

Department of Chemistry
C.L. Jain (P.G.) College, Firozabad
(Revision Questions)

NOTE: Questions are extracted from other sources, hence ignore if any error/wrong answer is found.

Multiple choice questions

1. Which of the following statement related to S block element is correct?

- a) Elements in which last electron enters in d orbital.
- b) Elements in which last electron enters in s orbital.**
- c) Elements in which last electron enters in p orbital.
- d) None of above.

2. Among the following find the correct statement related to group 2.

- a) The elements having 0 electrons in outer s orbital
- b) The elements having 1 electrons in outer s orbital
- c) The elements having 2 electrons in outer s orbital**
- d) The elements having 3 electrons in outer s orbital

3. All elements of group 1 are...

- a) Colorful
- b) Silvery white**
- c) Black – white
- d) None of above

4. From Lithium to Cesium the density...

- a) Increases**
- b) decreases

- c) remains same
- d) none of above

5. As we move from Lithium to Francium the ionic size...

- a) Decreases
- b) Increases**
- c) Remains constant
- d) None of above

6. The ionization energy from Lithium to Francium...

- a) Increases**
- b) Decreases
- c) Remains Same
- d) None of above

7. The electropositive character increases from...

- a) Lithium to Cesium**
- b) Cesium to Lithium
- c) Both a & b
- d) None of above

8. Which of the following element have highest electronegativity?

- a) Lithium
- b) Potassium
- c) Rubidium**
- d) Cesium

9. Find the correct statement related to metals.

- a) Metals have tendency to gain electrons
- b) Metals have tendency to lose electron**
- c) Metals have tendency to accept electrons
- d) None of above

10. Why electropositive character increases from Lithium to Cesium?

- a) Ionization energy increases
- b) Ionization energy decreases**
- c) Ionization energy remains same
- d) Other than above

11. Alkali metals show which oxidation state?

- a) 0
- b) +1**
- c) +2
- d) +3

12. Alkali metal ions are...

- a) Paramagnetic
- b) Diamagnetic**
- c) Triamagnetic
- d) Tetramagnetic

13. The alkali metals are...

- a) Good conductor of electricity**
- b) Bad conductor of electricity
- c) Bad conductor of heat
- d) None of above

14. Among the following which has highest reducing character?

- a) Sodium
- b) Potassium
- c) Rubidium
- d) Cesium**

15. Among the following which has lowest reducing character?

- a) Cesium
- b) Francium
- c) Potassium
- d) Lithium**

16. Among the following which one has lowest melting point?

- a) Lithium
- b) Potassium
- c) Cesium**
- d) Sodium

17. The flame of sodium is...

- a) Red violet
- b) Red Blue
- c) Golden yellow**
- d) Pale violet

18. Lithium shows similar properties with...

- a) Magnesium**
- b) Silicon
- c) Aluminium
- d) None of above

19. Lithium reacts with Nitrogen to give...

- a) LiN
- b) Li_2N
- c) Li_3N**
- d) Other than above

20. The nature of oxide...

- a) Depends upon the nature of alkali metals**
- b) Does not depends upon the nature of alkali metals

- c) Both A & B
- d) None of above

21. What is solvation of the ions?

- a) The repulsion of polar solvent molecules to the ion
- b) The repulsion of non polar solvent molecules to the ion
- c) The attraction of polar solvent molecules to the ion**
- d) The attraction of non polar solvent molecules to the ion

22. The hydroxides of Alkali metals have general formula...

- a) MOH**
- b) M_2OH
- c) MO_2H
- d) Other than above

23. Which of the following is the reducing agent?

- a) LiOH
- b) CsOH
- c) $LiAlH_4$**
- d) None of above

24. The role of Na^+ ion in animal body is...

- a) Deactivate enzymes
- b) Activate enzymes**
- c) Both A & B
- d) Other than above

25. Among the following which is present in Red Blood Cell?

- a) Na^+
- b) K^+
- c) Both A & B**
- d) None of above

26. Among the following which one have lowest density?

- a) Beryllium
- b) Magnesium
- c) Calcium**
- d) Radium

27. Why Ionization Potential decreases from Beryllium to Barium?

- a) Magnitude of screening effect.**
- b) Magnitude of kinetic effect
- c) Magnitude of dynamic effect
- d) None of above

28. Among the following which one has highest electropositive character?

- a) Beryllium
- b) Barium**
- c) Calcium
- d) Magnesium

29. Among the following which one has lowest Ionization energy?

- a) Beryllium
- b) Magnesium
- c) Calcium
- d) Radium**

30. The alkaline earth metals show ... oxidation state.

- a) 0
- b) +1
- c) +2**
- d) +3

31. Flame colour of Calcium is...

- a) Silver
- b) White
- c) Crimson
- d) Brick red**

32. The element Beryllium shows similar properties with...

- a) Sodium
- b) Magnesium
- c) Aluminium**
- d) Silicon

33. Among the following which is not soluble in water?

- a) Magnesium**
- b) Calcium
- c) Strontium
- d) Barium

34. The solubility of hydroxides of group 2 increases with...

- a) Decrease in atomic number
- b) Increase in atomic number**
- c) Both A & B
- d) None of above

35. The structure $[\text{Be}(\text{Ox})_2]^{2-}$ is known to have...

- a) Linear structure
- b) Tetrahedral structure**
- c) Octahedral structure
- d) Other than above

36. Among the following which element cannot be combined directly with Hydrogen?

- a) Beryllium**

- b) Calcium
- c) Magnesium
- d) None of above

37. The alkaline earth metals show +2 oxidation state. Why?

- a) They can easily accept electrons.
- b) They can easily lose electron.**
- c) They are amphoteric in nature.
- d) Other than above

38. Why are alkaline earth metals strong reducing agents?

- a) They have tendency to release electron in bivalent cation.**
- b) They have tendency to release electron in trivalent cation.
- c) They have tendency to release electron in monovalent cation.
- d) None of above

39. The Ionization Potential of Radium increases. Why?

- a) Shielding effect of f electrons is very high.
- b) Shielding effect of f electron is very less.**
- c) Shielding effect of d electron is very less
- d) None of above

40. Among the following which element shows apple green colour flame?

- a) Beryllium
- b) Magnesium
- c) Calcium
- d) Barium**

41. The ionic and atomic size increases from Beryllium to Radium. Why?

- a) Principle quantum number decreases
- b) Principle quantum number increases**
- c) Principle quantum number remains same
- d) None of above

Structure and Bonding:

1. Compound in which carbons use only sp^2 hybrid orbitals for bond formation is

- a) $CH_3CH_2CH_3$
- b) $CH_3C=CH_2$
- c) $CH_3=C=CH_2$
- d) $CH_2=CH-CH=CH_2$

Answer:(d)

2. The order of stability of carbonium ions is

- a) tertiary > secondary > primary
- b) secondary > tertiary > primary
- c) primary > secondary > tertiary
- d) primary > tertiary > secondary

Answer :(a)

3. Which of the following carbonium ions will be most stable ?

- a) $CH_3CH_2^+$
- b) $(CH_3)_2CH^+$
- c) $CH_2=CHCH_2^+$
- d) CH_3^+

Answer:(d)

4. Resonance structures of a molecule have

- a) same arrangement of atoms

- b) different arrangement of atoms
- c) different number of paired electrons
- d) None of these

Answer:(a)

5. Which of the following compounds will show dipole moment

- a) Cis-1, 2-dichloroethylene
- b)benzene
- c) trans. 1, 2-dichloroethylene
- d)p-dichlorobenzene

Answer:(a)

6. The order of stability of carbanions is '

- a) primary > secondary > tertiary
- b)secondary > tertiary > primary
- c) tertiary > secondary > primary
- d)tertiary > primary > secondary

Answer:(a)

7. Which of the following compounds have planar molecules?

- a) ethyl alcohol
- b)formaldehyde
- c) diethyl ether
- d)Ehanol

Answer:(b)

8. In stable organic compounds, carbon will always form

- a) 2 bonds
- b)4 bonds
- c) 3 bonds
- d)5 bonds

Answer: (b)

9. Compound in which carbons use only sp^3 hybrid orbitals for bond formation is

- a) $CH_3CH_2CH_3$
- b) $CH_3C=CH_2$
- c) $CH_3=C=CH_2$
- d) $CH_2=CH-CH=CH_2$

Answer: (a)

10. Which molecule has a nonzero dipole moment ?

- a) Cl_2
- b) CO_2
- c) CCl_4
- d) CHCl_3

Answer: (d)

P-Block Elements:

1. Among the following which group is not present in P-block.

- a) **Group 12**
- b) Group 13
- c) Group 15
- d) Group 16

2. The general electronic configuration of group 13 is...

- a) Ns^2nP^2
- b) **nS^2nP^1**
- c) nS^3nP^2
- d) nS^2nP^3

3. The atomic radius increases from Boron to Thallium due to...

- a) Dynamic effect
- b) Thermodynamic effect
- c) **Screening effect**
- d) None of above

4. In group 13, among the following which has highest Ionization Potential?

- a) Aluminium
- b) **Boron**
- c) Thallium
- d) Indium

5. Oxidation state of Boron is...

- a) -3
- b) +2
- c) +3
- d) None of above

6. Electropositive character from Boron to Thallium...

- a) Decreases
- b) Increases
- c) Remains constant
- d) None of above

7. Formation of Ionic Compounds is depends upon...

- a) Electropositive character
- b) Electronegative character
- c) Both of above
- d) None of above

8. Boron to Thallium electropositive character...

- a) Decreases
- b) Increases
- c) Remain constant
- d) Remains unchanged

9. Among the following Covalent Bonding is formed by...

- a) Aluminium
- b) Boron
- c) Indium
- d) Thallium

10. Which medium is used to form esters of Orthoboric Acid?

- a) Basic medium
- b) Acidic medium
- c) Both A & B
- d) None of above

11. Among the following which form of Aluminium is stable at high temperature?

- a) α Al_2O_3
- b) β Al_2O_3
- c) λ Al_2O_3
- d) None of above

12. In the structure of B_2H_6 the number of B – B bonds are...

- a) 1
- b) 3
- c) 0
- d) 2

13. The number of terminal Hydrogen atoms in the structure of B_2H_6 are...

- a) 4
- b) 5
- c) 6
- d) 0

14. The number of bridged H Atoms in the structure of B_2H_6 are...

- a) 1
- b) 2
- c) 3
- d) 0

15. Valence orbitals of each Boron atoms in B_2H_6 are...

- a) SP Hybridized
- b) SP^2 hybridized
- c) SP^3 hybridized
- d) None of above

16. In B_4H_{10} number of B – B bonds presents...

- a) 0
- b) 1
- c) 2
- d) 4

17. The bridged Hydrogen atoms present in B_4H_{10} are...

- a) 5
- b) 10
- c) 4
- d) 2

18. The number of terminal hydrogen present in B_4H_{10} are...

- a) 6
- b) 8
- c) 4
- d) 0

19. Which one of the following called as corundum alumina?

- a) $\alpha - Al_2O_3$
- b) $\beta - Al_2O_3$
- c) $\delta - Al_2O_3$
- d) None of above

20. Among the following which is used in column chromatography?

- a) $\alpha - Al_2O_3$
- b) $\beta - Al_2O_3$
- c) $\gamma - Al_2O_3$
- d) $\delta - Al_2O_3$

21. Why ionization potential increases from Sn to Pb?

- a) Presence of S electron
- b) Presence of D electron
- c) Presence of F electron
- d) None of above

22. Diamond and Graphite are the forms of...

- a) Carbon
- b) Silicon
- c) Tin
- d) Lead

23. Among the following which has highest tendency to form chains(Catenation)?

- a) **Carbon**
- b) Silicon
- c) Tin
- d) Lead

24. The number of Si – Si bonds present in SiO₂ are...

- a) **0**
- b) 1
- c) 2
- d) 3

25. The incorrect statement about CO₂ is...

- a) It is colorless
- b) **It is odorless**
- c) It is slightly acidic
- d) None of above

26. As atomic number increases, the character of group 14 elements from non metallic to metallic...

- a) **Increases**
- b) Decreases
- c) Remains unchanged
- d) None of above

27. In group 15 as we move from N to Bi atomic radius...

- a) Decreases
- b) **Increases**
- c) Remains same
- d) None of above

28. Among the following which element is present in the gaseous form?

- a) **Nitrogen**
- b) Phosphorus
- c) Arsenic
- d) Bismuth

29. Among the following which element has highest Ionization energy?

- a) **Nitrogen**
- b) Phosphorus
- c) Arsenic
- d) Antimony

30. Among the following which one has lowest electro negativity?

- a) Nitrogen
- b) Phosphorus
- c) Arsenic
- d) **Bismuth**

31. Why Nitrogen does not form compounds in +5 oxidation state?

- a) Because it has no S orbital in outer shell
- b) **It does not have d orbital in outer shell**
- c) Both of above
- d) None of above

32. Among the following which has ability to form dative bond with Lewis Acid?

- a) **Phosphorus**
- b) Arsenic
- c) Antimony
- d) Bismuth

33. The common negative Oxidation state of group 15 elements is...

- a) -1
- b) -2
- c) **-3**
- d) -4

34. In which Oxidation state all elements have tendency to act as electron pair donor?

- a) +2
- b) **+3**

- c) -3
- d) +5

35. Among the following which one does not act as electron acceptor?

- a) Nitrogen
- b) Arsenic
- c) Antimony
- d) Bismuth

36. Among the following which has cubic crystalline structure?

- a) α – Nitrogen
- b) β – Nitrogen
- c) γ – Nitrogen
- d) δ – Nitrogen

37. Among the following which one element does not show allotropy?

- a) Phosphorus
- b) Arsenic
- c) Antimony
- d) Bismuth

38. The trihydrides of group 15 elements are prepared from...

- a) Primary Metals
- b) Binary Metals
- c) Tertiary Metals
- d) None of above

39. The Haber Process is used to prepare...

- a) PH_3
- b) AsH_3
- c) NH_3
- d) BiH_3

40. The structures of trihydrides of group 15 are...

- a) Linear
- b) Bent

- c) **Pyramidal**
- d) Hexagonal

41. All trihydrides also known as...

- a) Lewis Acid
- b) **Lewis Base**
- c) Bronstead Base
- d) None of above

42. Among the trihydrides of group 15 which is most basic?

- a) **NH₃**
- b) ArH₃
- c) SbH₃
- d) BiH₃

43. Among the following which one is most unstable?

- a) NH₃
- b) PH₃
- c) ArH₃
- d) **BiH₃**

44. Among the following which one has less reducing character?

- a) **NH₃**
- b) ArH₃
- c) SbH₃
- d) BiH₃

45. How many bridged O atoms in the P₄O₆ structure?

- a) 0
- b) 2
- c) 4
- d) **6**

46. P₄O₆ structure is...

- a) Pyramidal
- b) **Tetrahedral**

- c) Hexagonal
- d) Other than above

47. The number of π bonds present in the P_4O_6 structure are...

- a) 0**
- b) 2
- c) 4
- d) 6

48. The trioxides of Bismuth are...

- a) Acidic in nature
- b) Basic in nature**
- c) Amphoteric in nature
- d) None of above

49. How many bridged O atoms in the P_4O_{10} structure?

- a) 0
- b) 2**
- c) 6
- d) 8

50. Structure of P_4O_{10} is...

- a) Tetrahedral**
- b) Pentagonal
- c) Hexagonal
- d) Pyramidal

51. In which state N_2O_3 exists in pure form?

- a) Liquid state
- b) Solid state**
- c) Powder form
- d) None of above

52. The most abundant element in group 16 is...

- a) Oxygen**
- b) Tellurium

- c) Selenium
- d) Polonium

53. In group 16 as atomic number increases the atomic radius...

- a) **Increases**
- b) Decreases
- c) Remains constant
- d) None of above

54. Among the following which has highest melting/boiling point?

- a) Oxygen
- b) Sulphur
- c) Selenium
- d) **Polonium**

55. Among the following which one has highest Ionization Potential?

- a) **Oxygen**
- b) Sulphur
- c) Selenium
- d) Tellurium

Atomic Structure MCQ