Science Exam Syllabus
Grades 7-8

1. Thinking and Working Scientifically

- Asking investigable questions and refining scope
- Forming predictions and hypotheses from scientific knowledge
- Identifying independent, dependent, and control variables
- Planning fair tests and comparative investigations
- Choosing apparatus and methods for accuracy and safety
- Measuring with appropriate units, scales, and precision
- Recording data in structured tables with headings and units
- Presenting data using line graphs, bar charts, scatter plots, and other suitable displays
- Interpreting patterns, trends, relationships, and anomalies
- Drawing conclusions from evidence and linking them to theory
- Evaluating reliability, validity, and sources of error
- Improving methods using repeats, controls, range, and precision
- Laboratory safety, risk awareness, and responsible conduct

2. Biology: Cells, Body Systems, Plants, Inheritance, and Ecosystems

- Cell structure in plant and animal cells, including key organelles at an introductory level
- Specialised cells and their functions where appropriate
- Levels of organisation: cells, tissues, organs, and organ systems
- Human body systems: digestive, respiratory, circulatory, excretory, skeletal, and muscular systems at an age-appropriate level
- Nutrition, balanced diet, deficiency, and health links at an introductory level
- Photosynthesis: word equation level and factors affecting rate at an introductory level
- Respiration: aerobic and anaerobic ideas at an introductory level; energy release concept
- Plant transport and reproduction: pollination, fertilisation, seed formation, and germination
- Human reproduction and development with age-appropriate scientific treatment
- Variation, inheritance, adaptation, and introductory genetics concepts
- Ecosystems, food webs, energy flow, and population change
- Human impact on ecosystems and sustainability
- Microorganisms in disease, food production, decomposition, and hygiene

3. Chemistry: Particles, Substances, Reactions, and Materials

- Particle model and kinetic idea for solids, liquids, and gases
- Changes of state and particle explanations
- Diffusion and gas behaviour at an introductory level
- Elements, compounds, and mixtures
- Atoms and simple atomic structure at an introductory level
- Chemical symbols and formulae at an introductory level
- Periodic table structure: metals/non-metals, groups, and periods at an introductory level
- Physical and chemical changes
- Acids, alkalis, indicators, pH, and neutralisation at an introductory level

- Common reaction types such as combustion, metal + acid, and neutralisation at an age-appropriate level
- Separation techniques: filtration, evaporation, distillation, and chromatography
- Metals and non-metals: properties, uses, reactivity, and corrosion at an introductory level
- Material properties: conductivity, solubility, hardness, flexibility, strength, durability, and sustainability
- Choosing materials for purpose in design and environmental contexts

4. Physics: Motion, Forces, Energy, Waves, Electricity, and Magnetism

- Motion: distance, time, speed, and introductory velocity ideas where appropriate
- Distance-time and speed-time graphs at an introductory interpretation level
- Forces, resultant force, balanced and unbalanced forces
- Newtonian ideas at an introductory level: inertia and force-motion relationships
- Mass, weight, gravity, and simple pressure contexts
- Friction, air resistance, and water resistance
- Work and power at an introductory level where appropriate
- Energy stores and transfers
- Energy conservation and efficiency at an introductory level
- Thermal energy transfer: conduction, convection, and radiation
- Light: reflection, refraction, lenses at an introductory level, shadows, and image ideas where appropriate
- Waves and sound: vibration, frequency, amplitude, pitch, loudness, wave speed ideas where appropriate
- Electricity: current, voltage, resistance, components, circuit symbols, and circuit relationships at an introductory level
- Series and parallel circuits, troubleshooting, power, energy use, and electrical safety
- Magnetism and electromagnetism: magnetic fields, electromagnets, and applications at an introductory level

5. Earth and Space

- Earth structure: crust, mantle, core, and model limitations at an introductory level
- Rock cycle and rock formation processes
- Weathering, erosion, transportation, and deposition
- Soil formation and Earth materials
- Water cycle and environmental water processes
- Weather vs climate
- Weather measurement, climate patterns, and data interpretation
- Natural hazards and risk reduction at an introductory level where appropriate
- Earth resources: water, minerals, rocks, fuels, and land use
- Sustainability, pollution, conservation, and responsible resource use
- Earth, Sun, and Moon system: day/night, seasons, phases, eclipses at an age-appropriate level
- Solar System structure, planets, moons, gravity, orbits, and scale
- Stars, galaxies, and the universe at an introductory level where appropriate

6. Science in STEM Contexts

- Science in everyday technologies, health, transport, communication, energy, environment, and materials
- Science and design cycle: ask, design, test, evaluate, improve
- Evidence-based decision making in real-life contexts
- Sustainability and resource choices: water, energy, materials, waste, biodiversity, and pollution
- Interpreting scientific claims in media and everyday contexts
- Evaluating evidence quality, missing information, uncertainty, and bias at an introductory level
- STEM careers and interdisciplinary problem solving
- Ethics, safety, risk, and responsibility in practical science and technology
- Communicating scientific ideas through diagrams, data, explanations, and short technical summaries