q 4. Define the following :

1. Mass :-

(1)Mass is the qualitative measure of the inertia of an object.

(2) Mass is scalar quantity.

(3) The larger the mass, the greater is the inertia.

2. Weight :-

(1) The gravitational force that acts on this mass is called its 'weight'.

(2) Weight is a vector quantity.

(3) It is different at different places on the earth.

3. MKS System :-

(1) In this system distance is measured in metres, mass in kilograms and time in seconds.

(2) In the MKS System of measurement, distance, mass, and time are accepted as the fundamental quantities. These three quantities are used to measure all other quantities.

4. CGS System :-

In this system distance is measured in centimeters, mass in grams and time in seconds.

5. International System of units :-

(1) An international system of units bases on seven fundamental units, called the System International (SI).

6.Metric system:-

The System International (SI), is currently used all over the world. It is also called the metric system.

Q 5. Explain giving examples:

(1) Scalar quantity : A quantity that can be completely expressed by its magnitude alone is called a scalar quantity. e.g., length, breadth, area, mass, temperature, density, time, work, etc. In scalar quantity only magnitude, i.e. a value with a unit, is used to express it.

(2) Vector quantity : The quantity that is expressed completely only when magnitude and direction are both given is called a vector quantity.

(1)(i) The displacement of 30 kilometres to the South and (ii) Displacement of 30 kilometres to the West is different from each other. Here the distance is same but the direction of the displacement is different from each other.

(2) (i) The Motor car travelling at the speed of 800 km/hour to the South and another Motor car travelling 800km/hour to the West are different from each other. Here speed is the same but in (ii) the direction of velocity is different.

Q 6. Explain, giving examples, the errors that occur while making measurements.

Ans: The major causes of errors in the measurement are as follows :

1. Not using the appropriate device at the time of measurements:-

(1) The standardized weights is not used by hawkers and vegetable seller at the time of business. They use stone pieces or some other matter. This results in inaccuracy of measurements. (2) The balance may not be working properly. (3) The indicators on the machines may not work properly, Sometimes while buying petrol or diesel,

2. Not using the deice properly :- (1) In daily life we uses many equipments of measurements such as spring balance, measuring tape, weighing balance, ruler, different weight of specific value. Measuring vessels for milk, Oil etc. (2) Some times, weight Printed on the packed product is not correctly measured.(3) While weighing on balance, the jerk given causes pointer to fluctuate and give improper reading. (4) While measuring the cloth from the bundle, the shop keeper may not measure the cloth with accuracy. Customers should pay keen attention to the measurements while buying things.

Q 7. Give reasons.

(a) It is not proper to measure quantities by using body parts as units.

Ans : As measurement of body parts for every person will be different. No standardization is taken. Therefore, it is not proper to measure quantities by using body parts. As the body parts for every person is different, the measurement taken on this body part will be different.

(b) It is necessary to get the weights and measures standardized at regular intervals.

Ans : Constantly use of the weights and the weighing apparatus may lose their standardization. Using such leads to

mal practice. Therefore, It is necessary to get the weights and measures standardized at regular intervals.

(c) The cubit was considered as standard.

Ans : In Egypt in ancient times, the distance from a man's elbow to the tip of his middle finger was called a 'cubit' This measure would differ from person to person. Therefore The cubit was considered as standard.

Q 8. Explain the need for accurate measurement and the devices to be used for that.

Ans : The need for accurate measurement is dependent on the following factors :

(1) Digital thermometers are not used for the measurement of body temperature accurately.(2) The measurement of anything should be absolutely accurate in our daily life. If measurements are not done properly, it may have long-lasting bad effects. (3) The sports competitions like Olympics need extremely accurate clocks for measuring distances and time.(4) Measurement of precious substances is extremely important. Also the substances used in very small quantities have to be measured meticulously and accurately. e.g. Precious metals of gold and silver

should be accurately measured. (5) Proper instruments are now available due to advancement in science and technology. devices that measure very small magnitudes of quantities like distance, mass, time and temperature, are now available These devices and instruments should be used with precision.

Q 9 What is an atomic clock? Where is it kept?

Ans : Atomic clock is a device that works with utmost accuracy. Its work is dependent on the vibrations of atoms and molecules. The functioning is due to molecular systems of Caesium or ammonia. The atomic clock in Mumbai is in National Physical Laboratory in New Delhi

Q 10. How is the velocity of light used for determining the standard meter?

Ans : The light ray passes through a vacuum at the velocity of 1/299792458 seconds. This distance is called one meter. In other words, the light ray travels 299792458 meters is one second. To standardize a meter in this way velocity of light is used.

Q 11. Explain Physical quantities

Ans : Physical quantities are the quantities such as mass, weight, distance, speed, temperature, volume etc e.g. weight of fruits, vegetables, good grains, temperature of the body or some liquids, volume of liquids, density of solid, liquid or gaseous substances, the speed of vehicles, etc are measured by their physical quantities.

Q 12 Explain Standardized measurement

Ans : It is not scientifically correct to measure the physical quantities without any standard method. Hence to keep uniformity of measurement, a standardized measurement methods have to be followed. For accurate and standard measurement, every physical quantity is measured in a standard and specific unit. E.g Length is always measured in unit of metre.

Q 13. Explain Fundamental quantities

Ans : The quantities for which the standardized units can be decided are called fundamental quantities e.g the distance and time are the quantities for which standard units have been decided.

There is fundamental unit for each fundamental quantity this fundamental unit is available to all. There are seven basic fundamental quantities.