

## **Chemical Bond -1**

### **1. Valency of an element indicates**

- 1) Combining capacity with hydrogen
- 2) Acidity
- 3) Number of valence electrons
- 4) None

### **2. Between Atoms of a molecule there exists**

- 1) Only attractive forces
- 2) Only repulsive forces
- 3) Both attractive and repulsive forces
- 4) Neither attractive nor repulsive forces

### **3. When two atoms of chlorine combine to form one molecule of chlorine gas, the energy of the molecule is**

- 1) Greater than that of separate atoms
- 2) Equal to that of separate atoms
- 3) Lower than that of separate atoms
- 4) None of these

### **4. Most energetic species among the following is**

- 1) H<sub>2</sub>                      2) Ne                      3) F                      4) F<sub>2</sub>

### **5. During, bond formation potential energy of the system**

1. Increases    2. Decreases    3. Remains the same    4. Cannot be predicted

6.  $H + H \rightarrow H_2$  this is an example for

1. Endothermic reaction
2. Exothermic reaction
3. Either exothermic or endothermic
4. Neither exothermic nor endothermic

7. Duplet configuration is not found in

1. Hydride ion
2. Hydrogen molecule
3. Lithium cation
4.  $Be^{3+}$

8. In a short period as the atomic number increases, the valency of elements with respect to Hydrogen

1. Decreases
2. Remains constant
3. First increases and then decreases
4. Increases

9. The element showing highest valency with respect to oxygen is

1. Sodium
2. Aluminium
3. Chlorine
4. Sulphur

10. The number of valency electrons and the valency with respect to hydrogen are equal for

1. Sulphur
2. Silicon
3. Phosphorus
4. Chlorine

11. The maximum valency of an element with atomic number 7 is

1. 2
2. 5
3. 4
4. 3

12. Electrovalency of non-metal atom is not equal to that of the metal atom in

1. Sodium bromide
2. Magnesium oxide
3. Aluminium nitride
4. Potassium sulphide

**13. Electrovalency of metal atom is maximum in**

- |                       |                       |
|-----------------------|-----------------------|
| 1. Sodium Chloride    | 2. Calcium Chloride   |
| 3. Magnesium Chloride | 4. Aluminium Chloride |

**14. The bond between two identical non-metal atoms has a pair of electrons**

- 1) Unequally shared between the two
- 2) Transferred fully from one atom to another
- 3) With identical spin
- 4) Equally shared between them

**15. A covalent bond is likely to be formed between two elements which**

- |                                   |                                  |
|-----------------------------------|----------------------------------|
| 1) Have high electro negativities | 2) Have Low ionization energies  |
| 3) Have low melting points        | 4) Form ions with a small charge |

**16. Which of the following has directional character?**

- |                  |                                  |
|------------------|----------------------------------|
| 1) Ionic bond    | 2) Metallic Bond                 |
| 3) Covalent bond | 4) Both Covalent and ionic bonds |

**17. Maximum number of covalent bonds by which two atoms can be bonded to each other**

- |         |        |          |                    |
|---------|--------|----------|--------------------|
| 1) Four | 2) Two | 3) Three | 4) No fixed number |
|---------|--------|----------|--------------------|

**18. The formal charges on the three oxygen atoms in O<sub>3</sub> molecule are**

- |            |             |             |              |
|------------|-------------|-------------|--------------|
| 1) 0, 0, 0 | 2) 0, 0, -1 | 3) 0, 0 + 1 | 4) 0, +1, -1 |
|------------|-------------|-------------|--------------|

**19. Octet rule is mostly violated in the compounds formed by**

- |                        |                          |
|------------------------|--------------------------|
| 1) Alkali metals       | 2) Alkaline earth metals |
| 3) IIIA group elements | 4) All of these          |

**20. Valency of sulphur in sulphur dioxide is**

1. 2      2. 4      3. 6      4. 8

**21. Variable valency is a property of**

1. Alkali metals      2. Transition metals  
3. Alkaline earth metals      4. Inert gases

**22. Number of electrons transferred from one atom to another during bond formation in MgO**

1. 1      2. 2      3. 3      4. 4

**23. Covalency for central atom is maximum in**

1.  $\text{BF}_3$       2.  $\text{SCl}_4$       3.  $\text{PCl}_5$       4.  $\text{BeCl}_2$

**24. Which of the following exhibits variable valency**

1. Na      2. K      3. Al      4. S

**25. Valency of the metal atom with respect to oxygen is maximum in**

1.  $\text{Mn}_2\text{O}_7$       2.  $\text{OsO}_4$       3.  $\text{MnO}_2$       4.  $\text{CrO}_3$

**26. Which of the following contains unpaired electron?**

1.  $\text{NO}_2$       2.  $\text{CO}_2$       3.  $\text{BF}_3$       4.  $\text{BeCl}_2$

**27. Which of the following has least polarity in bond?**

1. H - F      2. H - Cl      3. H - O      4. H - S

**28. Which contains both polar and non-polar bonds?**

1.  $\text{NH}_4\text{Cl}$       2.  $\text{CH}_4$       3.  $\text{H}_2\text{O}_2$       4.  $\text{CO}_2$

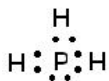
**29. The molecule that deviates from octet rule is**

1. NaCl      2.  $\text{BeCl}_2$       3. MgO      4.  $\text{NH}_3$

30. Which of the following covalent molecule is an exception to octet rule?

1. GaCl<sub>3</sub>            2. CO<sub>2</sub>                            3. H<sub>2</sub>O                            4. CH<sub>4</sub>

31. The formal charge on Phosphorous atom in



Molecule is

- 1) 0                            2) -3                            3) +3                            4) +0.33

32. Which of the following covalent molecule has expanded octet?

1. BCl<sub>3</sub>                            2. CO                            3. NH<sub>3</sub>                            4. PCl<sub>5</sub>

33. Electron deficient compounds are formed by

1. Boron                            2. Aluminium                            3. Carbon                            4. Both 1 and 2

34. Which of the following has non-polar covalent bond?

1. PCl<sub>5</sub>                            2. SO<sub>2</sub>                            3. H<sub>2</sub>O                            4. P<sub>4</sub>

35. The Lewis structure of N<sub>2</sub>O is  $\overset{1}{\text{N}} = \overset{2}{\text{N}} = \overset{\cdot\cdot}{\text{O}}$  The formal charge on 1st, 2nd Nitrogen atoms and Oxygen atom are respectively

- 1) 0, 0, 0                            2) +1, 0, -1                            3) -1, +1, 0                            4) 0, +1, -1

36. Metal 'M' forms a peroxide of the type MO<sub>2</sub>. Valency of the metal with respect to oxygen

1. 0                            2. 1                            3. 2                            4. 4

37. The Atomic numbers of three elements A, B and C are a, a+1 and a+2. C is an alkali metal. In a compound of A and C, the nature of bonding is

1. Coordinate                            2. Covalent                            3. Ionic                            4. Metallic

38. Two elements X and Y have the following electron configurations, X =  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$  and Y =  $1s^2 2s^2 2p^6 3s^2 3p^5$ . The formula of the compound formed by the combination of X and Y is

- 1.  $X Y_2$
- 2.  $X_5 Y_2$
- 3.  $X_2 Y_5$
- 4.  $X Y_5$

39. The electrons generally involved in bonding are those that

- 1. Lie closest to the nucleus
- 2. Have smaller ionization energies
- 3. Belong to inner shells
- 4. Have higher ionization energies

40. The formal charge on each oxygen atom and the P-O bond order in  $PO_4^{3-}$ , are respectively

- 1) -0.75, 1.25
- 2) -3, 1.25
- 3) -0.75, 0.6
- 4) -0.75, 1.0

**KEY**

1) 1    2) 3    3) 3    4) 3    5) 2    6) 2    7) 4    8) 3    9) 3    10) 2

11) 3    12) 4    13) 4    14) 4    15) 1    16) 3    17) 3    18) 4    19) 3    20) 2

21) 2    22) 2    23) 3    24) 4    25) 2    26) 1    27) 4    28) 3    29) 2    30) 1

31) 1    32) 4    33) 4    34) 4    35) 3    36) 3    37) 3    38) 1    39) 2    40) 2