B.Sc. DEGREE EXAMINATION, EVEN SEMESTER 2021
III Year VI Semester
Linear Algebra

Max.marks :25

Answer any **FIVE** questions $(5 \times 5 = 25)$ Marks

1. If v$_(1), v_(2,) \ldots v_n is a basis of V over F if w_(1), w_(2) \ldots w_m in V are linearly independent the$ n.
2. Show that, $Hom(V, W)$ is a vector space over F.
3. If V is a finite-dimensional inner product space and if W is a subspace of V, then prove that, V = W $\oplus W^1$.
4. Let V be a finite dimensional vector space over F. Prove that, $T \in A(V)$ is invertible if and only if the constant term of the minimal polynomial for T is not zero.
5. If S and T are linear transformations with m(S) = (12@34)) and m(T) = (-10@23)), find m(ST)
6. If F is a Field of real numbers, prove that the vectors (1,1,0,0), (0,1,-1,0) and (0,0,0,3) are linearly independent.
7. State and prove Schwarz inequality.