Question Bank

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Linear Algebra

Unit-1

1.Definition of:

a.Vector Space

b.Subspace

c.Linear Span

d.Linear Combination

e.Linear Integral

f.Linear Dependance

g.Null Space

h.Column Space

i.Linear Transformation

2.Theorems on necessary and sufficient condition of subspace and problems.

3. Algebra of subspace

4. If S is subset of vector space V(F) then P.T.

i. S is Subspace of V =>L(S)=S

ii. L(L(s))=L(s)

5. If S,T are subset of Vector space V(F) then

i.S ⊂ T =>L(S) ⊂ L(T)

ii.L(S∪ T) = L(S)+L(T)

6.Basis Extension theorem and problems.

7.Problems on Linear Transformation.

8.Let u,v be two vVector Space andT:u→V is L>T then range set R(T) and Null space N(T) is a Subspace of U(F)

9. Rank Nullity theorem and dimensions theorems.

10.Practical problems.

Unit-2

1.All theorems in Rank

2.Problems in Change of basis,Eigen value and Eigen vector and Characteristic equation.

Unit-3

1.Theorems and problems in Diagonalization.

2. An nXn matrix with n-distict eigen values is diagonalizable.

3.Problems in Complex Eigen value and application of Differential equation problems.

4.Definition of:

a.Orthogonal vector

b.Orthonormal vector

c.Inner product space

d.Length of a vector

e.Unit vector

5.Problems in Inner product space and Orthogonality.

6.All Inequality theorems.

7.Practical problems.

8.If S=$\{u_{1,\ldots\ldots}u_p\}$ is an orthogonal set of non-zero vectors in R^n then S is linear independent and hence, is a basis for the subspace spanned by S.