**SARASWATI MAHILA MAHAVIDYALAYA,PALWAL**

SESSION:**2021-22**

**LESSON PLAN** Sem : Even

Name of faculty : Ms. Priyanka Bhardwaj Class : BA-III

Designation : Assistant Professor in Maths Subject : Linear Algebra

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| **Sr.No.** | **Topics/chapters** | **Lectures** | **Topics of assignment/test** |
| 1. | Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent  and dependent subsets of a vector space. Finitely generated vector space, Existence Theorem for basis of a finitely generated vector space, Finite dimensional vector spaces, Invariance of the number of elements of bases sets, Dimensions, Quotient space and its dimension. | Lect 1 to Lect 20 | Test of subspaces, Linear span. |
| 2. | Homomorphism and isomorphism of vector spaces, Linear transformations and linear forms on vector spaces, Vector space of all the linear transformations Dual Spaces, Bidual spaces, annihilator of subspaces of finite dimentional vector spaces, Null Space, Range space of a linear transformation, Rank and Nullity Theorem. | Lect 21 to Lect 40 | Assignment of Dual Spaces, Bidual spaces. |
| 3. | Algebra of Linear Transformation, Minimal Polynomial of a linear transformation, Singular and non-singular linear transformations, Matrix of a linear Transformation, Change of basis,  Eigen values and Eigen vectors of linear transformation. | Lect 41 to Lect 60 | Test of Singular and non-singular linear transformations, Matrix of a linear Transformation, Change of basis. |
| 4. | Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements,Orthogonal sets and Basis, Bessel’s inequality for finite dimensional vector spaces, Gram-Schmidt Orthogonalization process, Adjoint of a linear transformation and its properties, Unitary linear transformations  . | Lect 61 to Lect 80 | Test of Inner product spaces. |