Cobalt Chemistry Questions with Solutions

Q1. What is the atomic number of cobalt?
(a) 27
(b) 28
(c) 29
(d) None of the above
Answer: (a) The atomic number of cobalt is 27.

Q2. What is the electronic configuration of cobalt?
(a) [Ar] $3d^7\ 4s^2$
(b) [Ar] $3d^8\ 4s^2$
(c) [Ar] $3d^9\ 4s^2$
(d) None of the above
Answer: (a) The electronic configuration of cobalt is [Ar] $3d^7\ 4s^2$.

Q3. Cobalt is a member of which group of elements of the periodic table?
(a) Alkaline earth metals
(b) Inner transition metals
(c) Alkali metals
(d) None of the above
Answer: (b) Cobalt is a member of inner transition metals of the periodic table.

Q4. Cobalt is _____ element.
(a) Paramagnetic
(b) Diamagnetic
(c) Ferromagnetic
(d) None of the above
Answer: (c) Cobalt is a ferromagnetic element.

Q5. Is cobalt a constituent of?
(a) Biotin
(b) Folic acid
(c) Vitamin B12
(d) None of the above
Answer: (c) Cobalt is a constituent of vitamin B12.

Q6. What is cobalt?

Answer: Cobalt is an inner transition metal with an atomic number of 29. It is often symbolised by the symbol Co and has an electronic configuration of [Ar] $3d^7\ 4s^2$. It is a rigid, shiny, silver-grey metal produced by reductive smelting.

Q7. What are the properties of cobalt?
Answer: Cobalt is an inner transition metal with an atomic number of 29. It is often symbolised by the symbol Co and has an electronic configuration of [Ar] $3d^7\ 4s^2$. A few properties of cobalt are mentioned below.
1. It is a rigid, ferromagnetic, silver-grey, shiny, malleable and ductile metal.
2. It is stable in the air and does not react with atmospheric oxygen or moisture.
3. It can be magnetised.
4. It reacts slowly with dilute acids.
5. It melts at 1495 °C and boils at 2927 °C.

Q8. What are the uses of cobalt?
Answer: Cobalt is an inner transition metal with an atomic number of 29. It is often symbolised by the symbol Co and has an electronic configuration of [Ar] $3d^7\ 4s^2$. A few uses of cobalt are mentioned below.
1. Cobalt is used to manufacture magnetic, wear-resistant and high-strength alloys.
2. Cobalt is used in dental implants, gas turbines, and orthopaedic implants.
3. Cobalt is used as a catalyst for the petroleum and chemical industries.
4. Cobalt is used in medical treatment and irradiated food.
5. Cobalt is used as a drying agent for paints and inks.
6. Cobalt is used in lithium-ion batteries.

Q9. What is the position of cobalt in the periodic table?
Answer: Cobalt is an inner transition metal with an atomic number of 29. It is placed in group 9 and period IV of the periodic table.

Q10. Name some ores of cobalt.
Answer: Some ores of cobalt are as follows.
1. Cobaltite
2. Smaltite
3. Chloranthite
4. Linnaeite

Q11. Does cobalt react with water?
Answer: Cobalt does not react with the water at room temperature. However, cobalt does react with water to form pink Hexa aqua cobalt (II) ion - $[Co(H_2O)_6]^{2+}$.

Q12. How many bonds can cobalt form?
Answer: Cobalt can form six-coordinate bonds. In which it occupies twelve electrons.

Q13. Does the human body need cobalt?
Answer: Yes, the human body needs cobalt. Cobalt is an essential component of vitamin B-12 and is crucial for appropriate cell functioning. It helps in the production of red blood cells and antibacterial and antiviral compounds that stop infection.
The deficiency of cobalt can even lead to anaemia.

Q14. What is cobalt poisoning?
Answer: Cobalt poisoning refers to the intoxication caused by increased levels of cobalt in the human body. Cobalt is an essential component of vitamin B-12 and is crucial for appropriate cell functioning. However, an excess amount of cobalt can affect us harshly. It can cause heart muscle disease, deafness, nerve problems, blood thickening, thyroid problems and vision problems.

Q15. What are the sources of cobalt?
Answer: Cobalt forms part of the structure of vitamin B12. It is crucial for appropriate cell functioning, production of red blood cells and antibacterial and antiviral compounds that stop infection. Some excellent sources of cobalt are mentioned below.
1. Fish
2. Nuts
3. Green leafy vegetables like broccoli and spinach
4. Whole wheat

Practise Questions on Cobalt

Q1. Is cobalt a metal?
Answer: Yes, cobalt is a shiny, brittle metal used to produce robust, hard metals, permanent magnets and corrosion and heat resistant alloys.

Q2. Why is cobalt used in batteries?
Answer: Cobalt is used in batteries to ensure cathodes do not overheat or catch fire. It helps extend batteries' life for eight to 10 years.

Q3. Which disease is caused by a deficiency of cobalt? What are its symptoms?
Answer: The lack of cobalt can cause anaemia.
Symptoms of anaemia
1. Numbness
2. Fatigue
3. Tingling in the hands and feet.

If not treated, it can also lead to decreased nerve function.

Q4. Give one of the uses of cobalt-60 other than cancer treatment.
Answer: Cobalt-60 is used in the Schilling test, which determines if a patient's body makes and uses vitamin B12 effectively.

Q5. Why is Cobalt-60 used to treat cancer?
Answer: Cobalt-60 is used to treat cancer because its radiation kills cancer cells.