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1) Unit - Fundamental units in SI unit system. Unit conversion.
2) The concept of particle (mass point) and frame of reference.
3) The concept of displacement and distance.
4) The concept and illustration of average velocity and instantaneous velocity; difference between velocity and speed.
5) The mathematic expression of the relationship between velocity and time interval.
6) Motion in a straight line with constant velocity – Quantitative description;
7) Motion in a straight line with constant acceleration – Quantitative descriptions;
8) Free falling bodies – the regular pattern of free falling bodies and examples.
9) The concept of force; three important elements of a force; classification of forces.
10) The concept of weight.
11) Types and occurrence condition of friction; direction of friction.
12) Superposition and decomposition of forces
13) Statement and interpretation of Newton's first law;
14) Statement and interpretation of Newton's second law; the relationship between acceleration and force
15) Statement and interpretation of Newton's third law;
16) Application of Newton's first law.
17) Application of Newton's second law.
18) Verticle Projectile motion
19) The concept of work; work done by a constant force with linear displacement ( $W = Fs \cos \theta$ ); concepts of positive work and negative work.
20) The concept of kinetic energy.
21) Work-energy theorem.
22) The concept of gravitational potential energy. Relation between gravitational potential energy and the work done by gravity.
23) The concept of mechanical energy.
24) Conservation of mechanical energy. Conversion of mechanical energy between kinetic energy and gravitational potential energy in a system
25) The concept of linear momentum. Vector property of linear momentum.
26) Conservation of linear momentum. Two bodies collision.
27) Concepts of elastic, inelastic and completely inelastic collision. Characteristics of elastic, inelastic and completely inelastic collision.
28) The concept of simple harmonic motion (SHM); relations of displacement, restoring force, amplitude, period and frequency.

29) Simple pendulum; harmonic vibration condition of simple pendulum.
30) Formula of period of simple pendulum; examples of calculation of period.
31) Definition of wavelength. Equation relates wave speed, wavelength and frequency.
32) Graphics of waves.
33) Electric charge – Types of charge.
34) Electrostatic induction – phenomenon of electrostatic induction.
35) Coulomb’s law.
36) Electric field and electric field lines – concept of electric field and electric field lines; electric field lines of an isolated point charge and uniform electric field
37) Work done by electric force.
38) Electric potential – concept of electric potential energy and electric potential; potential due to a point charge/ uniform electric field; concept of electric potential difference.
39) Motion of a point charge in a uniform electric field (initial velocity of the point charge and electric fields are perpendicular or parallel to each other).
40) Electric current – condition of forming an electric current; concept of electric current; definition of the direction of current.
41) Resistance and resistivity - definition of resistance; relation between resistance and resistivity; factors affecting the resistance of a long wire; circuit symbol of resistor.
42) Ohm’s law - relation of electric current, resistance and potential difference of a resistor; application of Ohm’s law.
43) Series and parallel circuits - concepts and characteristics of series and parallel circuits.
44) Circuit analysis
45) Energy and power in electric circuits. ( $P = I^2R$ or $P = U^2/R$ )
46) Magnetism - phenomena and permanent magnets; magnetic poles
47) Magnetic field – generation and basic characteristics of magnetic field; concept and SI unit of magnetic field; characteristic of uniform magnetic field.
48) Magnetic field due to a long straight wire/ a circular current loop/ an ideal solenoid.
49) Magnetic field lines– concept of magnetic field lines; analytic comparison between magnetic field lines and electric field lines (commons and differences); magnetic fields due to a long straight wire; magnetic field of a solenoid.
50) Concept of magnetic flux
51) Magnetic force on a charged particle moving in a uniform magnetic field perpendicularly or horizontally; formula; application of formula.
52) Magnetic force on a current-carrying wire; formula; application of formula.
53) Induction experiments – phenomenon and observations.

54) Faraday's law
55) Lenz's law – the meaning of the rate of change of magnetic flux;
56) Rectilinear propagation of light; the concept of light ray.
57) The speed of light in vacuum.
58) The laws of reflection of light;
59) The laws of refraction of light;
60) Image formation by a plane mirror - image of a point or an extended object formed by a plane mirror.
61) Scattering of light – explanation of daily phenomenon with theorem of scattering.
62) Image formation by a spherical mirror
63) Photoelectric effect and concept of photon.