**PG.GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Odd Semester (For Ongoing Classes UG-PG)**

**Session (2021-2022)**

**Class: B.Sc 5th Semester**   **Name of the Teacher: Dr. Harjeet Kaur**

**Subject: Nuclear Physics Period : 5th**

**Paper : C Room No : 129**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | Introduction, Rutherford scattering Expt., Distance of closest approach |
| Week 2 | 16-08-2021 to 21-08-2021 | Constituents of nuclei, p-e theory, p-n theory, Nuclear Size, Nuclear Shapes, Nuclear mass, Nuclear Energy, Nuclear Density, Charge, Wave Mechanical properties, Parity, statistics, Angular Momentum, Magnetic Moment |
| Week 3 | 23-08-2021 to 28-08-2021 | Quadrupole moment, Isotopes, Isotones, Isobars, Nuclear Forces and its Properties, Mass defect, Packing Fraction, Binding energy and its curve |
| Week 4 | 31-08-2021 to 04-09-2019 | Analogy between drop of a liquid and nucleus, Fission Model, Liquid Drop Model, Assumptions, Binding Energy Terms |
| Week 5 | 06-09-2021 to 11-09-2021 | Failures and Success of LDM, Experimental evidence of Magic numbers. |
| Week 6 | 13-09-2021 to 18-09-2021 | Shell Model, Energy Level Diagram, Success and Failure of LDM, Nuclear Stability |
| Week 7 | 20-09-2021 to 25-09-2021 | Natural Radioactivity, Properties of alpha, beta and gamma rays, Difference between gamma and X rays |
| Week 8 | 27-09-2021 to 01-10-2021 | Fundamental laws and Rutherford law of decay, decay constant, half-life, average life, Activity, Units, Series, Branching |
| Week 9 | 04-10-2021 to 09-10-2021 | Laws of Successive disintegration, Radiation damage, velocity, range, Geiger Nuttal law, energetics, Nuclear potential, Gammow theory, Alpha spectra |
| Week 10 | 11-10-2021 to 16-10-2021 | Beta decay, neutrino postulate, Energy conditions, Inverse beta decay, Internal conversion |
| Week 11 | 18-10-2021 to 19-10-2021 | Types of nuclear rxns, Conservation laws, Kinematics, Physical significance of Q value, Nuclear cross-section |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 12 | 01-11-2021 to 06-11-2021 | Compound Nucleus, Artificial radioactivity, radio isotopes, radio carbon dating, Geological dating |
| Week 13 | 08-11-2021 to 13-11-2021 | Rutherford scattering, impact parameter, Distance of closest approach, Coulomb scattering, |
| Week 14 | 15-11-2021 to 20-11-2021 | Neutron, energy classification, mass of neutron, Nuclear fission |
| Week 15 | 22-11-2021 to 27-11-2021 | Nuclear chain reaction, nuclear reactor, Reactor Facilities, Nuclear Fusion |
| Week 16 | 29-11-2021 to 30-11-2021 | Revision tests, Numericals |