Final review game

Split up into groups of 3

Reward: +3 pts extra credit for winning team
        +2 pts for running up team
        +1 pt for third place team

Rules:
1. No notes, no phones - only pens/paper/calculators are allowed
2. For each question, you can bet up to a certain # of points as specified on question
3. When you submit the answer, also write the group # AND the # of pts you are betting - you must submit before time limit!
4. 1st group to submit answer to me gets 2 bonus pts per question
5. If you get the question right, you get the # of points betted. If you get a question wrong, you have the # of points subtracted from your total... so make sure you are sure of your answer! (yes you can go into the negatives!)
6. The group with the highest number of points wins!
Which one of the following numbers contains a digit or digits which is/are not significant?

A) 970.0

B) 502

C) .300

D) .0043

E) 20.01
Question 2 (bet up to 10 pts - 45 seconds)

Which of the following compounds is ionic?

A) PF$_3$

B) CS$_2$

C) HCl

D) SO$_2$

E) MgCl$_2$
Question 3 (bet up to 10 pts - 45 seconds)

Which one of the following combinations of names and formulas of ions is incorrect?

A) O$_2^-$ oxide
B) Al$^{3+}$ aluminum
C) NO$_3^-$ nitrate
D) PO$_4^{3-}$ phosphate
E) CrO$_4^{2-}$ chromate
Question 4 (bet up to 15 pts - 45 seconds)

Which one of the following is a polyatomic cation?

A) nitrate

B) chromate

C) permanganate

D) hydronium

E) potassium
Question 5 (bet up to 20 pts - 90 seconds)

What is the molecular shape of SiF$_6^{2-}$ as predicted by the VSEPR theory?

A) trigonal bipyramidal

B) hexagonal

C) tetrahedral

D) see-saw

E) octahedral
Question 6 (bet up to 20 pts - 60 seconds)

A molecule with the formula AX₂ uses __________ to form its bonds.

A) sp hybrid orbitals

B) sp³d hybrid orbitals

C) sp² hybrid orbitals

D) sp³d² hybrid orbitals

E) sp³ hybrid orbitals
Question 7 (bet up to 25 pts - 45 seconds)

A molecule with the formula AX₄ uses __________ to form its bonds.

A) sp hybrid orbitals

B) sp³d hybrid orbitals

C) sp² hybrid orbitals

D) sp³d² hybrid orbitals

E) sp³ hybrid orbitals
A molecule with the formula $AX_3E_1$ uses _________ to form its bonds.

- A) sp hybrid orbitals
- B) sp$^3d$ hybrid orbitals
- C) sp$^2$ hybrid orbitals
- D) sp$^3d^2$ hybrid orbitals
- E) sp$^3$ hybrid orbitals
Select the correct statement about \( \pi \)-bonds in valence bond theory.

A) A \( \pi \) bond is stronger than a sigma bond.

B) A \( \pi \) bond can hold 4 electrons, two above and two below the sigma-bond axis.

C) A carbon-carbon double bond consists of two \( \pi \) bonds.

D) A \( \pi \) bond is the same strength as a sigma bond.

E) A \( \pi \) bond between two carbon atoms restricts rotation about the C–C axis.
Question 10 (bet up to all the pts you have - 3 min)

Which of the following molecules is polar?

A) BeCl₂

B) SF₂

C) KrF₂

D) CO₂

E) CCl₄
For which one of the following molecules is the indicated type of hybridization not appropriate for the central atom?

A) BeCl$_2$  $sp^2$
B) SiH$_4$  $sp^3$
C) BF$_3$  $sp^2$
D) C$_2$H$_2$  $sp$
E) H$_2$O  $sp^3$