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| **Indian School Al Wadi Al Kabir - Syllabus break up for 2018-19**  **PHYSICS** | | | | | |
| Class 11  PHYSICS | Week1  (1 - 2) | Week2  (5 - 9) | Week3  (12 - 16) | Week4  (19 - 23) | Week5  (26 -30) |
| **August**  **(1-31)** | **UNITS AND MEASUREMENTS**  Dimensions of physical quantities, dimensional analysis and its applications. | **LAWS OF MOTION**Intuitive concept of force. Inertia, Newton’s first law of motion; momentum and Newton’s second law of motion; impulse; | Newton’s third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction,lubrication.  Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on banked road). | Work, Energy and Power Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power.Notion of potential energy, potential energy of a spring, conservative forces. | Conservation of mechanical  energy (kinetic and potential energies); non-conservative forces motion in a vertical circle;  elastic and  inelastic collisions in one and two dimensions. |
| **PRACTICAL:**   * CYCLE-1 CONTINUES * SCREW GUAGE-1 * VERNIER CALIPERS-1 * SIMPLE PENDULUM | | | | | |

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| **SEPTEMBER**  **(01 – 30)** | **)** | 1. **- 06)**   **MOTION OF SYSTEM OF PARTICLES AND RIGID BODY** Centre of mass of a two-particle system, momentum conservation and centre of mass motion.  Centre of mass of a rigid body; centre of mass of a uniform rod. | **(09 - 13)**  Moment of a force, torque, angular momentum,laws of conservation of angular momentum and itsapplications  Equilibrium of rigid bodies.Rigid body rotation and equations of rotational motion, comparison of linear  and rotational motions  Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no  Derivation | **(16 - 20)**  ASSESSMENT - 1 | **(23-27)**  **A 1 ENDS** |
| **PRACTICAL : CYCLE –II**   * **VERNIER CALIPER-II** * **Spring Constant** * **Parallelogram law** | | | | | |

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| **October (1 - 31)** | **(1-4)**  **MOTION OF SYSTEM OF PARTICLES AND RIGID BODY**  Statement of parallel and perpendicular axes theorems and their applications.  Statement of parallel and perpendicular axes theorems and their applications.  GRAVITATION-  Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential, | **(9 - 11)**  Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential. Escape velocity,orbital velocity of a satellite.  Geo-stationary satellites. | **(14 - 18)**  **PROPERTIES OF BULK MATTER** Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus  of rigidity, Poisson's ratio; elastic energy. | **(21 - 24)**  Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity,, | **(28 - 31)**  Properties of Bulk Matter Bernoulli'stheorem and its applications. Surface energy and surface tension, angle of contact, excess of pressure across a curved surface,  Applicationof surface tension ideas to drops, bubbles and capillary rise. |
| **PRACTICAL : CYCLE –II**   * **VERNIER CALIPER-II** * **Spring Constant** * **Parallelogram law** | | | | | |

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| **November (1 - 30)** | **(1)**  **THERMAL PROPERTIES OF MATTER**  Heat, temperature, thermal expansion.  ; | **(04 - 08)**  Thermal expansion of solids, liquids and gases, anomalous expansion of water.  specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity.  Heat transfer-conduction, convection and radiation, thermal conductivity,. | **(11 - 15)**  Qualitative ideas of Blackbody  radiation, Wein's displacement Law, Stefan's law, Green house effect.  **Thermodynamics**  Thermal equilibrium and definition of temperature (zeroth law of thermodynamics), heat, work and internal energy. | **(18 - 22)**  Thermodynamics First law of thermodynamics, isothermal and adiabatic processes.Second law of thermodynamics: reversible and irreversible processes, Heat engine and refrigerator.  **BEHAVIOUR OF PERFECT GASES AND KINETIC THEORY OF GASES** Equation of state of a perfect gas, work done in compressing a gas. | **(25 - 29)**  **BEHAVIOUR OF PERFECT GASES AND KINETIC THEORY OF GASES** Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed  of gas molecules; degrees of freedom. Law of equi-partition of energy (statement only). and application to  specific heat capacities of gases; concept of mean free path, Avogadro's number.  , |
| **PRACTICAL :**   * **CYCLE –III** * **SCREW GUAGE-II** * **COEFFICIENT OF VISCOSITY** * **FOCAL LENGTH OF CONVEX LENS BY u-v METHOD.** | | | | | |
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| **DECEMBER**  **(01 – 31)** | **(02 - 06)**  Oscillations and Waves Periodic motion - time period, frequency, displacement as a function of time, periodic functions. Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a spring-restoring force and forceconstant;energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression forits time period.  Free, forced and damped oscillations (qualitative ideas only), resonance | **(09 - 13)**  **REVISION**  **ASSESSMENT II** | **(16 - 20)**  **ASSESSMENT II** | **(23 - 27)**  **WINTER BREAK** | **(30 - 31)**  WINTER BREAK |
| **PRACTICAL :**   * **CYCLE –III** * **SCREW GUAGE-II** * **COEFFICIENT OF VISCOSITY**   **FOCAL LENGTH OF CONVEX LENS BY u-v METHOD.** | | | | | |

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| **JANUARY**  **(01 – 31)** | **(01 - 03)**  **WINTER BREAK** | **(06 -10)**  **WINTER BREAK**  Free, forced and damped oscillations (qualitative ideas only), resonance | **(13 - 17)**  Wave motion: Transverse and longitudinal waves, speed of wave motion, displacement relation for a  progressive wave, principle of superposition of waves.  reflection of waves, standing waves in strings and  organ pipes, fundamental mode and harmonics, Beats, Doppler effect. | **(20 - 24)**  **RAY OPTICS**  **Ray Optics: Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and its applications, optical fibres , refraction at spherical lenses, thin lens formula,** | **(27 - 31)**  **lens maker’s formula, magnification, power of a lens, combination of thin lenses in contact, refraction and dispersion of light through a prism.**  **Scattering of light- blue color of sky and reddish appearance of the sun at sunrise and sunset.** |
| **PRACTICAL :**   * **CYCLE –III** * **SCREW GUAGE-II** * **COEFFICIENT OF VISCOSITY**   **FOCAL LENGTH OF CONVEX LENS BY u-v METHOD.** | | | | | |

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| **FEBRUARY**  **(01 – 28)** | **(03 - 07)**   * **Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.** | **(10 - 14)**  REVISION | **(17 - 21)**  **ASSESSMENT III** | **(24 - 28)**  ASSESSMENT III |  |