

Curriculum Plan
(Odd Semester 2026-27)

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

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

Paper Name: DSE: Novel Inorganic Solids (3 periods per week)

S.No.	Contents	Allocation of Lectures	Monthwise schedule to be followed	Assignments/ Presentations etc
1	Synthesis and modification of inorganic solids: Conventional heat and beat methods, Co-precipitation method, Sol-gel methods, Hydrothermal method, CVD, Ion-exchange and Intercalation methods.	9 Lectures	1st week of Aug - 3rd week of August	-Syllabus Overview -Reference Books -Problem solving
2	Characterization techniques of inorganic solids: X-ray Diffraction (XRD) for crystal structure and phase identification, and Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Fourier-Transform Infrared (FTIR) Spectroscopy, Brunauer–Emmett–Teller (BET) Analysis & DLS	6 Lectures	4th week of Aug- 1st week of September	- Related Problems - Assignment - Home Register Overview - Student's difficulties
3	Pigments: Solid electrolytes – Cationic, anionic, mixed Inorganic pigments – coloured solids, white and black pigments. One-dimensional metals, molecular magnets, inorganic liquid crystals	9 Lectures	2 nd week of Sept - 4 th week of Sept.	- Related Problems -Home Register checking - Class test - Previous Year Question Papers discussion
4	Composite materials: 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	9 Lectures	1 st week of October - 3rd week of Oct	- Related Problems - Home Register Overview - Revision session prior to home - Previous Year Question Papers discussion
5	Speciality polymers: 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.	12 Lectures	4 th week of Oct - 4 th week of November	- Related Problems - Home Register Overview - Home examination tentatively in October/November