

# 1 Lecture - PHY301

## Important Subjective

**What is the International System of Units (SI)?**

**Answer:** The International System of Units (SI) is the modern form of the metric system, which is the standard system of measurement used worldwide.

**What are the seven base units of the SI?**

**Answer:** The seven base units of the SI are meter (m), kilogram (kg), second (s), ampere (A), kelvin (K), mole (mol), and candela (cd).

**What is the meter and what is it used for?**

**Answer:** The meter is the SI unit of length and is defined as the distance traveled by light in a vacuum during a specific time interval. It is commonly used to measure distances or lengths.

**What is the kilogram and what is it used for?**

**Answer:** The kilogram is the SI unit of mass and is defined as the mass of a specific physical prototype made of platinum-iridium alloy. It is commonly used to measure the mass of objects.

**What is the second and what is it used for?**

**Answer:** The second is the SI unit of time and is defined as the duration of 9,192,631,770 cycles of the radiation corresponding to the transition between two energy levels of the cesium-133 atom. It is commonly used to measure time intervals.

**What is the ampere and what is it used for?**

**Answer:** The ampere is the SI unit of electric current and is defined as the constant current that, if maintained in two parallel conductors of infinite length, of negligible circular cross-section, and placed one meter apart in a vacuum, would produce a force between these conductors of  $2 \times 10^{-7}$  newton per meter of length. It is commonly used to measure electrical current.

**What is the kelvin and what is it used for?**

**Answer:** The kelvin is the SI unit of temperature and is defined as the fraction  $1/273.16$  of the thermodynamic temperature of the triple point of water. It is commonly used to measure temperature.

**What is the mole and what is it used for?**

**Answer:** The mole is the SI unit of amount of substance and is defined as the amount of a substance that contains as many elementary entities (such as atoms, molecules, ions, or electrons) as there are atoms in 0.012 kg of carbon-12. It is commonly used to measure the amount of a substance in chemistry.

**What is the candela and what is it used for?**

**Answer:** The candela is the SI unit of luminous intensity and is defined as the luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency  $540 \times 10^{12}$  Hz and that has a radiant intensity in that direction of  $1/683$  watt per steradian. It is commonly used to measure the brightness of light sources.

**Why is the SI important?**

**Answer:** The SI is important because it provides a standardized system of measurement that can be used globally, which facilitates communication and collaboration in science, engineering, and industry. The SI also enables accurate and precise measurements, which are essential for scientific research, technological innovation, and quality control in manufacturing.