GOVT. COLLEGE FOR GIRLS PADHA (KARNAL)

LESSON PLAN FOR B.A. FINAL (SEMESTER V)

(JULY TO NOV. 2025)

NAME OF TEACHER: Ms. Preeti Rani
CLASS: B.A. Final (Semester V)
SUBJECT: Mathematics
PAPER: Sequences and Series

WEEKS	TOPICS COVERED
WEEK 1	Boundedness of the set of real numbers; Least upper bound and Greatest lower bound of a set.
WEEK 2	Archimedean property; Algebraic and ordered properties in R; Real number system as a complete ordered field.
WEEK 3	Neighbourhoods, interior points, isolated points, limit points, Open sets, Closed sets.
WEEK 4	Interior of a set, closure of a set in real numbers and their properties; Bolzano–Weierstrass theorem.
WEEK 5	Open covers, compact sets, Heine–Borel theorem; Doubt Session – I.
WEEK 6	Denumerable and non-denumerable sets; Denumerability of integers, rationals and non-denumerability of real numbers.
WEEK 7	Sequences: Real sequences and their convergence, Theorems on limit of sequence.
WEEK 8	Bounded and monotonic sequences; Cauchy's sequence, Cauchy's general principle of convergence. Assignment – I
WEEK 9	Subsequences and subsequential limits; Limit superior and limit inferior; Doubt Session – II.
WEEK 10	Infinite series: Convergence and divergence of infinite series; Comparison tests of positive term series.
WEEK 11	Cauchy's general principle of convergence of series; Convergence and divergence of geometric series; Hyper Harmonic series.
WEEK 12	D'Alembert's ratio test, Raabe's test, Logarithmic test, Cauchy's nth root test.
WEEK 13	De-Morgan and Bertrand's test, Gauss test, Cauchy's integral test, Cauchy's condensation test.
WEEK 14	Alternating series, Absolute and conditional convergence, Leibnitz test. Assignment – II
WEEK 15	Arbitrary series, Abel's and Dirichlet's test, Insertion and removal of parenthesis, Re-arrangement of terms in a series.
WEEK 16	Riemann's re-arrangement theorem and Pringsheim's theorem (statement only), Cauchy product of series (definitions and examples only). Final Revision & Test.