GOVT.SHIVALIKCOLLEGENAYANANGAL

Teaching Plan (Session 2024-25)

Class-B.Sc. III (SEMVI)

Teacher Name - Sunita Saini

Subject-Physics
Name of Paper –Nuclear and Radiation Physics

Sr. No.	Date	Topics to be covered
1.	7-11 JAN	**Section–A** Energy loss due to ionization (Bethe's formula), Energy loss of electrons
2.	13-18 JAN	**Group Discussion about covered topics** Bremsstrahlung, Interactions of gamma rays with matter. Radiation loss by fast electrons.
3.	20-25 JAN	**Class Test** **Topic**-. Energy loss due to ionization (Bethe's formula) Radiation length, Electron-positron annihilation, Cyclotron. Betatron.
4.	27 JAN - 1 FEB	Radiation length, Electron-positron annihilation, Cyclotron. Betatron, Qualitative discussion ofSynchrotron, Collider machines and linear accelerator.
5.	3-8 FEB	**PPT On Topic**- Cyclotron, Betatron., GM counter, Proportional counter, Ionization chamber
7.	10-15 FEB	Ionization chamber, Proportional counter, GM counter, Classification of these particles, types of interactions. Conservation laws and quantum numbers, Concepts of isospin
8.	17-22 FEB	**ClassTest** **Topic**- Ionization chamber, Proportional counter, GM counter Classification of these particles, types of interactions. Conservation laws and quantum numbers, Concepts of isospin
9.	24 FEB - 1 MAR	**SECTIONB** **Assignment on Topic**-. Scintillation counter, Solid state detectors**, (BOYS)** Elementary particles and their masses, Decay modes (**GIRLS**) Strangeness, Parity
10.	3-8 MARCH	Charge conjugation. Antiparticles, Gell- Man method.

11.	10-15 MARCH	**Class Test** **Topic**- Gell- Man method. Decay and strange particles. Particle symmetry,
12.	17-22 MAR	Introduction to quarks and qualitative discussion of the quark model.
13.	24-29 MAR	DISCUSSION
14.	1-5 APRIL	MST
15.	7-12 APRIL	REVISION
16.	16-30 APRIL	REVISION

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Sr. No.	Date	Topics to be covered
1.	1-5 Aug	**Section – A** Constituents of nucleus and their intrinsic properties.
2.	7-12 Aug	Qualitative facts about size, mass, density, energy, charge.Binding energy, angular momentum. **Group Discussion about covered topics**
3.	14-19 Aug	Magnetic moment and electric quadruple moments of thenucleus. **Class Test** **Topic** - Constituents of nucleus and their intrinsic properties.
4.	21-26 Aug	Wave mechanical properties of nucleus, average binding energy and its variation with mass numbers, Properties ofnuclear forces.
5.	28Aug -2 Sep	Non existence of electrons in the nucleus and neutron-protonmodel. **PPT On Topic**- Binding energy and its variation, Nuclear shellmodel.
7.	4 – 9 Sep	Liquid drop model and semi empirical mass formula, Conditions of nuclear stability.
8.	11-16 Sep	Fermi gas model. Experimental evidence of magic numbersand its explanation. **Class Test** **Topic** - Liquid drop model and semi empirical mass formula.
9.	18 - 23 Sep	**SECTION B** Radioactivity. Modes of decay and successive radioactivity.**Assignment on Topic** - Alpha emission. Electron emission.(BOYS) Positron emission, Electron capture.(GIRLS)
10.	25-30 Sep	Qualitative discussion of alpha, beta and gamma spectra, Geiger-Nuttal rule.

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11.	2-7 Oct	Neutrino hypothesis of beta decay. Evidence of existence ofneutrino.
12.	9-14 Oct	**PPT by Students on Topic** Nuclear shell model, Alpha emission. Electron emission, Positron emission, Electron capture.
13.	16-21 Oct	Gamma-ray emission, Internal conversion.
14.	23-28 Oct	**MST**
15.	30 Oct-4 Nov	Qualitative discussion of alpha and beta decay theories.
16.	6-11 Nov	Nuclear reactions. Reaction cross section.
17.	13-18 Nov	Conservation laws. Kinematics of nuclear Reaction. **Class Test Topic - Kinematics of nuclear Reaction**
18.	20-25 Nov	Q-value and its physical significance, Compound nucleus, Possible reaction with high energy particles.
19.	27Nov- 2 Dec	Group Discussion on Important Topics. **REVISION**

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