| Concept label | Definition of concept | Type concept | attribute | | Concept position | | | example | nonexample |
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| | | | critical | variable | superordinate | Coordinate | subordinate | | |
| Atomic structure | A Structure consisting of a positively charged nucleus, surrounded by negatively charged electrons, revolving in orbits at varying distance from the nucleus. | abstract | .positively charged nucleus<br>.negatively charged electrons<br>.nucleus<br>.neutron<br>.revolving in orbits<br>.varying distance from the nucleus | .number of protons<br>.number of electrons<br>. mass<br>.size<br>.properties | atom | | .electrons<br>.protons<br>.neutrons<br>.orbits | .Pseudo Examples<br>.animated film showing the nucleus and revolving electrons around the nucleus.<br>.hydrogen atom model/animated<br>. | Pseudo non example<br>.structure of molecules/ ball and stick model<br>.crystal lattice model |
| nucleus | Nucleus isThe tiny central region of the atom that contain all the positive charge and the mass | abstract | .nucleus<br>.central region<br>.positively charged<br>.mass of an atom | .mass number<br>.size of the nucleus<br>.atomic number<br>. | atom | shells | Proton , neutrons | .nuleus of oxygen atom consist of 8 protons and 8 neutrons.<br>.atomic model that show the center of an atom | . two shells of oxygen atom |

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| proto n | A proton is a subatomic particle that found in the nucleus that has a unit positive charge | .abst ract | .subatomic particle . positive charge .nucleus,proto n | .atomic number .mass number | Atom | Neutrn,electro | none | .number of proton in hydrogen atom is one | . number of electron In H atom is one |
| electr on | .electron is a subatomic particle that possess a unit negative charge and occupies the space around the nucleus | abstr act | .subatomic particle .has negative charge .found around the nucleus .electrons | .shell .number of electron .various distance from the nucleus for various elements orbitals | Atom | Neutron,proton | none | .number of electrons in neutral sodium atom is 11. | .the number of neutron in sodium atom is 12 |
| Bohr atomi c model | .bohr atomic model is a model of atomic structure, in which electrons circulate around the nucleus in discrete and stable orbits with different energy levels. | abstr act | Bohr atomic model .Electron circulate .discrete and stable orbits .different energy levels | .atomic spectra .ground state .exited state .number of electrons in a shell | atom | Ruther ford model | none | .Picture that show Atomic structure for H, F, Ne, atoms | . molecular structures .crystal lattice |
| Electr-omag netic radiat -on | EMR Is a radiation which is formed from oscillating electric and magnetic fields. | .abst ract | .EMR .oscillating electric and magnetic field .speed of light .perpendicular one another | .wave length .frequency .energy .photon .amplitude | light | NONE | .light in its different forms(visi-ble,x-ray) | Examples; rainbow, x-ray | None example .mechanical energy .sound |

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| Quantum - mechanical model of an atom | Quantum mechanical model of an atom is an atomic model where electrons are treated as wave. | abstract | .electrons treated as waves<br>.quantum mechanical model<br>.atomic model | . orbitals<br>.quantum numbers, (n, ml, ms, s,) | Atomic model | Bohr atomic model | Quantum numbers<br>.orbitals | .model<br>. image that show the shapes of orbitals | .Rutherford, Bohr, Daltons model of an atom |
| atomic orbital | Atomic orbital is The region where there is high probability of finding an electron | abstract | .atomic orbital<br>. space/region<br>.high probability of finding an electron | .quantum numbers(n, ml, ms, s,)<br>.shape of orbitals | atom | nucleus | Quantum numbers | .model for different types of atomic orbitals | Bohr model of shells |