

Platinum Chemistry Questions with Solutions

Q1. What is the atomic number of platinum?

- (a) 71
- (b) 72
- (c) 78
- (d) None of the above

Answer: (d) None of the above

Explanation: The atomic number of platinum is 78.

Q2. Who discovered platinum?

- (a) Antonio de Ulloa
- (b) Antonio de Manual
- (c) Tonio de Torre
- (d) None of the above

Answer: (a) Platinum was discovered by Antonio de Ulloa y de la Torre-Giralt in 1735.

Q3. How many naturally occurring isotopes does Platinum have?

- (a) Five
- (b) Six
- (c) Seven
- (d) None of the above

Answer: (b) Platinum has six naturally occurring isotopes.

Explanation: Platinum has six naturally occurring isotopes (^{190}Pt , ^{192}Pt , ^{194}Pt , ^{195}Pt , ^{196}Pt and ^{198}Pt).

Q4. Platinum is used in _____

- (a) Grids of special-purpose vacuum tubes
- (b) Thermocouples
- (c) Electrical contacts
- (d) Heating elements in high-temperature furnaces
- (e) All of the above

Answer: (e) Platinum is used in the grids of special-purpose vacuum tubes, thermocouples, electrical contacts, and as a heating element in high-temperature furnaces.

Q5. Cisplatin is a _____

- (a) Gastrointestinal drug
- (b) Cardiovascular drug
- (c) Chemotherapy drug

(d) All of the above

Answer: (c) Cisplatin is a chemotherapy drug.

Q6. What is platinum?

Answer: Platinum is a transition metal with the chemical symbol Pt and atomic number 78. It is a rare element found in the earth's crust and is extensively used as a catalyst for chemical reactions.

Q7. Name any two ores of platinum?

Answer: Platinum is found in Sperrylite and Cooperite ores.

Q8. Name all the naturally occurring isotopes of platinum.

Answer: There are six naturally occurring isotopes of platinum.

1. ^{190}Pt (0.01 %)
2. ^{192}Pt (0.78 %)
3. ^{194}Pt (33.0 %)
4. ^{195}Pt (33.8 %)
5. ^{196}Pt (25.2 %)
6. ^{198}Pt (7.2%)

Q9. Is platinum soluble in water?

Answer: No, platinum is not soluble in water. Instead, it gets dissolved in the hot aqua regia solution.

Q10. What are the applications of platinum?

Answer: Platinum is a transition metal with the chemical symbol Pt and atomic number 78. It is a rare element found in the earth's crust. There are a lot of applications of platinum. A few of them are mentioned below.

1. It is used for making electrodes which are primarily used in laboratories.
2. A compound of platinum commonly known as cisplatin is used for treating cancer.
3. It is used as a catalyst for chemical reactions.
4. It is used in car catalytic inverters to convert carbon monoxide (CO) and other residual pollutants into Carbon dioxide (CO₂) and water vapour.
5. It is used for making jewellery.

Q11. Which physical properties of platinum make it suitable for making jewellery?

Answer: Platinum is suitable for making jewellery as it is ductile and malleable. Moreover, it is also chemical inert, i.e. does not react with water or acids. These properties of platinum make platinum appropriate for making jewellery.

Q12. What is the electronic configuration of platinum?

Answer: The electronic configuration of platinum is $[\text{Xe}] 4f^{14} 5d^9 6s^1$.

Q13. What is the chemical formula of cisplatin?

Answer: The chemical formula of cisplatin is $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$.

Q14. What is the primary application of cisplatin?

Answer: Cisplatin is a chemotherapy drug. It is used to treat cancer by damaging the DNA of the cancer cells and stopping them from multiplying.

Q15. How will you differentiate between platinum and white gold?

Answer: We can differentiate between platinum and white gold in the following ways.

S. No.	Platinum	White Gold
1.	Platinum is a naturally white metal.	White Gold is made by mixing gold with metals like Palladium.
2.	Platinum jewellery is more expensive than White Gold jewellery.	White Gold jewellery is relatively inexpensive than platinum jewellery.
3.	It is more prone to dullness caused by small bruises on the surface.	It is less prone to dullness and is more resistant to small scratches on surfaces.
4.	It is 1.28 times heavier than white gold.	It is lighter than platinum.

Practise Questions on Platinum

Q1. Does platinum burn in the air?

Answer: No, platinum does not burn in the air. It does not react with oxygen in the air, even if heated in a Bunsen burner flame.

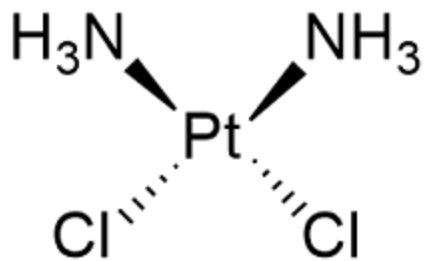
Q2. Does platinum react with acid?

Answer: No, platinum does not react with acid. It is chemically inert and resistant to acids but gets dissolved in the aqua regia.

Q3. What is cisplatin? Draw its structure along with its IUPAC name.

Answer: Cisplatin is a chemotherapy drug. It is used to treat cancer by damaging the DNA of the cancer cells and stopping them from multiplying.

Structure of cisplatin:



Cisplatin

The IUPAC name of cisplatin is cis- diamine dichloro platinum (II).

Q4. Is platinum a reactive metal?

Answer: No, platinum is not a reactive metal. It is chemically inert and will not oxidise in air at any temperature. It is resistant to acids but dissolves readily in aqua regia. Platinum metal is rapidly attacked by fused alkali oxides and peroxides and will react with fluorine and chlorine at red heat.

Q5. Name any two chemotherapy drugs of platinum other than cisplatin.

Answer: The two chemotherapy drugs of platinum other than cisplatin are mentioned below.

1. Oxaliplatin
2. Carboplatin