

S – block elements p – block elements and chemical bonding -1

1 .Group I elements do not occur free (native state) in the nature because

- They are unstable
- Their compounds with other elements are highly stable
- Their chemical reactivity is very high
- They react with the constituents of the atmosphere

2. Group II elements are called ----- metals

- Alkali metals
- Noble metals
- Alkaline earth metals
- Transition metals

3. Atomic radii of alkali metals

- Decrease down the group
- Increase down the group
- Remain constant
- Are less than the corresponding ionic radii

4. Which electronic configuration is not of alkali metal?

- $1S^2 2S^1$
- $1S^2 2S^2 2P^6 3S^1$
- $1S^2 2S^2 2P^6 3S^2 3d^{10}4S^1$
- $1S^2 2S^2 2P^6 3S^2 3P^6 4S^1$

5.The correct order of density of the following metals is

- $Li < Na > K$
- $Li > Na > K$
- $Li < Na < K$
- $Li > Na < K$

6. Because of their low ionization energy alkali metals are

- Weak oxidizing agents
- Strong reducing agents
- Strong oxidizing agents
- Weak reducing agents

7. Which among the following has the highest ionization potential?

- a. K
- b. Li
- c. Rb
- d. Na

8. Which alkali metal directly reacts with nitrogen gas?

- a. Na
- b. K
- c. Li
- d. Cs

9. Which has the maximum electropositive character ?

- a. Na
- b. K
- c. Li
- d. Cs

10. Which of the following property is not true for an alkali metal?

- a. Low Ionization potential
- b. Low atomic volume
- c. Low density
- d. Low electronegativity

11. Sodium forms only Na^+ (unipositive ion) and not Na^{2+} (dispositive ion) because

- a. Sodium contains only one electron in outermost shell
- b. First ionization potential is small and the difference in first and second ionization potential is large
- c. radius of Na^{2+} is much smaller than that of Na^+
- d. radius of Na^{2+} is greater than that of Na^+

12. Which of the following alkali metal is not stored in kerosene ?

- a. Na
- b. K
- c. Cs
- d. Li

13. Sodium reacts with water more vigorously than lithium because

- a. It has higher atomic weight
- b. It is more electronegative
- c. It is more electropositive
- d. It has higher ionization energy

14. Which of the following elements cannot give characteristic coloration to the flame ?

- a. Cs
- b. Ca
- c. Mg
- d. Sr

15. A colorless salt gives violet color to the Bunsen flame and also turns moist litmus paper blue.
It is

- a. Na_2CO_3
- b. KNO_3
- c. K_2CO_3
- d. $\text{Cu}(\text{OH})_2$

16. Among the nitrates of alkali metals which one can be decomposed to its oxide ?

- a. NaNO_3
- b. KNO_3
- c. LiNO_3
- d. All these

17. Lithium does not resemble other alkali metals due to

- a. Small size of Li^+ ion
- b. High polarization power
- c. High Ionization energy and low electro positive nature
- d. All the above are correct

18. Photo electric effect is maximum in

- a. Li
- b. Na
- c. K
- d. Cs

19. Carbon differ from the other elements of its group in several respect due to

- a. Its limited covalence of 4
- b. Its ability to form multiple bonds
- c. Its tendency to form long chain
- d. All the above are correct

20. The property to show catenation is maximum in

- a. C
- b. Si
- c. Ge
- d. Sn

25. Oxidation state not shown by carbon is

- a. + 4
- b. - 4
- c. + 1
- d. + 2

22. Except ----- all the 14th group elements exhibit allotropy

- a. C
- b. Si
- c. Pb
- d. Sn

23. The amorphous forms of carbon are

- a. Diamond and graphite
- b. Diamond and charcoal
- c. Graphite and lamp black
- d. Charcoal and lamp black

24. Which one of the properties is common in diamond and graphite?

- a. Electrical conductivity
- b. Crystal structure
- c. Nature of bonding
- d. Density

25. The use of diamond as a gem depends on its

- a. Hardness
- b. High refractive index
- c. Purest form of carbon
- d. Chemical inertness

26. The shapes of Fullerene (C₆₀) resembles that of soccer ball with

- a. Six membered carbon rings
- b. Five membered carbon rings
- c. Five and six membered carbon rings
- d. Seven membered carbon rings

27. n – type semiconductor is obtained when silicon is mixed (doped) with

- a. Trivalent impurities
- b. Tetravalent impurities
- c. Pentavalent impurities
- d. None of these

28. According to octet rule, atoms form chemical bond to achieve

- a. High energy
- b. Stability
- c. Noble gas configuration
- d. Low energy

29. The electrons which are involved in chemical bonding are

- a. Inner shell electrons
- b. Valence shell electrons
- c. Both inner shell and valence shell electrons
- d. Neither inner shell nor valence shell electrons

30. Anions and cations are formed when electrons are

- a. Shared between atoms
- b. Gained or lost by atoms
- c. In an excited state
- d. None of the above

31. Which of the following process involve the breaking of ionic bond?
- melting of ice
 - melting of NaCl crystal
 - melting of solid iodine
 - boiling of water
32. The bonds formed by sharing of electrons between atoms is called a
- Covalent bond
 - Ionic bond
 - Hydrogen bond
 - Metallic bond
33. Identify the compound which is not an ionic
- MgSO_4
 - KCl
 - CaO
 - NH_3
34. In dry ice there are
- Ionic bond
 - Covalent bond
 - Hydrogen bond
 - None of these
35. The types of overlapping taking place during the formation of HCl molecule is
- s – s
 - s – p
 - p – p
 - s – sp hybrid orbital
36. The angle between two covalent bonds is maximum in
- Methane
 - Water
 - Carbon dioxide
 - Ammonia

37. The hybridization of the central atom in methane , carbon dioxide and boron trifluoride respectively is

- a. sp , sp^2 , sp^3
- b. sp^2 , sp , sp^3
- c. sp^3 , sp , sp^2
- d. sp^3 , sp^2 , sp

38. The bond angle and hybridization in boron trifluoride is

- a. 120° , sp^3
- b. $109^\circ 28'$, sp^3
- c. 180° , sp^3
- d. 120° , sp^2

39. In ethene molecule the C – C atoms are linked by

- a. Two pi bonds
- b. Two sigma bonds
- c. One sigma and one pi bonds
- d. One sigma and two pi bonds

40. Number of π bonds in naphthalene molecule is

- a. 3
- b. 4
- c. 5
- d. 6

41. Which of the following molecule contains only one π bond ?

- a. Benzene
- b. Ethyne
- c. Nitrogen
- d. Ethene

42. The repulsion is strongest between the electrons of

- a. Lone pair – lone pair
- b. Lone pair – bond pair
- c. Bond pair – bond pair
- d. All the above

43. Dative bond is present in

- a. NH_3
- b. H_2O
- c. NH_4Cl
- d. BaCl_2

44. Proton may take part in

- a. Ionic bonding]
- b. Covalent bonding
- c. Coordinate bonding
- d. H- bonding

45. Following pairs does not form dative bonds

- a. NH_3 and H^+
- b. H_2O and CH_4
- c. NH_3 and BF_3
- d. H_2O and H^+

46. Which one of the following compound does not contain all the three types of bond i.e. ionic, covalent and coordinate bond

- a. $[\text{Ni}(\text{CO})_4]$
- b. NH_4Cl
- c. H_2SO_4
- d. $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$

47. Hydrogen bond is not present in

- a. Glycerine
- b. Water
- c. Hydrogen sulphide
- d. Hydrogen fluoride

48. Identify the false statement

- a. A water molecule can form four hydrogen bonds
- b. S – orbital never forms a π bond
- c. P – orbital forms a π bond
- d. A water molecule can form two hydrogen bonds

49. The bond formed between two atoms of an electropositive element is

- a. Electrovalent
- b. Covalent
- c. Coordinate covalent
- d. Metallic bond

50. The shapes of molecules and ions are mainly determined by the number of

- a. Valence shell electrons
- b. Lone pair of electrons
- c. Bond pair and lone pair electrons
- d. Lone pair valence shell electrons

51. Which of the following contains both polar and non-polar covalent bonds ?

- a. H_2O
- b. N_2
- c. CH_4
- d. H_2O_2

52. Mg and Li are similar in their properties due to

- a. Same charge to mass ratio
- b. Same electron affinity
- c. Same group
- d. Same polarization power

53. Which element shows more pronounced inert pair effect

- a. Si
- b. Sn
- c. Pb
- d. C

54. Potassium super oxide is used in breathing masks because

- a. It decomposes and gives oxygen
- b. It reacts with carbon dioxide and produce oxygen gas
- c. It absorb poisonous gases
- d. All the above are correct

55. The softest form of carbon is a

- a. Graphite
- b. Diamond
- c. Lamp black
- d. Bone black

56. Which will form a strongest ionic bond?

- a. F and Cl
- b. Cl and Br
- c. Mg and F
- d. Na and F

57. Sodium chloride is an ionic compound whereas hydrogen chloride gas is covalent because

- a. Sodium is reactive
- b. Hydrogen is a non-metal
- c. Hydrogen chloride is a gas
- d. Electronegativity difference between H and Cl is less than 2.1

58. Which type of bond is present in sulphuric acid

- a. Covalent bond
- b. Ionic bond
- c. Coordinate bond
- d. All the above

58. which of the following molecule is linear?

- a. C_2H_6
- b. C_2H_4
- c. H_2O
- d. C_2H_2

59. which one of the following compound that does not contain multiple bonds ?

- a. H_2O
- b. HCN
- c. CO
- d. N_2

60. Which of the following contains both ionic & covalent bonding?

- a. CH_2Cl_2
- b. NH_3
- c. NH_4Cl
- d. $FeCl_3$