1 何謂 ionosonde 其探測原理為何？ (20%)

2 敘述寧靜時期之電離層各層之特性 (15%)

3. 電離層中有那些非經常性擾動 (15%)

4. 解釋名詞: (30%)

①法拉第旋轉；②TEC；③赤道噴泉效應；④Sporadic E；

⑤地磁微脈動；⑥哨波。

5. If electric fields are negligible, the motions of ions and the neutrals are related by $-e\,\vec{v}\times\vec{B} = m\,\nu_i\,(\vec{v}-\vec{u})$
Where the $\vec{v}$ and $\vec{u}$ are ion and neutral velocities, ν_i is the ion-neutral collision frequency, m is the ion mass and $\vec{B}$ is the magnetic flux density. Suppose the neutral wind is horizontal, and its magnetically southward and eastward components are $\vec{U}_S$ and $\vec{U}_E$. The dip angle is I. Let the ionosphere be horizontally uniform. Show the resulting vertical motion of the ions w is:

$$w = \frac{U_E \cos I\,(\nu_i/\omega_i) + U_S \cos I \sin I}{1 + (\nu_i/\omega_i)^2}$$

(20%)　where $\omega_i = \frac{e|\vec{B}|}{m}$