

NDA-CDS-AFCAT 2024

TOP 25 MCQs

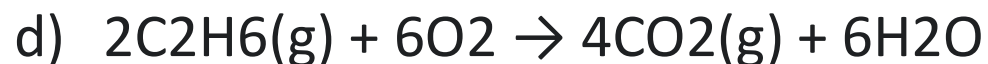
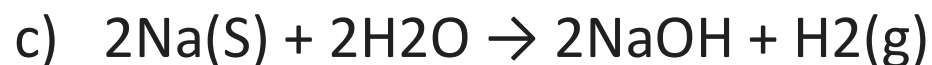
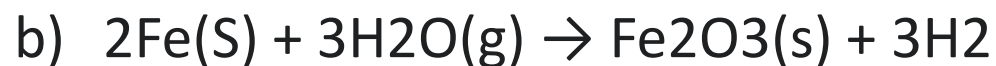
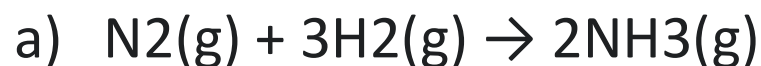
CHEMISTRY

ELEMENTS COMPOUNDS AND MIXTURES

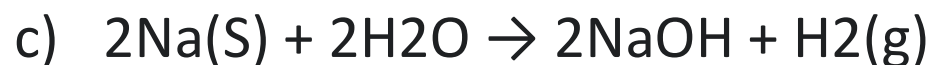
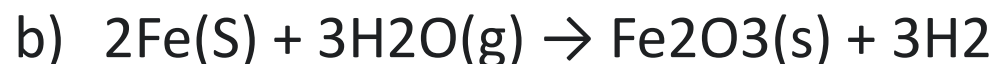
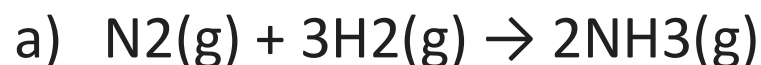


SHIVANGI MA'AM

In Which One Of The Following Chemical Equations Is The Law Of Conservation Of Mass Violated?



In Which One Of The Following Chemical Equations Is The Law Of Conservation Of Mass Violated?



- The Law of Constant Proportion states that a given compound always contains exactly the same proportion of elements by mass.
- Gay Lussac's Law of Combining Gas Volumes states that when gases combine in a reaction, they do so in a simple ratio by volume, provided all gases are at room temperature.

Mass Of 0.1 Mol Of Glucose Will Be:

a) 18 g

b) 180 g

c) 9 g

d) 36 g

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• 0.1 mole of $C_6H_{12}O_6$ = Molecular mass of $C_6H_{12}O_6$ in grams

- 0.1 (Mass of 6C + Mass of 12H + Mass of 6O)
- 0.1 ($12 \times 6 + 1 \times 12 + 16 \times 6$)
- 0.1 (72 + 12 + 96)
- 18 grams

Which Among The Following Metals Is The Lightest?

- a) Aluminium
- b) Tin
- c) Lead
- d) Copper

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b) Tin

c) Lead

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Metals	Density (gm / cm ³)
Aluminum (Al)	2.7
Tin(Sn)	7.34
Copper (Cu)	8.96
Lead(Pb)	11.34

What Is The Chemical Formula Of Salt?

- a) ZnC
- b) NaCl
- c) NaOH
- d) More than one of the above.

What Is The Chemical Formula Of Salt?

a) ZnC

b) NaCl

c) NaOH

d) More than one of the above.

- Sodium chloride, commonly known as salt, is an ionic compound with the chemical formula NaCl, representing a 1:1 ratio of sodium and chloride ions.

Solid Carbon Dioxide Is Known As:

- a) Diamond
- b) Dry Ice
- c) Rock
- d) Mercury

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- a) Diamond
- b) Dry Ice**
- c) Rock
- d) Mercury



Which Of The Following Is A Set Of Mixtures?

- a) Air, Water, Wood
- b) Wood, Salt, Sand
- c) Salt, Sand, Water
- d) Wood, Air, Sand

Which Of The Following Is A Set Of Mixtures?

- a) Air, Water, Wood
- b) Wood, Salt, Sand
- c) Salt, Sand, Water
- d) Wood, Air, Sand**

Which Among The Following Is A Homogenous Solution?

- a) Cement in water
- b) Sugar in water
- c) Sugar and sand
- d) More than one of the above

Which Among The Following Is A Homogenous Solution?

a) Cement in water

b) Sugar in water

c) Sugar and sand

d) More than one of the above

- A Homogeneous mixture has the same proportion of its compound in a sample.
- Sugar in water is a homogeneous mixture.

A Solution In Which No More Solute Can Be Dissolved At A Given Temperature Is Called:

- a) Unsaturated Solution
- b) Universal solvent
- c) Volatile solution
- d) Saturated solution

A Solution In Which No More Solute Can Be Dissolved At A Given Temperature Is Called:

a) Unsaturated Solution

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- When you keep adding sugar to the water, a time will reach when no more sugar will dissolve in the water and sugar will settle down at the bottom.

d) Saturated solution

Which One Among The Following Statements Regarding The Properties Of Mixtures And Compounds Is NOT Correct?

- a) A mixture shows the properties of its constituents but the properties of a compound are entirely different from its constituents
- b) Energy is either absorbed or evolved during the preparation of a mixture but not in the preparation of a compound
- c) The constituents of a mixture can be separated by physical methods but those of a compound cannot be separated by physical methods
- d) A mixture may be homogeneous or heterogeneous but a compound is homogeneous

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- c) The constituents of a mixture can be separated by physical methods but those of a compound cannot be separated by physical methods
- d) A mixture may be homogeneous or heterogeneous but a compound is homogeneous

- The compound is always formed by absorption or evolution of energy but no energy is released or absorbed during the formation of the mixture.
- The mixture contains two or more substances mixed, but neither chemically as well as not in inexact quantity while compound includes two or more elements combined chemically and in a fixed ratio.
- A mixture shows the properties of its constituents but the properties of a compound are entirely different from its constituents
- Mixtures do not have a certain formula.
- A mixture may be homogeneous or heterogeneous.

Which One Of The Following Elements Forms The Highest Number Of Compounds?

- a) Oxygen
- b) Hydrogen
- c) Chlorine
- d) Carbon

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b) Hydrogen

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d) Carbon

- Carbon can form a large number of chemical compounds, at least 10 million in number.
- It also has the highest sublimation point among all the elements.
- It is the 15th most abundant element on Earth's Crust.
- Graphite, Diamond, Fullerenes are some of the allotropes of Carbon.

The Formation Of Five Oxides Of Nitrogen Is An Example Of:

- a) Law of multiple proportion
- b) Law of conservation of mass
- c) Law of reciprocal proportions
- d) Law of gaseous volume

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a) Law of multiple proportion

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d) Law of gaseous volume

- When two or more compounds are formed by the combination of two elements, the weight of one element that combines with the other is in simple ratios of whole numbers.
- It was formulated by Dalton.

The Balancing Of Chemical Reaction



The Coefficient Of MgCl_2 In The Balanced Equation Is:

a) 1

b) 2

c) 3

d) 4

The Balancing Of Chemical Reaction



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a) 1

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d) 4

- 1) Chlorine on LHS = 3
- Chlorine on RHS = 2
- Balance the Cl
- LHS $2 \times 3 = \text{RHS } 3 \times 2$):
- $2\text{FeCl}_3 + \text{MgO} \rightarrow \text{Fe}_2\text{O}_3 + 3\text{MgCl}_2$
- 2) Pick Fe to balance next:
- Fe on LHS = 2
- Fe on RHS = 3
- Fe is already balanced in this step
- 3) Pick Mg to balance next:
- Multiply MgO by 3 on LHS
- $2\text{FeCl}_3 + 3\text{MgO} \rightarrow \text{Fe}_2\text{O}_3 + 3\text{MgCl}_2$

**Sulphur And Oxygen Atoms Combine Together In The Ratio Of 2 : 3 By Mass To Form An Oxide. What Will Be The Correct Formula Of The Oxide?
[Atomic masses: S = 32 u, O = 16u]**

a) S₂O₃

b) S₃O₂

c) SO₄

d) SO₃

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a) S₂O₃

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c) SO₄

d) SO₃

•The ratio of Sulphur and oxygen by mass in Sulphur trioxide is 2:3.

•Thus the chemical formula of Sulphur trioxide is SO₃.

•Mass of Sulphur =32u, Mass of three atoms of oxygen=48u.

•Therefore mass ratio in SO₃ is 32:48.

Which One Of The Following Is A Heterogeneous Mixture?

- a) Hydrochloric acid
- b) Vinegar
- c) Milk
- d) Soda water

Which One Of The Following Is A Heterogeneous Mixture?

a) Hydrochloric acid

b) Vinegar

c) Milk

- Milk is a heterogeneous mixture.
- Milk is a mixture of fat and protein dispersed in the water.

d) Soda water

Which One Of The Following Is A Heterogeneous System?

- a) The cooling fluid in a radiator
- b) Atmospheric air
- c) Cooking gas in a cylinder
- d) A mixture of ice, water and steam

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a) The cooling fluid in a radiator

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- The chemical composition of the three phases is the same, but their physical properties differ drastically.

When 1 Liter Of Water Is Cooled From 4°C To 0°C, Its Volume _____.

- a) first decreases and then increases
- b) remains the same
- c) increases
- d) decreases

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a) first decreases and then increases

b) remains the same

c) increases

d) decreases

- When 1 liter of water is cooled from 4°C to 0°C volume of water will start increasing this due to water's unique property known as 'Anomalous Expansion of Water'.

Which One Of The Following Gases Produces A Red Light When Electricity Flows Through It?

- a) Helium
- b) Argon
- c) Nitrogen
- d) Neon

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- d) Neon**

Gas	Colour
Hydrogen	Blue-violet
Helium	Pink-orange
Neon	Red
Argon	Violet
Krypton	Lavender
Oxygen	Blue-violet
Mercury	Blue-violet
Xenon	Blue
Water	Vapour Pink

Which Of The Following Metals Does Not Form Amalgams?

- a) Zinc
- b) Copper
- c) Magnesium
- d) Iron

Which Of The Following Metals Does Not Form Amalgams?

a) Zinc

b) Copper

c) Magnesium

d) Iron

- Either the mixture/alloy of mercury (hg) with any other metal is called an amalgam whereas tungsten, platinum, iron, and tantalum are exceptions that do not form an amalgam.

Which Gas Is Typically Produced When Metal Reacts With Acids?

- a) Carbon dioxide
- b) Oxygen
- c) Hydrogen
- d) Nitrogen

Which Gas Is Typically Produced When Metal Reacts With Acids?

a) Carbon dioxide

b) Oxygen

c) **Hydrogen**

d) Nitrogen

	<u>Metal</u>	<u>Symbol</u>
These metals are more reactive than hydrogen	Potassium Sodium Calcium Magnesium Aluminum Zinc Iron Tin lead	K Na Ca Mg Al Zn Fe Sn Pb
	Hydrogen	H
These metals are less reactive than hydrogen	Copper Mercury Silver Gold	Cu Hg Ag Au

Name The Particles Which Make Up Matter.

- a) Atoms
- b) Metals
- c) Metalloids
- d) More than one of the above

Name The Particles Which Make Up Matter.

a) Atoms

b) Metals

c) Metalloids

d) More than one of the above

- The matter is made up of very small particles (atoms).
- An atom is the smallest particle of an element that may or may not exist independently and retain all its chemical properties.

Which of the enlisted compounds is termed as slaked lime?

- a) Calcium Oxide
- b) Calcium Hydroxide
- c) Calcium Sulphate
- d) Calcium Carbonate

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- Calcium oxide (CaO), often known as quicklime or burnt lime, is a widely used chemical compound. When quicklime is combined with water, a reaction takes place, resulting in calcium hydroxide (Ca(OH)₂).
- This process is known as "slaking of lime" or hydration of lime. The output, calcium hydroxide, is known as slaked lime or hydrated lime because it is produced using a process called "slaking." The reaction is as follows:
- $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$

Which metal is known as an alloy of copper and zinc?

- a) Bronze
- b) Aluminum
- c) Brass
- d) Copper

Which metal is known as an alloy of copper and zinc?

a) Bronze

Alloy

Mixing Elements

Brass

Copper + Zinc

b) Aluminum

Bronze

Copper + Tin

Duralumin

Aluminum + Copper + Manganese + Aluminum

c) Brass

Solder

Tin + Lead

Stainless steel

Iron + Chromium + Carbon

d) Copper

Pewter

Tin + Copper + Antimony + Bismuth

Steel

Iron + Carbon

Cinnabar (HgS) is an ore of which metal?

- a) Aluminum
- b) Mercury
- c) Gold
- d) Silver

Cinnabar (HgS) is an ore of which metal?

a) Aluminum

b) Mercury

c) Gold

d) Silver

- Cinnabar is a toxic mercury sulfide mineral of mercury with a chemical composition of HgS.
- The name cinnabar is derived from the Greek name kinnabari.
- Its appearance is bright scarlet to brick-red colour.
- Because of its colour, it was used as jewellery and ornaments for thousands of years in many parts of the world.

Sodium hydroxide is NOT used for _____.

- a) making soap
- b) making newspapers
- c) degreasing metals
- d) preserving pickle

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a) making soap

b) making newspapers

c) degreasing metals

d) preserving pickle

- Sodium hydroxide (NaOH) is known as 'caustic soda' and it is a 'high-base' alkali.
- It is used in the manufacture of pulp and paper cloth, drinking water, soap, and detergent.
- In the field of medicine, sodium hydroxide is used for the treatment, control, prevention, and improvement of diseases.

Which one of the following statements is correct about camphor and ammonium chloride?

- a) Both of them are inorganic compounds
- b) Both of them are organic compounds
- c) Both of them undergo sublimation
- d) Both 2 and 3

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- a) Both of them are inorganic compounds
- b) Both of them are organic compounds
- c) Both of them undergo sublimation**
- d) Both 2 and 3

- Both camphor and ammonium chloride are solid at room temperature.
- But they are vaporised (gas phase) when heat is applied.
- This property is called Sublimation.

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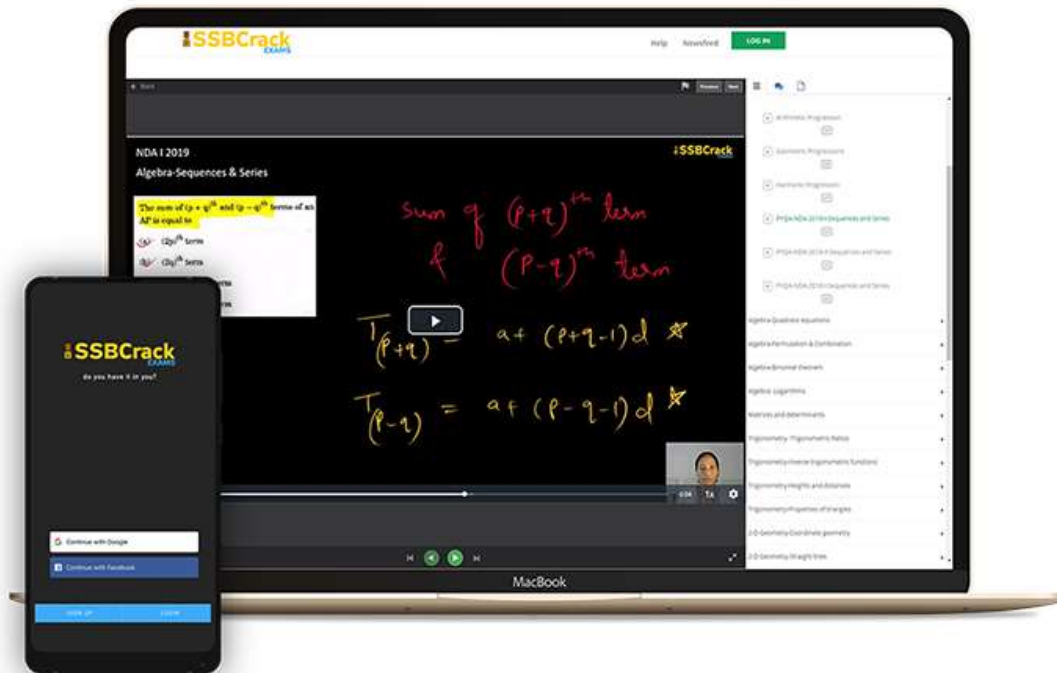
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