Assignment 2_ Chemistry of main group elements

The due date for submitting this assignment has passed. Due on 2018-02-07, 23:59 IST.

Submitted assignment

1) The Steric no. (SN) and the number of loan pairs of central atom (LPs) in I₃⁺, respectively, are

- SN = 4 and LPs = 2
- SN = 2 and LPs = 2
- SN = 10 and LPs = 8
- SN = 2 and LPs = 8

No, the answer is incorrect.
Score: 0
Accepted Answers:
SN = 4 and LPs = 2

2) The geometry and shape of ClF₃, respectively, are

- trigonal bipyramidal and T-shaped
- T-shaped and trigonal bipyramidal
- tetrahedral and trigonal planar
- trigonal planar and trigonal planar

No, the answer is incorrect.
Score: 0
Accepted Answers:
trigonal bipyramidal and T-shaped

3) During hybridization, the number of hybrid orbitals formed, are equal to the

- number of atomic orbitals mixed
- number of valence orbitals mixed
- sum of bonding and antibonding orbitals
- half the number of electrons coming from the central atom

No, the answer is incorrect.
Score: 0
Accepted Answers:
4) The correct order of hybridization of central atoms in the following species: BF$_3$, HC≡CH, CBr$_4$ and CO$_3^{2-}$, is

- $sp^3$, $sp$, $sp^3$ and $sp^2$, respectively
- $sp$, $sp$, $sp^3$ and $sp^2$, respectively
- $sp^2$, $sp$, $sp^3$ and $sp^2$, respectively
- $sp^2$, $sp$, $sp^3$ and $sp^3$, respectively

No, the answer is incorrect.
Score: 0

Accepted Answers:
$sp^2$, $sp$, $sp^3$ and $sp^2$, respectively

5) According to Bent’s rule: More electronegative substituents ‘prefer’ hybrid orbitals having ................., and more electropositive substituents ‘prefer’ orbitals having ............... 

- more $p$-character; less $s$-character
- more $s$-character; more $p$-character
- less $p$-character; more $s$-character
- less $s$-character; more $s$-character

No, the answer is incorrect.
Score: 0

Accepted Answers:
less $s$-character; more $s$-character

6) The decreasing order of bond angle X-P-X in POX$_3$ (X= F, Cl, Br) is

- POCl$_3$ > POBr$_3$ > POF$_3$
- POBr$_3$ > POCl$_3$ > POF$_3$
- POBr$_3$ > POF$_3$ > POCl$_3$
- POBr$_3$ < POCl$_3$ > POF$_3$

No, the answer is incorrect.
Score: 0

Accepted Answers:
POBr$_3$ > POCl$_3$ > POF$_3$

7) Among the following, the correct statement(s) is/are:

1) Number of atomic orbitals combined ≠ the number of MOs produced,
2) The energy of Bonding MOs will be lower than that of isolated atoms,
3) The energy of Antibonding MOs will be higher than that of isolated atoms
4) The energy and the orientation of AOs should not be similar to form MOs

- 1
- 2 and 3
- 2, 3 and 4
- 1 and 4

No, the answer is incorrect.
Score: 0
8) The bond order and the number of electrons present in \( s^* \) (antibonding orbital) in \( \text{He}^2+ \), respectively, are

- 1 and 1
- 0 and 1
- 2 and 0
- \( \frac{1}{2} \) and 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
- \( \frac{1}{2} \) and 1

9) The correct bond order of the following species: \( \text{N}_2 \), \( \text{N}_2^+ \), and \( \text{O}_2 \), is

- 3, 2.5 and 3
- 2.5, 2 and 2
- 3, 2.5 and 2
- 2, 2.5 and 3

No, the answer is incorrect.
Score: 0

Accepted Answers:
- 3, 2.5 and 2

10) The molecule that represents the hybridization sequence: \( \text{sp}^2-\text{sp}^2-\text{sp}-\text{sp} \), is

- \( \text{H}_2\text{C}≡\text{C}≡\text{CH}_2 \)
- \( \text{H}_2\text{C}≡\text{CH}-\text{C}≡\text{N} \)
- \( \text{H}≡\text{C}≡\text{C}≡\text{CH} \)
- \( \text{H}_2\text{C}≡\text{C}≡\text{CH}_2 \)

No, the answer is incorrect.
Score: 0

Accepted Answers:
- \( \text{H}_2\text{C}≡\text{CH}-\text{C}≡\text{N} \)

You were allowed to submit this assignment only once.