

Syllabus for the Bangladesh Physics Olympiad

Category A (Class 7 & 8)

Measurement:

Slide calipers, Error in slide calipers, Uses of slide calipers, Measurements of area and volume of different shaped bodies.(Circumference & area of circle, area of rectangle, square, triangle & trapezium, area & density of cube shaped body)

Structure of substances:

Concept of atom & molecule, Molecular structure of solid, liquid & gas, intermolecular distance, intermolecular force, Change of state.

Mechanics:

Speed, Displacement & Velocity, Uniform & non uniform motion, Acceleration, & retardation,

Heat:

Concept of heat, Effect of heat, Origin of heat, Unit of heat – Calorie and Joule, Temperature, Difference between heat & temperature, Specific heat, Different scales of temperature (Celsius & Fahrenheit scales) & the relation between them, Melting & boiling points, Expansion of solids, Linear expansion, Superficial expansion & Cubical or volume expansion, Coefficient of linear, superficial & cubical (volume) expansion, Expansion of liquid & gas, Specific heat, Conductor and Insulator of heat, Methods of heat transfer – conduction, convection & radiation, Conductor & insulator of heat, Applications of heat phenomena-Thermo Flask, Land & sea breezes, Uses of heat energy in daily life, Boyle's law, Charle's law.

Pressure:

Pressure in liquid, Pascal's law, Hydraulic press.

Mass, weight & density:

Concept of mass, weight, density & their measurements.

Atmosphere:

Atmospheric pressure, Barometer, Manometer, Applications of atmospheric pressure, Concept of water cycle, carbon cycle & nitrogen cycle.

Gravitation:

Gravity, Gravitation, Mass & Weight, Difference between mass & weight Newton's law of gravitation, Force of gravity, Acceleration due to gravity, Gravity & Universe.

Sound:

Concept of sound, Mechanism of sound transfer, velocity of sound, Audible range, Ultrasonic & infrasonic waves, Echo, Uses of sound in daily life.

Magnetism:

Magnet, properties of magnet, Magnetic induction, Magnetic field, Magnetic lines of force & their properties, Earth's magnetic field, Neutral point, Uses of magnet.

Electricity:

Electric potential, Concept of current, Conventional & original direction of current, Coulomb's law, Unit of charge – Coulomb, Unit of current – Ampere, Unit of electric potential – volt, Resistance & its unit, Electric power & its unit – KW, Electrical energy & its unit – KWh, Direct & Alternating currents, Electrical circuits, Circuit diagram & circuit symbols, Series & parallel circuits, Ammeter, Voltmeter, Switch, Fuse, Circuit breaker, Earth wire, Cell, Danger of electricity, Various cells, Uses of electricity – Electric bell, electric heater, electric bulb.

Light:**Reflection of light:**

Reflection of light, Regular & diffused reflection, Laws of reflection, Image, Reflection of light in plane mirror, Periscope, Image, Virtual & real images, Multiple reflection, Uses of reflection.

Refraction of light:

Refraction of light, Rules & reasons of refraction, Examples of refraction, Critical angle & total internal reflection, Refraction through glass slab, Refraction through glass prism, Spherical mirrors, Lenses, Effects of refraction, Mirage, Uses of refraction.