

THIS IS FORM A

Name _____

Grades will be posted sometime tomorrow. You may pick up your test copy from the bookcase outside my office. Have a wonderful break!

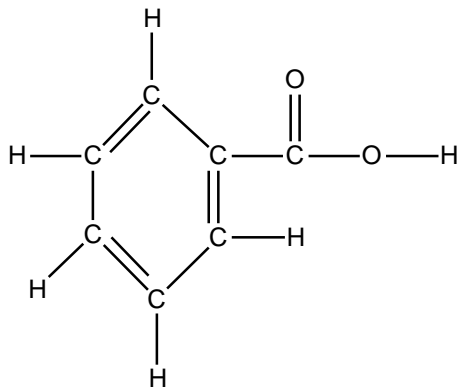
Choose the single best answer to each question.

- Of the following elements which has the smallest radius?
 - Zr
 - Br
 - Na
 - Al
- Calcium ions and bromide ions are brought together to form a compound, with a release of energy. This energy is called
 - ionization energy
 - electron affinity
 - lattice energy
 - bond energy
- Which of the following has bonds with the most ionic character?
 - CsCl
 - AlBr₃
 - MgCl₂
 - NaCl
- The total number of valence electrons in the PH₄⁺ ion is
 - 7
 - 8
 - 9
 - 18
 - 19
- In the Lewis structure of ICl₄⁻, the central atom, I, has
 - 4 shared pairs of electrons, no lone pairs
 - 1 lone pair of electrons
 - 6 shared pairs of electrons
 - 4 shared pairs of electrons and 2 lone pairs

6. The lattice energy for ionic compounds increases as the charge on the ions _____ and the size of ions _____
1. increases, increases
 2. decreases, decreases
 3. increases, decreases
 4. decreases, increases
7. Which of the following species has a central atom with no lone pairs?
1. AsH_3
 2. OF_2
 3. AsCl_5
 4. ICl_4^-
8. Which of the following has a central atom with more than an octet of electrons?
1. BrO_4^-
 2. SCl_2
 3. SeF_4
 4. IO_3^-
9. Which of the following species has a 180° bond angle in its molecular geometry?
1. BrO_4^-
 2. OF_2
 3. CBr_4
 4. AsCl_5
10. The molecule XeOF_4 has a central Xe atom. This Xe atom has a double bond to the oxygen atom, a single bond to each fluorine atom and a lone pair of electrons. The geometry of XeOF_4 is best described as
1. see-saw
 2. trigonal bipyramid
 3. octahedral
 4. square pyramid
11. The molecular geometry of IO_3^- is
1. trigonal planar
 2. trigonal pyramid
 3. T-shaped
 4. see-saw
12. For which of the following can resonance structures be drawn?
1. ICl_4^-
 2. SCl_2
 3. AsCl_5
 4. CS_3^{2-}

13. Which one of the following is square planar?
1. BrO_4^- 2. ICl_4^- 3. SeF_4 4. CBr_4
14. Consider the species BrO_4^- . Which of the following statements concerning this ion is true?
1. The bonds are polar, as is the ion.
2. The bonds are polar but the ion is nonpolar.
3. The bonds are nonpolar, as is the ion.
4. The bonds are nonpolar, but the ion is polar.
15. Which of the following has a planar (flat) geometry?
1. SCl_2 2. AsH_3 3. SeF_4 4. IO_3^-
16. Of the molecules SCl_2 , BrO_4^- , CBr_4 and AsCl_5 , the one that is polar is
1. SCl_2 2. BrO_4^- 3. CBr_4 4. AsCl_5
17. The negative end of a polar bond is toward the atom that has
1. the smaller number of valence electrons
2. the larger electronegativity value
3. a lone pair
4. the lower ionization energy
18. Which geometry can be associated with an sp^3 hybridized atom?
1. trigonal planar 2. trigonal pyramid
3. square planar 4. T-shaped
19. In which molecule does the central atom have sp^3d hybridization?
1. SCl_2 2. SeF_4 3. ICl_4^- 4. AsH_3

20. The molecule



has

1. 11 sigma bonds and 4 pi bonds
 2. 11 sigma bonds and 8 pi bonds
 3. 13 sigma bonds and 6 pi bonds
 4. 15 sigma bonds and 4 pi bonds
21. On a relative basis, the weaker the intermolecular forces in a substance are
1. the greater is its tendency to evaporate
 2. the higher is its boiling point
 3. the lower is its vapor pressure at a particular temperature
 4. the larger is its surface tension as a liquid
22. Which of the following substances exhibits London forces only?

Ar, NH₃, Br₂, NaCl, H₂S

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|---------------------------------------|-------------------------|
| 1. Ar, Br ₂ | 2. NaCl |
| 3. NH ₃ , H ₂ S | 4. Ar, H ₂ S |

23. Which of the following compounds exhibit(s) hydrogen bonding:

CH₄, AsH₃, CH₃NH₂, H₂Te, HF

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|---|---|
| 1. AsH ₃ , H ₂ Te | 2. CH ₃ NH ₂ , HF |
| 3. CH ₄ , H ₂ Te, AsH ₃ | 4. HF, H ₂ Te |
| 5. CH ₄ , AsH ₃ , CH ₃ NH ₂ , H ₂ Te, HF | |

24. Which of the following has the lowest boiling point?

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| 1. H ₂ O | 2. N ₂ | 3. HCl | 4. CCl ₄ |
|---------------------|-------------------|--------|---------------------|

25. The measure of a liquid's resistance to flow is called

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| 1. surface tension | 2. heat of vaporization |
| 3. viscosity | 4. diffusion rate |

.Answers:

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| 1. 2 | 14. 2 |
| 2. 3 | 15. 1 |
| 3. 1 | 16. 1 |
| 4. 2 | 17. 2 |
| 5. 4 | 18. 2 |
| 6. 3 | 19. 2 |
| 7. 3 | 20. 4 |
| 8. 3 | 21. 1 |
| 9. 4 | 22. 1 |
| 10. 4 | 23. 2 |
| 11. 2 | 24. 2 |
| 12. 4 | 25. 3 |
| 13. 2 | |