BITSAT 2026 Physics Syllabus

1. Units & Measurement

1.1 Units (Different systems of units, SI units, fundamental and derived units)

1.2 Dimensional Analysis

1.3 Precision and significant figures

1.4 Fundamental measurements in Physics (Vernier calipers, screw gauge, Physical balance etc)

2. Kinematics

2.1 Properties of vectors

2.2 Position, velocity, and acceleration vectors

2.3 Motion with constant acceleration

2.4 Projectile motion

2.5 Uniform circular motion

2.6 Relative motion

3. Newton's Laws of Motion

3.1 Newton's laws (free body diagram, resolution of forces)

3.2 Motion on an inclined plane

3.3 Motion of blocks with pulley systems

3.4 Circular motion – centripetal force

3.5 Inertial and non-inertial frames

4. Impulse and Momentum

4.1 Definition of impulse and momentum

4.2 Conservation of momentum

4.3 Collisions

4.4 Momentum of a system of particles

4.5 Center of mass

5. Work and Energy

5.1 Work done by a force

5.2 Kinetic energy and work -energy theorem

5.3 Power

5.4 Conservative forces and potential energy

5.5 Conservation of mechanical energy

6. Rotational Motion

6.1 Description of rotation (angular displacement, angular velocity and angular acceleration)
6.2 Rotational motion with constant angular acceleration
6.3 Moment of inertia, Parallel and perpendicular axes theorems, rotational kinetic energy
6.4 Torque and angular momentum
6.5 Conservation of angular momentum
6.6 Rolling motion
7. Gravitation
7.1 Newton's law of gravitation
7.2 Gravitational potential energy, Escape velocity
7.3 Motion of planets – Kepler's laws, satellite motion

II 8. Mechanics of Solids and Fluids
8.1 Elasticity
8.2 Pressure, density and Archimedes' principle
8.3 Viscosity and Surface Tension
8.4 Bernoulli's theorem
9. Oscillations
9.1 Kinematics of simple harmonic motion
9.2 Spring mass system, simple and compound pendulum
9.3 Forced & damped oscillations, resonance
10. Waves
10.1 Progressive sinusoidal waves
10.2 Standing waves in strings and pipes
10.3 Superposition of waves, beats
10.4 Doppler Effect
11. Heat and Thermodynamics
11.1 Kinetic theory of gases
11.2 Thermal equilibrium and temperature
11.3 Specific heat, Heat Transfer - Conduction, convection and radiation, thermal conductivity,
Newton's law of cooling Work, heat and first law of thermodynamics
11.4 2nd law of thermodynamics, Carnot engine – Efficiency and Coefficient of performance

12. Electrostatics
12.1 Coulomb's law
12.2 Electric field (discrete and continuous charge distributions)
12.3 Electrostatic potential and Electrostatic potential energy
12.4 Gauss' law and its applications
12.5 Electric dipole
12.6 Capacitance and dielectrics (parallel plate capacitor, capacitors in series and parallel)
13. Current Electricity
13.1 Ohm's law, Joule heating
13.2 D.C circuits – Resistors and cells in series and parallel, Kirchoff's laws, potentiometer and
Wheatstone bridge
13.3 Electrical Resistance (Resistivity, origin and temperature dependence of resistivity).
14. Magnetic Effect of Current
14.1 Biot-Savart's law and its applications
14.2 Ampere's law and its applications
14.3 Lorentz force, force on current carrying conductors in a magnetic field
14.4 Magnetic moment of a current loop, torque on a current loop, Galvanometer and its conversion
to voltmeter and ammeter
15. Electromagnetic Induction
15.1 Faraday's law, Lenz's law, eddy currents
15.2 Self and mutual inductance
15.3 Transformers and generators
15.4 Alternating current (peak and rms value)
15.5 AC circuits, LCR circuits
16. Optics
16.1 Laws of reflection and refraction
III 16.2 Lenses and mirrors
16.3 Optical instruments – telescope and microscope
16.4 Interference – Huygen's principle, Young's double slit experiment
16.5 Interference in thin films
16.6 Diffraction due to a single slit

16.7 Electromagnetic waves and their characteristics (only qualitative ideas), Electromagnetic
spectrum
16.8 Polarization – states of polarization, Malus' law, Brewster's law
17. Modern Physics
17.1 Dual nature of light and matter – Photoelectric effect, De Broglie wavelength
17.2 Atomic models – Rutherford's experiment, Bohr's atomic model
17.3 Hydrogen atom spectrum
17.4 Radioactivity
17.5 Nuclear reactions: Fission and fusion, binding energy
18. Electronic Devices
18.1 Energy bands in solids (qualitative ideas only), conductors, insulators and semiconductors;
18.2 Semiconductor diode – I-V characteristics in forward and reverse bias, diode as a rectifier; I-V
characteristics of LED, photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator.
18.3 Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier
(common emitter configuration) and oscillator
18.4 Logic gates (OR, AND, NOT, NAND and NOR). Transistor as a switch.