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## Valence Electrons Questions and Answers

### Q1. What are valence electrons?

**The Valence Electrons** are a type of outer shell electron. Which can participate in the formation of a chemical bond and attach to an atom even if the outer shell is not closed. It also contributes to the formation of a shared electron in both atoms, in a single covalent bond.

### Q2. How to find valence electrons of an element?

The valence electron of an element can be determined as the no. of electrons present in its outermost shell. It can be easily counted by knowing the group that an element belongs to.

### Q3. How many valence electrons does oxygen have?

There are only 6 electrons available in Oxygen. So, the oxygen has 6 valence electrons.

### Q4. How to find valence electrons for transition metals?

The valence electron of any transition metals can be determined as the total no. of electrons that are in higher energy levels.

### Q5. How to find valence electrons of a compound?

The number of **valence electrons** for a compound can be calculated by adding the valence electrons of all the atoms that form that respective compound. For example, in CO<sub>2</sub> there is one Carbon atom and two oxygen atoms, and the no. of valence electron in O is 6 and in C is 4. Therefore, the total no of the valence electron in CO<sub>2</sub> is =  $1*4 + 2*6 \Rightarrow 4 + 12 \Rightarrow 16$  electrons

### Q6. How many valence electrons does carbon have?

Carbon contains 4 electrons in its outer shell out of total 6 electrons, thus it has 4 valence electrons. The

electronic configuration of Carbon is 2, 4.

**Q7. how many valence electrons does nitrogen have?**

Nitrogen contains 3 electrons in its outer shell out of total of 7 electrons, thus it has 3 valence electrons. The electronic configuration of Nitrogen is 2, 3.

**Q8. how many valence electrons does chlorine have?**

Chlorine contains 7 electrons in its outer shell out of total of 17 electrons, thus it has 7 valence electrons. The electronic configuration of Chlorine is 2, 8, 7.

**Q9. how many valence electrons does fluorine have?**

Fluorine contains 7 electrons in its outer shell out of total of 9 electrons, thus it has 7 valence electrons. The electronic configuration of Fluorine is 2, 7.

**Q10. how many valence electrons does antimony have?**

Antimony contains 5 electrons in its outer shell, thus it has 5 valence electrons. The electronic configuration of Antimony is 2, 8, 18, 18, 5.

**Q11. how many valence electrons does argon have?**

Argon contains 8 electrons in its outer shell, thus it has 8 valence electrons. The electronic configuration of Argon is 2, 8, 8.

**Q12. How many valence electrons does helium have?**

Helium contains only 2 electrons and both are present in the k shell, thus it has **2 valence electrons**.

The atomic number of Helium is 2. Helium is one of the most significant member of the noble gas family that can be found on the upper right side of the periodic table.

The electronic configuration of helium is **He(Z=2) = 1s<sup>2</sup>**.

**Q13. how many valence electrons does rhenium have?**

Rhenium contains 2 electrons in its outer shell, thus it has 2 valence electrons. The electronic configuration of Rhenium is 2, 8, 18, 32, 13, 2.

**Q14. how many valence electrons does boron have?**

Boron contains 3 electrons in its outer shell, thus it has 3 valence electrons. The electronic configuration of Boron is 2, 5.

**Q15. how many valence electrons does sulphur have?**

Sulfur contains 6 electrons in its outer shell, thus it has 6 valence electrons. The electronic configuration of the Sulfur is 2, 8, 6.

**Q16. how many valence electrons does magnesium have?**

Magnesium contains 2 electrons in its outer shell, thus it has 2 valence electrons. The electronic configuration of Magnesium is 2, 8, 2.

**Q17. how many valence electrons does aluminum have?**

Aluminum contains 3 electrons in its outer shell, thus it has 3 valence electrons. The electronic configuration of Antimony is 2, 8, 3.

**Q18. how many valence electrons does a pentavalent impurity have?**

Pentavalent impurities contain 5 electrons in their outer shell or valence shell, thus it has 5 valence electrons.

**Q19. how many valence electrons does arsenic have**

Arsenic contains 5 electrons in its outer shell, thus it has 5 valence electrons. The electronic configuration of Arsenic is 2, 8, 18, 5.

**Q20. how many valence electrons does a silicon atom have?**

Silicon contains 4 electrons in its outer shell, thus it has 4 valence electrons. The electronic configuration of Silicon is 2, 8, 4.

**Q21. how many valence electrons does a noble gas typically have?**

Typically Noble Gases have 8 valence electrons. The only exception is Helium that has 3 valence electrons.

**Q22. how many valence electrons does  $\text{AlCl}_3$  have?**

In  $\text{AlCl}_3$  Al have 3 valence electron and Cl have 7 valence electron, total electrons  $\Rightarrow 3 + 7 \times 3 \Rightarrow 3 + 21 \Rightarrow 22$ . Thus total no. of valence electron is 22.

**Q23. how many valence electrons does lithium have?**

Lithium contains 1 electron in its outer shell, thus it has 1 valence electron. The electronic configuration of Lithium is 2, 1.

**Q24. how many valence electrons does neon have?**

As Neon is a noble gas thus it has 8 valence electrons. As it contains 8 electrons in its outer shell or valence shell.

**Q25. how many valence electrons does gold have?**

Gold contains 1 electron in its outer shell, thus it has 1 valence electron only.

**Q26. how many valence electrons does a carbon atom have?**

Carbon contains 4 electrons in its outer shell out of total of 6 electrons, thus it has 4 valence electrons. The electronic configuration of Carbon is 2, 4.

**Q27. how many valence electrons does bromine have**

Bromine contains 7 electrons in its outer shell, thus it has 7 valence electrons. Bromine belongs to the halogen family and the electronic configuration of Bromine is 2, 8, 18, 7.

**Q28. how many valence electrons does beryllium have?**

Beryllium contains 2 electrons in its outer shell out of total of 4 electrons, thus it has 2 valence electrons. The electronic configuration of Beryllium is 2, 2.

**Q29. how many valence electrons does bismuth have?**

Bismuth contains 5 electrons in its valence shell or its outer shell, thus it contains 5 valence electrons. As Bismuth is a Pentavalent post-transition metal thus it can be noted that it contains 5 valence electrons.

**Q30. how many valence electrons does calcium have?**

Calcium contains 2 electrons in its outer shell, thus it has 2 valence electrons. The electronic configuration of Calcium is 2, 8, 8, 2.

**Q31. how many valence electrons does chromium have?**

The electronic configuration of Chromium is  $3d^5 4s^1$  i.e. 5 electrons in 3d shell and 1 electron in 4s shell, thus Chromium has 6 valence electrons.

**Q32. how many valence electrons does cobalt have?**

The electronic configuration of Cobalt is  $3d^7 4s^2$  i.e. 7 electrons in 3d shell and 2 electrons in 4s shell, thus Chromium has 9 valence electron.

**Q33. how many valence electrons does dysprosium have?**

The electronic configuration of Dysprosium is  $4f^{10} 6s^2$  i.e. 10 electrons in 4f shell and 2 electrons in 6s shell, it is a rare earth metal or lanthanide metal. Chromium has 3 valence electrons.

**Q34. how many valence electrons does dubnium have?**

The electronic configuration of Dubnium is  $5f^{14} 6d^3 7s^2$  i.e. 3 electrons in 6d shell and 2 electrons in 7s shell, thus Dubnium has 5 valence electron.

**Q35. how many valence electrons does darmstadtium have?**

Darmstadtium (Ds) belongs to Group 10 and its Atomic Number is 110. The electronic configuration of Darmsdatium is  $5f^{14} 6d^8 7s^2$  i.e. 8 electrons in 6d shell and 2 electrons in 7s shell.

**Q36. how many valence electrons does dihydrogen monoxide have?**

**Dihydrogen Monoxide** means  $H_2O$ . As Hydrogen contains 1 valence electron and Oxygen contains 6 valence electrons, therefore in Dihydrogen Monoxide ( $H_2O$ ) the no. of valence electrons  $\Rightarrow 2 \times 1 + 6 \Rightarrow 2 + 6 \Rightarrow 8$  electrons.

**Q37. how many valence electrons does dichromate have?**

A **Dichromate** have 56 valence electrons. A valence electron is a type of outer shell electron. Which can participate in the formation of a chemical bond and attach to an atom even if the outer shell is not closed.

**Q38. how many valence electrons does germanium have?**

The **Germanium has 4 Valence Electrons**. It is a bright, hard, brittle, and white metallic colored chemical element in the carbon group. Its atomic number is 32 and the chemical symbol is Ge.

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