Class 9 KPK board

Conceptual Questions

Chapter # 1

1. **How technology is shaped by physics?**

Ans: Physics and technology are closely related. Therefore physics has a key role in the progress of humankind and in the improvement of quality of living.

The technologies shaped by physics are:

i. Physics provide basic understanding for developing new instruments for medical application such as CT Scan, MRI, PET etc.

ii. The use of physics in information technology has improved the standard of communication such as mobile cell phones and hologram technology etc.

2. **Physics and biology are considered different branches of science, how physics links with biology?**

Ans: Physics is the root of every field of science. One of the major developments in Biology and even in medicine have been made by physicists.

Examples

Physics provide basic understanding for developing new instruments for medical application such as CT Scan, MRI, PET and laser surgeries.

3. **Why measurements important?**

Ans: Measurement

Measurement is a technique by comparing a quantity with a standard unit.

Explanation

Measurements required tools and provide scientists with a quality. Measurement is not only the fundamental concepts in science but also in our daily life. Without measurements, it would be difficult for scientists to conduct experiments.

Importance

Measurement is mainly use in industries like construction, manufacturing, farming, engineering and a lot of other activities.

4. Why area is a derived quantity?

Ans: Reason

Area is a derived quantity because it is derived from two base quantities.

Explanation

As area is the product of length "l" and width "w" i.e. A = l x w

Here both are lengths and we know that length is base quantity. As area is the product of two base quantities that is why area is derived quantity.

5. Name any four derived units and write them as their base units?

Ans: Four derived units and their base units are listed below:

Derived Quantities	Derived Units	Base Units
Area	m^2	$m \times m$
Volume	m^3	$m \times m \times m$
Acceleration	$\frac{m}{s^2}$	$\frac{m}{s \times s}$
Force	Newton	$kg \times \frac{m}{s \times s}$

6. Why in physics we need to write in scientific notation?

Ans: Reason

In physics we need scientific notation because to write too big or too small numbers easily in decimal form.

Explanation

In physics some time we deal with large numbers and sometime very small number, it becomes difficult to write these numbers.

So scientific notation is an easy way to write these numbers in decimal numbers which is commonly used in physics.

Advantages of Scientific Notation

- Time saving
- Space saving
- Chances of error are reduced
- Easy to manipulate

7. What is least count? How least count for vernier calipers and screw gauge are defined?

Ans: Least count

The smallest value up to which measuring instrument can be measured.

Least count of vernier caliper

$$Least\ count = One\ main\ scale\ division - One\ vernier\ scale\ division$$

$$Least\ count = 1mm - 0.9mm$$

$$Least\ count = 0.1mm$$

Least count of screw gauge

$$Least\ count = \frac{Pitch\ of\ screw\ guage}{Total\ number\ of\ divisons\ on\ circular\ scale}$$

If the pitch is 0.5 mm and divisions on circular scale is 50, then

$$Least\ count = \frac{0.5mm}{50}$$

$$Least\ count = 0.01mm$$

8. How can we find the volume of small pebble with the help of measuring cylinder?

Ans: Procedure

1. Water is poured into measuring cylinder until the cylinder is about half full.
2. Measure the volume and pebble is lowered gently into it.
3. When the object is completely immersed, note the volume again.
4. The volume of pebble is found by subtracting the first reading from the second.