

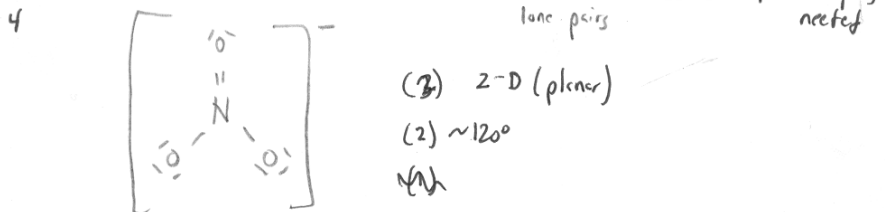
Quiz: Ch. 8 & 9
Version I (35 pts)
AP Chemistry

Name: _____
I have not received or given, nor will give any aid on this exam.
November 4, 2004 Period: 5 6 7

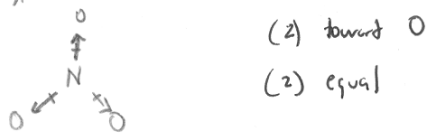
- 6
1. (7 pts) Consider the compound $\text{Fe}(\text{NO}_3)_2$. (1) (1)
- a. (2 pts) Name this compound. iron (II) nitrate
- b. (5 pts) In the space below, draw the Lewis structure (2-dimensional, as usual). Include resonance structures if appropriate. state how many res. structures. Do not



2. (24 pts) Consider only the anion of the above compound: (2) 20
- a. (6 pts) Draw the molecular geometry. Show 3-dimensional structure if appropriate; no lone pairs needed. 3 each



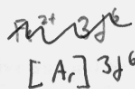
- b. (2 pts) Approximate the bond angle(s) as accurately as possible. 120°
- c. (2 pts) Name the molecular geometry of the anion: trig. planar
- d. (2 pts) Name the electron domain geometry of the anion: trig. planar
- e. (3 pts) How many and what type of hybrid orbitals would be employed by the central atom? 3 sp^2
- f. (4 pts) Re-draw your answer to part a in the space below; then, draw the dipoles for each bond. the skeleton



- g. (2 pts) Is the anion polar or nonpolar? Circle one: nonpolar
- h. (2 pts) The anion contains 3 sigma bonds and 1 pi bonds.

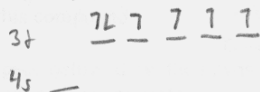
3. (6 pts) Consider only the cation of the above compound:

a. (2 pts) Give the noble gas electronic configuration of the cation.



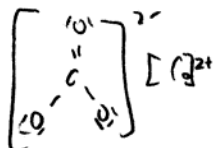
b. (4 pts) Is the cation diamagnetic or paramagnetic? Briefly describe how you know in 1-2 sentences and/or a drawing.

Circle one



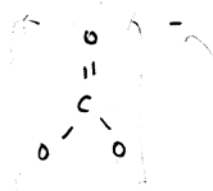
4 unpaired = paramagnetic
2 2

- 6
1. (7 pts) Consider the compound CoCO_3 .
- a. (2 pts) Name this compound. cobalt (II) carbonate
cobaltous
- b. (5 pts) In the space below, draw the Lewis structure (2-dimensional, as usual.) Include resonance structures if appropriate.



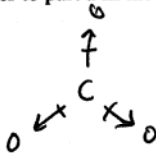
(2) ionic
(2) bonds 2, 1, 4
AVOON

- 20
2. (22 pts) Consider only the anion of the above compound:
- a. (6 pts) Draw the molecular geometry. Show 3-dimensional structure if appropriate.



2 planar
2 ~120°

- b. (2 pts) Approximate the bond angle(s) as accurately as possible. 120°
- c. (2 pts) Name the molecular geometry of the anion: trig. pl.
- d. (2 pts) Name the electron domain geometry of the anion: trig. pl.
- e. (6 pts) How many and what type of hybrid orbitals would be employed by the central atom? 3 sp²
- f. (4 pts) Re-draw your answer to part a in the space below; then, draw the dipoles for each bond.



- g. (2 pts) Is the anion polar or nonpolar?
- h. (2 pts) The anion contains 3 sigma bonds and 1 pi bonds.

3. (6 pts) Consider only the cation of the above compound:

a. (2 pts) Give the noble gas electronic configuration of the cation. $[Ar] 3d^7$

b. (4 pts) Is the cation diamagnetic or paramagnetic? paramagnetic Briefly describe how you know in 1-2 sentences and/or a drawing.

3d ↑ ↑ ↑ ↑ ↑

4s ↑