Kegn. Andarge Welede-Giorgis Memorial School

2012, Grade 11, Sub. Chem. Review Questions.

Please, Answer the following Questions.

1. The molecules BF_3 and NF_3 are covalent cpds. BF_3 is non-polar while NF_3 is polar. The reason is:
   A) B is a metal and N is non-metal
   B) B-F bonds have no dipole moment but N-F bonds have dipole moment
   C) the atomic mass
2. In which of the following substances is the main IMAF is dispersion force?
   A) C_4H_{10} B) CH_3OH C) NH_3 D) HF
3. The Lewis symbol for the oxide (O^{2-}) ion would show dots to represent
   A) $2e^-$ B) $8e^-$ C) $10e^-$ D) $16e^-$
4. The total number of valence electrons in N_2 is A) 2 B) 4 C) 6 D) 10
5. "An orderly arrangement of nuclei in a sea of electrons" describes:
   A) Ionic Bond B) Metallic Bond C) Covalent Bond D) Hydrogen Bond
6. Which of the following substances has the highest melting point?
   A) NaCl B) NaI C) NaF D) NaBr
7. Which of the following molecules is polar?
   A) CS_2 B) CCl_4 C) cis-1,2-dichloroethene D) trans-1,2-dichloroethene
8. Which of the following triatomic molecules has the same molecular shape?
   O_3, SO_2, CO_2
   A) O_3 and SO_2 B) O_3 and CO_2 C) SO_2 and CO_2 D) All have the same shape
9. Which of the following ions: SCN^-, CNO^-, NO_2^- has the same molecular geometry? A) SCN^- and NO_2^- B) CNO^- and SCN^- C) CNO^- and NO_2^- D) All have the same shape
10. Of the following pairs of molecules, which one has the same trigonal planar geometry but different number of bonds?
    A) BF_3 and BH_3 B) BF_3 and SO_3 C) ClF_3 and BF_3 D) BrF_3 and ClF_3
11. Which of the following species can not be adequately described by a single Lewis structure? A) C_2H_6 B) C_2H_4 C) O_3 D) CCl_4
12. The intermolecular force that is responsible for the dissolution of solid NaCl in water is: A) Hydrogen Bonding B) Dipole-Dipole Forces C) Ion-Dipole Forces D) London force

13. The Key IMAF in liquid CH_3Cl:

A) Hydrogen Bonding B) Dipole-Dipole forces C) London forces D) Ion-Dipole forces

14. Which of the following bonds is non-polar?

A) N-Cl B) C-F C) F-F D) C-O E) A and C

15. Given the molecules: i. BF_3 ii. PF_3 iii. SF_4 iv. SF_6 v. BrF_3.

A) i, ii, iii, iv B) ii, iii, iv C) i, ii, v D) ii, iii, iv

16. When liquid benzene (C_6H_6) boils the gas formed consists of

A) Ions B) Individual atoms C) Individual molecules D) None

17. Which of the following electron groups cannot give rise to bent (V-shape) molecules?

A) Two B) Three C) Four D) None

18. Stronger IMAF decrease one of the following properties of substances.

A) Vapor pressure B) Boiling point C) Heat of vaporization D) Density

19. What is the electron group arrangement, molecular shape, and ideal bond angles respectively for H_3O^+?

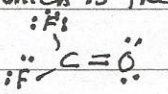
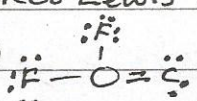
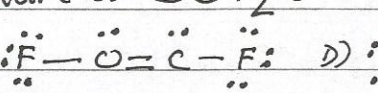
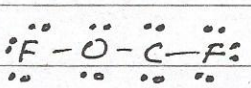
A) Trigonal Planar, Tetrahedral and 120°

B) Tetrahedral, Trigonal Planar, 107.5°

C) Trigonal Planar, Tetrahedral, 120°

D) Trigonal Planar, Trigonal Planar, 120°

20. Which is the correct Lewis structure of COF_2?

A)  B)  C)  D) 

21. Which of the following atoms can expand its octet?

A) F B) O C) N D) S

22. In which of the following bonding patterns does X obey the Octet Rule? A)  B)  C)  D) All except C

23. How many resonance hybrids are possible for N_2O?

A) Three B) Two C) One D) Four

24. Which of these species is tetrahedral?

A) $SiCl_4$ B) SeF_4 C) CI_4 D) A and C

25. The F-S-F bond angles in SF_6 are

A) 90° and 180° B) 90° only C) 90° and 120° D) 45° and 90°

26. Which of the following four molecules is polar? PH_3, OF_2, HF, SO_3.

A) All except SO_3 B) Only HF C) HF and OF_2 D) All

27. Which species is planar? A) NH_3 B) H_3O^+ C) SO_3^{2-} D) NO_2^-

28. Which of the following are not matched correctly?

A) NF_3 : Trigonal Planar
B) H_2O: Bent
C) BF_3 : Trigonal Planar
D) AsF_5 : Trigonal Bipyramidal

29. Which of the following species is incorrectly matched with its electronic geometry about the central atom?

A) NO_2^- : Triagonal Planar
B) ClO_4^- : Tetrahedral
C) SO_3^{2-} : Pyramidal
D) ClO_3 : Tetrahedral

30. What is the total number of valence electrons in SO_4^{2-}?

A) 32 B) 24 C) 18 D) 20

31. Writ the Lewis formula for each of the following:

CF_4, NH_3, $BeBr_2$, H_2O and PF_3

32. Which of the following substances can be melted without breaking Chem. bonds?

A) Sodium Sulfate B) Zinc Chloride C) Sulfur Dioxide D) Silicon Dioxide
E) Diamond

33. What is the molecular shape of nitrogen trichloride?

A) Trigonal Planar B) Tetrahedral C) Trigonal pyramidal D) None of these

34. What is the bond angle in nitrogen Trichloride?

A) 120° B) 109.5° C) 107.5° D) 90°

35. Given the three molecules: CH_3OH, H_2S, CH_3CH_3:

A) H-bond is the dominant IMAF for only CH_3OH.
B) London force is the dominant IMAF in all of them.
C) H-bond is the dominant IMAF in all of them.
D) None of these

36. In the rxn: $BH_3 + NH_3 \longrightarrow H_3B-NH_3$, the H-B-H bond angle changes from: A) 109° to 120° B) 90° to 109° C) 120° to 109°
D) None

37. The largest bond angle is in
A) H_2O B) CO_2 C) PCl_3 D) CCl_4

38. Which of the following bonds is the most polar?
A) H – O B) H – F C) H – Cl D) H – Br

39. The pair having identical geometry:
A) BF_3, AlF_3 B) BeF_2, H_2O C) BF_3, PCl_3 D) BCl_3, PCl_3

40. Which molecule has dipole moment > 0.
A) $BeCl_2$ B) CO_2 C) H_2S D) PH_3

41. CS_2 is an example of a molecule which is:
A) polar with polar bonds
B) non-polar with polar bonds
C) Non-polar with non-polar bonds
D) polar with non-polar bonds

42. What accounts for different boiling points of non-polar molecules?
A) Dipole-Dipole interaction C) Ion-Dipole Interaction
B) Hydrogen bonding D) Dispersion forces

43. Which of the following substances has the strongest IMAF and the highest boiling point?
A) $H_2N_2H_2$ B) C_2H_4 C) Ne D) $CH_3-CH_2-CH_3$

44. What kind of IMAF must be overcome as solid CO_2 sublimes?
A) H-bonding B) Dipole-Dipole interaction C) London Dispersion
D) Ion-Dipole

45. The strength of Dispersion Forces increase with increase in:
A) molar mass B) temperature C) Pressure D) All

46. Which IMAF is the strongest in magnitude?
A) Dipole-Dipole Interaction C) London/Dispersion
B) Hydrogen Bonding D) Ion – Dipole

47. Which type of IMAF exists in all substances
A) London B) Hydrogen bonding C) Dipole-Dipole D) Ion-Dipole

48. Write Lewis structure for each ionic cpd
A) NaF B) CaO C) $SrBr_2$ D) K_2O