Radio Isotopes it’s applications

Ch 1 :-
- Introduction – Isotopes
- Radio isotopes source
- Absorbing Doscand Units of Radiation
- Type of Radiation :-
  A – charged Nuclear Particles
  B – Electromagnetic Radiation
  C – Neutron
  D – characterization of neutron
- Type of Decay :-
  A – Decay
  B – β- Decay
  C – Proton Decay
  D – neutron Decay
  E – Positron Decay
- Pair Production
- Absorption of Gamma Rays
- Definitions :-
  1. masses
  2. charges
  3. Dimensions
  4. Density of nucleues
  5. Forces
- Cross section

Ch 2 :-
- Radioactivity
  - Natural Radioactivity
    1. The Radioactive Decay law
    2. Radioactive of sample
    3. Half life time and mean life time ( t ½ ,T )
  - Artificially produced Radionuclides
  - Units of Radioactivity

Ch 3 :-
- Nuclear – Particles reactions with matter :-
  1. charged particles :- ( 1. Range of charged particles 2. Specific ionization and stopping power ) .
2. Electrons (determination electron range from absorption curve).

3. Law of absorption

4. – ray (absorption - ray from matter)
   • Decay X and β with - ray
   • Stopping of neutrons (Fast neutrons, slow neutrons).

**Ch 4:** Nuclear detectors
- motion of electrons and ions in gas
- Gas-Filled counters
- Ionization chamber
- Ionization chamber for neutrons
- Proportional counters
- Geiger–Mueller counter
- Scintillation counter and applications
- The solid–state Counters

**Ch 5:**
- Principles of radiation and detection
- Principles Rules to uses Radio isotopes in industry
- Principles of Radiotracer Technique
- Fluid properties
- Flaw Rate Measurement
  1. Peak-to-Peak Method
  2. Dilution Method
  3. Total-count Method
  4. on–the-spot activation Method
  5. Activation analysis Method
- Flow pattern study
- Leakage Investigation
- Process characteristics
  1. Homogeneous Mixing
  2. Residence Time