

## Curriculum Plan

(Odd Semester 2023-24)

Teacher Name: **Dr. Rajesh Kumar Meena**

Course: B.Sc. (H) Chemistry, Sem V

Paper Name: DSE: Novel Inorganic Solids (4 periods per week)

S.No.	Contents	Allocation of Lectures	Monthwise schedule to be followed	Assignments/ Presentations etc
1	<b>Synthesis and modification of inorganic solids:</b> Conventional heat and beat methods, Co-precipitation method, Sol-gel methods, Hydrothermal method, Ion-exchange and Intercalation methods.	10 Lectures	3 <sup>rd</sup> week of Aug – 1 <sup>st</sup> week of September	-Syllabus Overview -Reference Books -Problem solving
2	<b>Inorganic solids of technological importance:</b> Solid electrolytes – Cationic, anionic, mixed Inorganic pigments – coloured solids, white and black pigments. One-dimensional metals, molecular magnets, inorganic liquid crystals	9 Lectures	2 <sup>nd</sup> week of Sept – 4 <sup>th</sup> week of September	- Related Problems - Assignment - Home Register Overview - Student's difficulties
3	<b>Nanomaterials:</b> Overview of nanostructures and nanomaterials: classification. Preparation of gold and silver metallic nanoparticles, self-assembled nanostructures-control of nanoarchitecture-one dimensional control. Carbon nanotubes and inorganic nanowires. Bioinorganic nanomaterials, DNA and nanomaterials, natural and antisical nanomaterials, bionano composites.	9 Lectures	1 <sup>st</sup> week of Oct - 3 <sup>rd</sup> week of Oct.	- Related Problems -Home Register checking - Class test - Previous Year Question Papers discussion
4	<b>Composite materials:</b> Introduction, limitations of conventional engineering materials, role of matrix in composites, classification, matrix materials, reinforcements, metal-matrix composites, polymer-matrix composites, fibre-reinforced composites, environmental effects on composites, applications of composites	8 Lectures	4 <sup>th</sup> week of October - 1 <sup>st</sup> week of Nov	- Related Problems - Home Register Overview - Revision session prior to home - Previous Year Question Papers discussion
5	<b>Speciality polymers:</b> Conducting polymers - Introduction, conduction mechanism, polyacetylene, polyparaphenylene and polypyrrole, applications of conducting polymers, Ion-exchange resins and their applications. Ceramic & Refractory: Introduction, classification, properties, raw materials, manufacturing and applications.	8 Lectures	2 <sup>nd</sup> week of Nov - 4 <sup>th</sup> week of November	- Related Problems - Home Register Overview - Home examination tentatively in October/November