CH-107 Tutorial-4
Answers

1. (a) $N = \frac{1}{\sqrt{\pi a_0^3}}$

(b) $\langle \hat{r} \rangle = 1.5\, a_0$

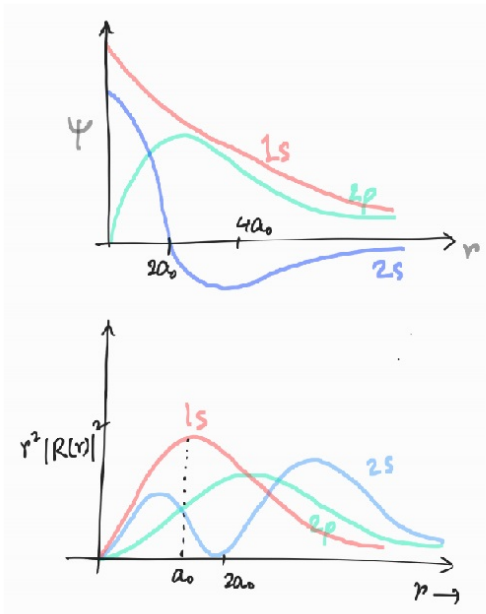
2. $\theta = 54.73^\circ$ & 125.27°

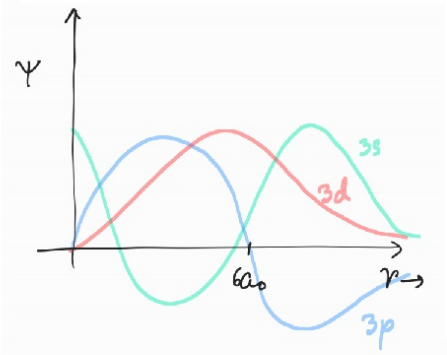
3. (a) $n = 4, l = 3$
4f orbital

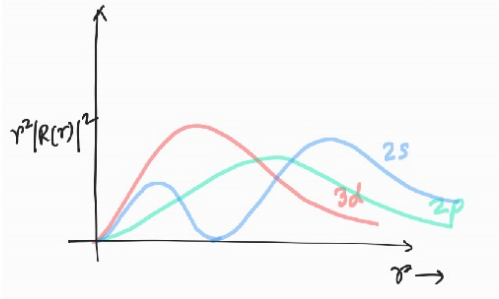
(b) $n = 4, l = 1$
4p orbital

(c) $n = 9, l = 4$ 9g orbital

4.







5. (i) $r = a_0$

(ii) $r = 4a_0$, $\theta = 90^\circ$, $\theta = \pm \sin^{-1}\left(\frac{1}{\sqrt{3}}\right)$