

b) Ca $l=0$, SPIN $\uparrow\downarrow$ \vee $S=0$ \vee 1 LINE

c) O $3p$ $\uparrow\uparrow\downarrow$ \vee $S=0$ $l=1+1=2$ \vee 5 LINES

d) S_u $(s_s)^2 / (s_p)^2$ \vee $J=0$ \vee 1 LINE

7-32) EQUATION (7.51): $F_z = m_s g_L \mu_B \frac{dB}{dz}$

SPEED $v = 250$ m/sec

\vee TRANSIT TIME $t = \frac{L}{v} = \frac{1}{250}$ sec

DEFLECTION IN MAGNET

$$z_1 = \frac{1}{2} a t^2 = \frac{1}{2} \frac{F}{m} t^2$$

FINAL Z-VELOCITY $v_z = a t = \frac{F}{m} t$

\vee EXTRA DEFLECTION $z_2 = v_z t = \frac{F}{m} t^2$

TOTAL DEFLECTION $z_{tot} = \frac{3}{2} \left(\frac{F}{m} \right) t^2$

$$z_{tot} = \frac{3}{2} \frac{1}{m_{Ag}} m_s g_L \mu_B \frac{dB}{dz} \cdot t^2$$

WITH $m_s g_L = \frac{1}{2} \times 2 = 1$