

Important Concepts for General Science: UPSC IAS Prelims

UPSC IAS Exam is one of the toughest competitive examinations where its syllabus includes different subjects like Geography, Polity, History, Economic and General Science. The General Science which deals with Biology, Physics, and Chemistry has a key role in this Examination. Normally few questions from the topic Scientific Laws and Theories can be seen in recent times UPSC IAS Prelims Exam. So, the laws and theories should not be neglected if you are preparing for the UPSC IAS Prelims Examination.

A Scientific Law is the explanation of an experimental phenomenon. It doesn't describe why the phenomenon happens or what causes it. The description of the phenomenon is called a Scientific Theory. There are lots of scientific theories and laws especially in Physics and chemistry which we studied from our school days. These are essential for the UPSC IAS prelims exam as UPSC tends to ask more questions on this. Already we have come up with an article on How to Prepare for Science Subjects for the UPSC Civil Services Prelims Exam. Here we are giving the all laws in a nutshell. This will help your last minute UPSC IAS Prelims Exam Preparation.

General Science Principles for UPSC

Name of Principles/Law/Theories	Definition
Archimedes' principle	It states that a body when entirely or partially dipped in a liquid, experiences an upward thrust which is equivalent to the weight of the liquid expatriated by it. Thus, the body seems to lose a part of its weight. This loss in weight is equivalent to the weight of the liquid displaced by the body.
Avogadro's Law	It states that equal volumes of all gases under like conditions of temperature and pressure comprise the same number of molecules.
Brownian motion	It is a zigzag, asymmetrical motion displayed by small solid particles when suspended in a liquid or gas due to uneven bombardment by

	the gas and liquid molecules.
Bernoulli's principle	It states that as the speed of a moving fluid, gas or liquid, surges, the pressure within the fluid declines.
Boyles's Law	It states that temperature lasting constant, volume of a given mass of a gas varies inversely with the pressure of the gas.
Charles's Law	The law states that pressure remaining constant, the volume of a given mass of gas rises or drops by $\frac{1}{273}$ part of its volume at 0 degree Celsius for each degree Celsius rise or fall of its temperature.
Coulomb's Law	It states that force of attraction or repulsion between two charges is proportionate to the amount of charge on both charges and inversely proportional to the square of the distance between them.
Law of conservation of energy	It states that energy can neither be generated nor demolished but it can be converted from one form to another. Meanwhile, energy cannot be made or demolished; the amount of energy existing in the universe always remains constant.
Newton's First Law of Motion	An object at rest inclines to stay at rest, and an object in motion inclines to stay in motion, with the same speed and direction in a straight line if acted upon by some external force.
Newton's Second Law of Motion	The rate of change of momentum of a body is directly proportional to the force applied and takes place in the direction in which the force acts.

Newton's Third Law of Motion	To every action there is an equal and opposite reaction.
Ohm's Law	It states that the current passing via a conductor between two points is directly proportional to the potential variance across the two points given the temperature and physical state of the conductor does not alter.
Tyndall effect	The scattering of light by very small particles suspended in a liquid or gas.
Big Bang Theory	This theory states that the universe began almost 14 billion years ago with a massive expansion event. At the time, the universe was confined to a single point, encompassing all of the universe's matter. That original movement continues today, as the universe keeps expanding outward.
Hubble's Law of Cosmic Expansion	An equation that states: $\text{velocity} = H \times \text{distance}$. Velocity represents the galaxy's recessional velocity; H is the Hubble constant, or parameter that indicates the rate at which the universe is expanding; and distance is the galaxy's distance from the one with which it's being compared.

Joule–Lenz law	It states that the power of heating generated by an electrical conductor is proportional to the product of its resistance and the square of the current:
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