... values of r, R approaches zero rapidly and hence $4\pi^2 r^2 R^2$ must approach zero.

(iii) The probability functions show one maxima for 1s and more for higher orbitals. The maxima in the 1s orbital occurs at $0.53\,Å$, the radius of the first Bohr orbit.

(iv) The distance (measured from the nucleus) of the largest maximum probability region increases with the increase of its principal quantum number n. This is why the energy of the orbitals increases with the increase of the principal quantum number.

(v) For the orbitals like 2s, 3s, 3p etc. due to the existance ~~due to~~ of one or more radial nodes there are small maxima bearing electron density between the nucleus and the largest maxima. Thus the total number of maxima including the largest one for s, p, d--- orbitals is given by $n, (n-1), (n-2)$ .... respectively where n is the principal quantum number. In general there are $(n-l-1)$ radial nodes in the radial distribution functions and consequently there are $[(n-l-1)+1]$ maxima in the radial distribution function for the orbitals.

(vi) <u>Penetration</u>: The radial density function of the 2s, 2p, 3s etc. orbitals have small but finite values within the curves for the lower orbitals. The radial density of 2s orbital spreads into the curve for 1s orbital. The 3s orbital spreads into 2s and 1s orbitals and so on. This is termed as penetration of orbitals.

(s, p) d, f)

[See after 18 pages]