

Name _____

Chem 370 - Spring, 2019
Fifteen Minute Quiz No. 9

1. (3 points) In the table below, for octahedral complexes, indicate whether the ground state for the configuration is *A*, *E*, or *T*, and whether it would be subject to no, weak, or strong Jahn-Teller (J-T) distortion.

Configuration	<i>A</i> , <i>E</i> , or <i>T</i> ?	No, weak, or strong J-T?
$t_{2g}^6 e_g^1$	<i>E</i>	strong
$t_{2g}^5 e_g^2$	<i>T</i>	weak
$t_{2g}^6 e_g^2$	<i>A</i>	no

2. (1 point) From your recall of the Orgel diagrams, give the state-to-state notation for the same-spin transition(s) expected for an octahedral d^6 high-spin complex. Be sure to add the spin multiplicity for the states.

Transition(s): ${}^5T_{2g} \rightarrow {}^5E_g$ (same diagram as d^1)

3. (1 point) For the reaction, $[\text{Pt}(\text{NH}_3)_3\text{CN}]^+ + \text{CN}^- \rightarrow [\text{Pt}(\text{NH}_3)_2(\text{CN})_2] + \text{NH}_3$, which isomer of $[\text{Pt}(\text{NH}_3)_2(\text{CN})_2]$ would predominate, *cis* or *trans*?

Answer: ***trans*** (CN^- is a strong *trans*-directing ligand)