**Name of the Teacher:\_Dr. R. L. Dhiman, Department of Physics, S.D. College, Ambala Cantt.**

**LESSON PLAN**

**Physics Paper –X (Nuclear Physics)**

**Class: B.Sc.- III (Section- A & Section- B) Semester- V [Session 2017-2018]**

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| **S No** | **Period** | **Topics to be Covered** | **Academic Activity to be Organized** |
|  | **17-31 July 2017** | **No Teaching Work due to late start of class** **(due to extension in on -line admission dates)**  | **NIL** |
|  | **01-31 Aug 2017** | **Unit-I : Nuclear Composition : Proton-Electron & Proton-Neutron Hypothesis, Basic Properties of Atomic Nuclei, Nuclear Mass, Binding Energy & Binding Energy Curve, Nuclear Stability, distance of closet approach by Rutherford Experiment, Nuclear Mass determination by Bain Bridge & Jordan Mass Spectrograph and related Important Conceptual & Numerical problems.**  | **Conceptual & Numerical Problems related to every article given to students as Home Assignment there after the related problems discussed in the Class**  |
|  | **01-30 Sept 2017** | **Unit-II : Interaction of radiations (Light, Heavy & gamma rays) with matter, Energy Loss, Range and struggling of alpha particles, Energy-Life time relationships, Energy Loss, Range of Beta-particles. Passage of gamma radiations through matter (Photoelectric effect, Compton effect & pair production) Electron–Positron annihilation, Applications of Absorptions of Gamma rays (Mass absorption Coefficient) and its applications and related Important Conceptual & Numerical problems. Alpha disintegration and its theory, Energetic of Alpha decay, Origin of continuous Beta-spectrum (Neutrino Hypothesis), Types of Beta-decay, Nature and Energetic of Gamma-decay and related Important Conceptual & Numerical problems.**  | **Conceptual & Numerical Problems related to every article given to students as Home Assignment, there after the related problems discussed in the Class** **One Assignment****from Unit-I for Physics Paper-II** |
|  | **01-31 Oct 2017** | **Uinit-III : Particles Accelerator: Types (Tandem, Linear, Drift Tube, Cyclotron and Betatron) Principle, Construction, Working, Advantages & disadvantages and their Compression. Nuclear Radiation Detector: Types (Gas filled Ionization detector, Ionization Chamber, Proportional Counter, G.M. Counter) Principle, Construction, Working, Advantages & disadvantages and their Compression. Scintillation Counter, Photo-Multiplier, Semiconductor Detector: Types (P-N Junction, Diffused Junction, Surface Barrier, Ge-Li Detectors) Principle, Construction, Working, Advantages & disadvantages and their compression and related Important Conceptual & Numerical problems.**  | **Conceptual & Numerical Problems related to every article given to students as Home Assignment there after the related problems discussed in the Class**  |
|  | **01-13 Nov 2017** | **Unit-IV : Nuclear Reactions: Types, Conservation Laws& Energetic (Q-Value) of Nuclear Reactions, Nuclear Chain Reaction, Nuclear Reactor :Types (Fission & Fusion Reactor) General Aspects of Reactor Design, Nuclear Power Reactors in India and related Important Conceptual & Numerical problems.**  | **Conceptual & Numerical Problems related to every article given to students as Home Assignment there after the related problems will be discuss in the Class**  |

**Topics of Assignment/ Class Tests given to the Students:**

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| **One Assignment** **for Physics Paper-X**  | **Nuclear Composition : Proton-Electron & Proton-Neutron Hypothesis, Basic Properties of Atomic Nuclei, Nuclear Mass, Binding Energy & Binding Energy Curve, Nuclear Stability, distance of closet approach by Rutherford Experiment, Nuclear Mass determination by Bain Bridge & Jordan Mass Spectrograph and related Important Conceptual & Numerical problems.**  |
| **Class Tests** | **On Dated :- 09.10.2017 [Section –A] from Unit I & II** **:- 12.10.2017 [Section – B] from Unit I & II** |