**SARASWATI MAHILA MAHAVIDYALAYA,PALWAL**

SESSION:**2021-22**

**LESSON PLAN** Sem : Even

Name of faculty : Ms. Mithlesh Gupta Class : BA-II

Designation : Associate Professor in Maths Subject : Sequence and Series

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| **Sr.No.** | **Topics/chapters** | **Lectures** | | **Topics of assignment/test** |
| 1. | Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set,  neighborhoods, interior points, isolated points, limit points, open sets, closed set, interior of a set, closure of a set in real numbers and their properties. Bolzano-Weiestrass theorem, Open covers, Compact sets and Heine-Borel Theorem. | | Lect 1 to Lect 20 | Test of Open set, Interior points, Limit points, Closure of sets & assignment of Bolzano-Weiestrass theorem. |
| 2. | Sequence:Real Sequences and their convergence, Theorem on limits of sequence, Bounded and monotonic sequences, Cauchy’s sequence, Cauchy general principle of convergence, Subsequential limits.  Infinite series: Convergence and divergence of Infinite Series, Comparison Tests of positive  terms Infinite series, Cauchy’s general principle of Convergence of series, Convergence and divergence of geometric series, Harmonic series or p-series. | | Lect 21 to Lect 40 | Test of Harmonic series or p-series and examples. |
| 3. | Infinite series: D-Alembert’s ratio test, Raabe’s test, Logarithmic test, de Morgan and Bertrand’s test, Cauchy’s Nth root test, Gauss Test, Cauchy’s integral test, Cauchy’s condensation test. | | Lect 41 to Lect 60 | Assignment of Ratio test, Cauchy’s root test, Gauss Test, Cauchy’s integral test, Cauchy’s condensation test and test on their examples. |
| 4. | Alternating series, Leibnitz’s test, absolute and conditional convergence, Arbitrary series: abel’s lemma, Abel’s test, Dirichlet’s test, Insertion and removal of parenthesis, re-arrangement of terms in a series, Dirichlet’s theorem, Riemann’s Re-arrangement theorem, Pringsheim’s theorem (statement only), Multiplication of series, Cauchy product of series, (definitions and examples only) Convergence and absolute convergence of infinite products.  . | | Lect 61 to Lect 80 | Assignment of Leibnitz test, Abel’s test, Dirichlet test.  Test of examples on Arbitrary Series. |