



## Entrance Exam Objectives Qualifying to FSS

### Mathematics

- Algebraic expressions
- Equations of lines
- Proportionality
- Systems of equations in 2 unknowns
- Thales' theorem + All geometry requirements from the intermediate cycle (Triangles, quadrilaterals, etc.)
- Vectors
- Trigonometry

### Chemistry

#### Atomic Structure:

1. Write the Symbol of the Nuclide - Atomic Number and Mass Number.
2. Determine the Composition of the Atom - Protons, Electrons, Neutrons.
3. Calculate the charge -  $Q(\text{Nucleus})$ ,  $Q(\text{Cloud})$ ,  $Q(\text{Atom})$
4. Write Electron Arrangements for the first 20 elements - K,L,M,N
5. Classify elements in the Periodic table - Group, Column ,Period, Row.

#### Chemical Bonding:

1. Understand Chemical Stability - Duet and Octet Rules for Elements, Lewis Dot Symbols.
2. Explain Covalent Bonding - Definition, occurrence, formation
3. Explain Ionic Bonding – Definition, occurrence, formation

#### Redox Processes:

1. Define the term Redox - Oxidation and Reduction.
2. Identify the Oxidizing and Reducing Agents – Oxidant and Reductant.
3. Classify metals based on increasing tendency to lose electrons.
4. Defining Electrochemical Cells - Types, applications.
5. Identify the anode and the cathode.
6. Writing half reactions and deducing the overall reaction.
7. Explain the phenomena at each electrode - Mass of strip, concentration of ions, movement of electrons, movement of the current.
8. Explain the role of the Salt Bridge - Definition, mode of action, movement of ions

### **Physics**

- Resistors
- Electric power and Energy
- Mechanical Actions
- Equilibrium of a body
- Direct voltage and alternating voltage
- Archimedes'Upthrust