Assignment 5  Advanced Transition Metal Organometallic Chemistry

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2019-03-06, 23:59 IST.

1) The common method(s) for the preparation of bis(arene)metal complexes is/are,
   - [ ] cyclotrimerization of alkynes
   - [ ] vapour condensation method
   - [ ] oxidative coupling
   - [ ] electrophilic aromatic substitution

No, the answer is incorrect.
Score: 0
Accepted Answers:
- cyclotrimerization of alkynes
- vapour condensation method

2) The reaction given below is an example of,
   - [ ] reductive complexation
   - [ ] cyclotrimerization reaction
   - [ ] Fischer-Hafner synthesis
   - [ ] metal atom/ligand vapour cocondensation

No, the answer is incorrect.
Score: 0
Accepted Answers:
- Fischer-Hafner synthesis

3) Alkylated arenes in Fischer-Hafner synthesis,
   - [ ] gives bis(arene) metal complexes
   - [ ] gives mono(arene) metal complexes
   - [ ] requires harsh condition
   - [ ] isomerized by AlCl₃

No, the answer is incorrect.
Score: 0
4) Metal orbitals for \( \text{bis(arene)metal complexes (h}^6\text{-C}_6\text{H}_6)_2\text{M, which has } \delta \text{ and } \sigma \text{ symmetry respectively (if } z \text{ is the molecular axis) are,} \)

- \( d_z^2 \) and \( d_{xz} \)
- \( d_{x^2-y^2} \) and \( p_z \)
- \( s \) and \( p_y \)
- \( d_z^2 \) and \( s \)

No, the answer is incorrect.

Score: 0

Accepted Answers:
- \( d_z^2 \) and \( p_z \)

5) Identify the doubly degenerate ligand group orbital (LGO) for \( \text{C}_6\text{H}_6\) ligand which is centrosymmetrical in nature,

- \( e_{2u} \)
- \( e_{1g} \)
- \( b_{2g} \)
- \( a_{2u} \)

No, the answer is incorrect.

Score: 0

Accepted Answers:
- \( e_{1g} \)

6) The following reaction can be categorized as,

- radical reaction
- nucleophilic addition reaction
- oxidative addition reaction
- nucleophilic substitution reaction

No, the answer is incorrect.

Score: 0

Accepted Answers:
- nucleophilic addition reaction

7) The point group of the following compound is,

- \( D_{6h} \)
- \( C_{3v} \)
- \( C_{2h} \)
- \( D_{3h} \)

No, the answer is incorrect.

Score: 0
8) Identify the attacking species in the following reaction, \( D_{6h} \)

- an alkyl anion (\( R^- \))
- an alkyl cation (\( R^+ \))
- an alkyl radical (\( R^• \))
- an alkane (\( RH \))

No, the answer is incorrect.
Score: 0

Accepted Answers:
- an alkyl radical (\( R^• \))

9) Predict the product of the reaction,

No, the answer is incorrect.
Score: 0

Accepted Answers:

10) The bond energies of \( D(\text{Cr}-\text{C}_6\text{H}_6) \) and \( D(\text{Fe}-\text{C}_5\text{H}_5) \),

- are equal to each other
- \( D(\text{Cr}-\text{C}_6\text{H}_6) \) is less than \( D(\text{Fe}-\text{C}_5\text{H}_5) \)
- are proportional to hapticity of the \( \text{C}_6\text{H}_6 \) and \( \text{Cp} \) ligands
- are proportional to number of \( p \)-electrons of the \( \text{C}_6\text{H}_6 \) and \( \text{Cp} \) ligands

No, the answer is incorrect.
Score: 0

Accepted Answers:
- \( D(\text{Cr}-\text{C}_6\text{H}_6) \) is less than \( D(\text{Fe}-\text{C}_5\text{H}_5) \)