Syllabus for the Bangladesh Physics Olympiad for 2021-2022 Category A (Class 6 & 7)

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 and spherical bodies)

Structure of substances:
Concept of atom & molecule, Molecular structure of solid, liquid & gas, intermolecular distance, inter-molecular force, Change of state.

Mechanics:
Speed, Displacement & Velocity, Uniform & non uniform motion, Acceleration, motion in uniform gravitational field, equation for constant acceleration. Rotation and angular velocity, Newton's Laws of Motion, conservation of linear momentum, Simple pendulums

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 (Kelvin, Celsius & Fahrenheit scales) & the relation between them, Absolute temperature, 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, Conductor and Insulator of heat, Methods of heat transfer – conduction, convection & radiation, Heat exchange Applications of heat phenomena - Thermo Flask, Land & sea breezes, Uses of heat energy in daily life, Boyle's law, Charles' law, Gay-Lussac's law.

Fluid:
Pressure in liquid, Pascal's law, Hydraulic press, Archimedes' Law, conditions for objects to float.

Mass, weight & density:
Concept of mass, weight, density & their measurements

Atmosphere:
Atmospheric pressure, Barometer, Manometer, Applications of atmospheric pressure

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

Sound:
Concept of sound, Mechanism of sound transfer, Audible range, Ultrasonic & infrasonic waves, Echo, Uses of sound in daily life, wave, phase

Magnetism:

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

Electricity:

Electric potential, Electric field, Force on charges in a constant electric field, Superposition principle, Coulomb's law, Electric field lines and their properties, 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 and combination of resistors, Ammeter, Voltmeter, Switch, Fuse, Circuit breaker, Earth wire, Cell, Danger of electricity, Various cells, Uses of electricity – Electric bell, electric heater, electric bulb, Ohm's law and its graphical representation, Resistance of wires with constant cross section, Concept of Short circuit and open circuit.

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, Snell's Law, 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, Relation of refractive index with the speed of light in the media.

Math:

Solving linear equations of 2 variables, solving quadratic equations, finding slope of straight lines from graph or equation of the line, Area of different types of triangles and quadrilaterals, Symmetry

NOTE: Questions may contain concepts not contained in the syllabus, but sufficient information will be given so that candidates without previous knowledge of those topics would not be at a disadvantage.