

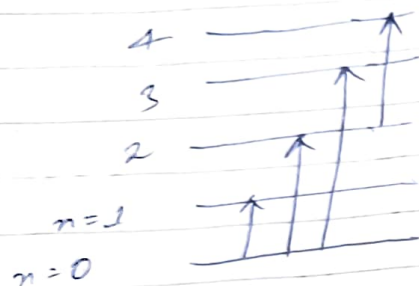
Selection Rules for UV-Visible Electronic Transitions

- ① $\Delta S = 0$
i.e. Total spin cannot change.

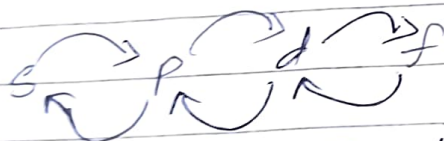
$$E_2 \rightarrow J = \pm \frac{1}{2}$$

$$E_1 \rightarrow \begin{matrix} \uparrow \downarrow \\ +\frac{1}{2} -\frac{1}{2} \end{matrix}$$

- ② $\Delta n = \pm 1, \pm 2, \pm 3 \dots$



- ③ Orbital selection Rule



$s \rightarrow p$
 $p \rightarrow d$
 $d \rightarrow f$

allowed transitions

$s \rightarrow d$
 $s \rightarrow f$
 $p \rightarrow f$

not allowed (forbidden)

gerade \rightarrow ungerade

- ④ $\pi \rightarrow \pi^*$
 $\sigma \rightarrow \sigma^*$
- allowed ①

$\sigma \rightarrow \pi^*$
 $\pi \rightarrow \sigma^*$

symmetry forbidden