Class XI – Physics & Chemistry (Punjab Board)

This document contains a **structured extraction of chapters, topics, and sub-topics** from the official Class XI **Physics** and **Chemistry** textbooks (Punjab Curriculum & Textbook Board / PECTAA).

📘 CHEMISTRY (Class XI)

Chapter 1: Periodic Table and Periodic Properties

- Historical development of periodic table
- Modern periodic law
- Modern periodic table: periods and groups
- Metals, non-metals and metalloids
- Blocks in periodic table (s, p, d, f)
- Families of elements (alkali metals, alkaline earth metals, halogens, noble gases, etc.)
- Electronic configuration and periodic position
- Periodicity of properties:
- Atomic radius
- Ionic radius
- Ionization energy
- Electron affinity
- Electronegativity
- Metallic and non-metallic character
- Reactions of sodium and magnesium:
- With water
- With oxygen
- With chlorine
- Trends in bonding in oxides and chlorides (Period 3)
- Classification of oxides:
- Basic oxides
- Acidic oxides
- Amphoteric oxides
- Classification of chlorides:
- Neutral chlorides
- Acidic chlorides
- Oxidation numbers in oxides and chlorides

Chapter 2: Atomic Structure

- Subatomic particles: proton, neutron, electron
- Atomic number and mass number
- Isotopes

- Atomic and ionic radii
- Behaviour of charged particles in electric field
- Quantum numbers:
- Principal
- Azimuthal
- Magnetic
- Spin
- Energy levels and sub-shells (s, p, d, f)
- Atomic orbitals and their shapes
- Aufbau principle
- Pauli exclusion principle
- Hund’s rule
- Electronic configuration of atoms and ions
- Successive ionization energies

Chapter 3: Chemical Bonding

- Types of chemical bonding
- Ionic bonding
- Covalent bonding
- Lewis structures
- Bond polarity
- Electronegativity and bond type
- Intermolecular forces

Chapter 4: Stoichiometry

- Chemical equations
- Mole concept
- Empirical and molecular formula
- Limiting reagent
- Percentage yield and purity

Chapter 5: States and Phases of Matter

- States of matter
- Kinetic molecular theory
- Gas laws
- Liquids and solids
- Phase changes

Chapter 6: Chemical Energetics

- Energy changes in reactions
- Exothermic and endothermic reactions
- Enthalpy changes
- Hess’s law

Chapter 7: Reaction Kinetics

- Rate of reaction
- Factors affecting reaction rate
- Collision theory
- Activation energy

Chapter 8: Chemical Equilibrium

- Reversible reactions
- Dynamic equilibrium
- Equilibrium constant
- Le Chatelier’s principle

Chapter 9: Acid–Base Chemistry

- Acids and bases
- pH scale
- Strong and weak acids/bases
- Neutralization

Chapter 10: Electrochemistry

- Oxidation and reduction
- Electrochemical cells
- Standard electrode potential
- Electrolysis

Chapter 11: Hydrocarbons

- Alkanes
- Alkenes

- Alkynes
- Reactions of hydrocarbons

Chapter 12: Nitrogen and Sulfur

- Occurrence and properties
- Ammonia and nitric acid
- Sulfur compounds

Chapter 13: Halogens

- Occurrence
- Properties
- Uses

Chapter 14: Atmosphere

- Composition of atmosphere
- Layers of atmosphere
- Air pollution

Chapter 15: Basic Separation Techniques

- Filtration
- Distillation
- Chromatography

Chapter 16: Lab Safety and Practical Skills

- Laboratory rules
- Handling chemicals
- Apparatus usage

📗 PHYSICS (Class XI)

Chapter 1: Measurements

- Physical quantities
- Base and derived units
- SI system
- Prefixes
- Significant figures
- Errors and uncertainty
- Precision and accuracy
- Dimensional analysis
- Limitations of dimensional analysis

Chapter 2: Force and Motion

- Scalars and vectors
- Kinematics
- Newton’s laws of motion
- Momentum and impulse

Chapter 3: Circular and Rotational Motion

- Angular displacement
- Angular velocity and acceleration
- Centripetal force
- Torque
- Angular momentum

Chapter 4: Work, Energy and Power

- Work done by force
- Kinetic and potential energy
- Conservation of energy
- Power

Chapter 5: Solids and Fluid Dynamics

- Elasticity
- Stress and strain

- Fluid pressure
- Bernoulli’s theorem

Chapter 6: Heat and Thermodynamics

- Temperature and heat
- Thermal expansion
- Laws of thermodynamics

Chapter 7: Waves and Vibrations

- Simple harmonic motion
- Wave motion
- Sound waves

Chapter 8: Physical Optics and Gravitational Waves

- Interference
- Diffraction
- Polarization
- Gravitational waves

Chapter 9: Electrostatics and Current Electricity

- Electric charge
- Coulomb’s law
- Electric field and potential
- Ohm’s law
- Electrical circuits

Chapter 10: Electromagnetism

- Magnetic fields
- Electromagnetic induction
- Faraday’s law

Chapter 11: Special Theory of Relativity

- Postulates of relativity
- Time dilation
- Length contraction

Chapter 12: Nuclear and Particle Physics

- Atomic nucleus
- Radioactivity
- Nuclear reactions
- Elementary particles

Sources: Official Class XI Chemistry & Physics Textbooks (Punjab Board / PECTAA) filecite turn1file0 turn1file1