

# NDA-CDS-AFCAT 2024

## TOP 25 MCQs

# CHEMISTRY

## PROPERTIES AND PREPARATION

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# Which Of The Following Statement(s) Is/Are True?

I. Air expands on heating

II. The warm air is heavier than the cold air

a) Neither I nor II

b) Both I and II

c) Only I

d) Only II

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**c) Only I**

d) Only II

- When air is heated, the molecules will start to vibrate and bump into each other. Because each molecule uses more space for motion, the air expands and becomes less dense.

# Which Of The Following Is NOT A Characteristic Of Gas?

- a) Exerts pressure equally in all directions
- b) Low compressibility
- c) Low density
- d) More than one of the above

# Which Of The Following Is NOT A Characteristic Of Gas?

a) Exerts pressure equally in all directions

**b) Low compressibility**

c) Low density

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- Gases exert pressure equally in all directions.
- The gas particles have a very weak attractive force between them and move randomly ultimately exerting pressure in all directions.

# Air Is Considered To Be

- a) An element
- b) A mixture
- c) A solvent
- d) A compound

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- Air is generally a mixture of different gases and dust particles present in our surroundings.

# Which Of The Following Gases Is Lighter Than Air?

- a) Carbon dioxide
- b) Oxygen
- c) Ammonia
- d) Chlorine



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**c) Ammonia**

d) Chlorine

- Vapour density for ammonia is 8.5 while for chlorine is 35.5, HCl is 18.25 and oxygen is 16.

# What Is The Number Of Isotopes Of Hydrogen?

- a) 1
- b) 5
- c) 3
- d) More than one of the above

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Isotopes of hydrogen are: Protium Deuterium Tritium

# Which Of The Following Holds True According To The Properties Of Hydrogen?

- I. Hydrogen is the lightest gas.
  - II. Hydrogen cannot be corrosive.
  - III. Deuterium is another name for heavy hydrogen.
- 
- a) a only
  - b) c only
  - c) b only
  - d) More than one of the above

# Which Of The Following Holds True According To The Properties Of Hydrogen?

- I. Hydrogen is the lightest gas.
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- III. Deuterium is another name for heavy hydrogen.

a) a only

b) c only

c) b only

**d) More than one of the above**

- Hydrogen can be corrosive at elevated temperatures and pressures.

# Which One Of The Following Is The Colour Of Hydrogen Gas?

- a) Light yellow
- b) Orange
- c) Black
- d) Colourless

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c) Black

**d) Colourless**

- In nature, hydrogen gas is colourless, odourless, non-toxic, and tasteless.

# Which Is The Only Non-metal Placed With Alkali Metals.

- a) Francium
- b) Hydrogen
- c) Rubidium
- d) Caesium



# Which Is The Only Non-metal Placed With Alkali Metals.

a) Francium

**b) Hydrogen**

c) Rubidium

d) Caesium

- Hydrogen is the only non-metal placed with alkali metals.

# Which method is used to produce the hydrogen in large scale?

- a) Filtration
- b) Evaporation
- c) Fractional distillation
- d) Simple distillation

# Which method is used to produce the hydrogen in large scale?

a) Filtration

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**c) Fractional distillation**

d) Simple distillation

- Vacuum distillation is used when the boiling point of the compound is too high ( $T_b > 150^\circ\text{C}$ ) in order to distill the compound without significant decomposition.

## **Producer Gas Is Mixture Of Which Of The Following:**

- a) CO + N<sub>2</sub>
- b) CO<sub>2</sub> + H<sub>2</sub>
- c) CO<sub>2</sub> + N<sub>2</sub>
- d) More than one of the above

# Producer Gas Is Mixture Of Which Of The Following:

a)  $\text{CO} + \text{N}_2$

b)  $\text{CO}_2 + \text{H}_2$

c)  $\text{CO}_2 + \text{N}_2$

d) More than one of the above

- A typical producer gas obtained from coke contains 27% carbon monoxide, 12% hydrogen, 0.5% methane, 5% carbon dioxide and 55% nitrogen, by volume.

**On Heating A Mixture Of  $\text{NH}_4\text{Cl}$  &  $\text{KNO}_2$ , We Get**

a)  $\text{NH}_4\text{NO}_3$

b)  $\text{KNH}_4(\text{NO}_3)_2$

c)  $\text{N}_2$

d)  $\text{NO}$

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a)  $\text{NH}_4\text{NO}_3$

b)  $\text{KNH}_4(\text{NO}_3)_2$

c)  $\text{N}_2$

d)  $\text{NO}$

- The mixture of  $\text{NH}_4\text{Cl}$  and  $\text{KNO}_2$  is used to produce a super stable nitrogen gas which is used for industrial purposes such as packaging.

## Choose The Incorrect Statement:

- a) Dinitrogen is a colourless, odourless, tasteless and non-toxic gas.
- b) Very pure nitrogen can be obtained by the thermal decomposition of sodium or barium azide
- c) Cryogenic distillation of air is the oldest method of nitrogen production
- d) Nitrogen atom has three stable isotopes



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- The nitrogen atom has two stable isotopes:  $^{14}\text{N}$  and  $^{15}\text{N}$ .

# Identify The Defect In Painting In Which A Formation Of Dull Patches Occurs On The Finished Polished Surface.

- a) Saponification
- b) Bloom
- c) Wrinkling
- d) Flaking

# Identify The Defect In Painting In Which A Formation Of Dull Patches Occurs On The Finished Polished Surface.

a) Saponification

**b) Bloom**

c) Wrinkling

d) Flaking

- In this defect, the formation of dull patches occurs on the finished polished surface. It is due to the defect in paint or bad ventilation.

# The Ingredient Of Paint Which Gives It, The Binding Property And Form Opaque Coating Is

- a) Filler
- b) Pentafor
- c) Solvent
- d) Base

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a) Filler

b) Pentafor

c) Solvent

**d) Base**

- The base of the paint typically consists of a combination of pigments and binders, which together give the paint its color and ability to adhere to a surface.

# Which Of The Following Is Most Durable Varnish?

- a) Oil varnish
- b) Turpentine varnish
- c) Spirit varnish
- d) Water varnish

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a) Oil varnish

b) Turpentine varnish

c) Spirit varnish

d) Water varnish

- The oil varnishes dry slowly, but they form hard and durable surface.

# What Is The Purpose Of Using Vehicle Components In Paint Manufacturing?

- a) To prevent shrinkage and cracking
- b) To bring down the cost of paint
- c) To spread the paint evenly
- d) To modify the weight of paint



# What Is The Purpose Of Using Vehicle Components In Paint Manufacturing?

a) To prevent shrinkage and cracking

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**c) To spread the paint evenly**

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- The purpose of using vehicle components in paint manufacturing is to prevent shrinkage and cracking.

# Which Of The Following Is A Vehicle Used As A Composition Of Oil Paints?

- a) Linseed oil
- b) Spirit
- c) Paint thinner
- d) Petroleum jelly

# Which Of The Following Is A Vehicle Used As A Composition Of Oil Paints?

a) Linseed oil

b) Spirit

c) Paint thinner

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- Vehicle or drying oils: It is a liquid that binds the pigment to the surface and protects pigment from decay e.g. linseed oil, dehydrated castor oil, etc.

# Which Of The Following Is NOT A Vehicle In Paints?

- a) Linseed oil
- b) Tung oil
- c) Poppy oil
- d) Turpentine oil

# Which Of The Following Is NOT A Vehicle In Paints?

a) Linseed oil

b) Tung oil

c) Poppy oil

**d) Turpentine oil**

- Turpentine oil is used as a solvent in the paint.
- The function of the solvent is to make the paints thin so that it can be easily applied to the surface. It also helps the paint penetrate through the porous surfaces.

# **When Paint Is Applied In Three Coats, The First Coat Is Known As:**

- a) stopping
- b) finishing coat
- c) under coat
- d) priming coat

# When Paint Is Applied In Three Coats, The First Coat Is Known As:

- a) stopping
- b) finishing coat
- c) under coat
- d) priming coat**

- It is the first coat of paint that is directly applied to the surface. its purpose is to wet the surface and to provide good adhesion for subsequently applied coats.

# Maximum Permissible Limit Of Magnesia Content In Ordinary Portland Cement Is

- a) 5%
- b) 6%
- c) 8%
- d) 10%



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a) 5%

**b) 6%**

c) 8%

d) 10%

- cement weight of the magnesia is not more than 0.06 or 6 % in composition.

# Water Has Its Maximum Density At?

a) 100°C

b) 4°C

c) 0°C

d) -4°C

# Water Has Its Maximum Density At?

a) 100°C

**b) 4°C**

c) 0°C

d) -4°C

- The density of water increases until the temperature drops to 4°.
- At 4°, clusters of water molecules begin to form and the density begins to decrease.

# Which Of The Following Substances Dissolve In Water?

- a) Milk, Sugar, Honey
- b) Turpentine, Lemon Juice, Petrol
- c) Kerosene, Salt, Soap
- d) Sugar, Vinegar, Salt

# Which Of The Following Substances Dissolve In Water?

a) Milk, Sugar, Honey

b) Turpentine, Lemon Juice, Petrol

c) Kerosene, Salt, Soap

**d) Sugar, Vinegar, Salt**

- vinegar attracts water polar molecules because it is also a polar substance composed of acetic acid and water.

**A solution of resin or resinous substance dissolved in alcohol, turpentine or spirit is called \_\_\_\_\_.**

- a) resin paint
- b) varnish
- c) aluminium paint
- d) distemper

**A solution of resin or resinous substance dissolved in alcohol, turpentine or spirit is called \_\_\_\_\_.**

a) resin paint

**b) varnish**

c) aluminium paint

d) distemper

- Varnish: Varnish is nearly homogenous solution of resins in oil, alcohol or turpentine. Type of solvent used depends upon the type of resin used.

**The constituents of paint in suspension are held by which vehicle that also help in its evenly distribution?**

- a) Base
- b) Pigments
- c) Plaster of Paris
- d) Binder



# The constituents of paint in suspension are held by which vehicle that also help in its evenly distribution?

a) Base

b) Pigments

c) Plaster of Paris

**d) Binder**

- The vehicle is the liquid substance that holds the ingredients of paint in liquid suspension.
- They are required mainly for two reasons:
  - To make it possible to spread the paint evenly and uniformly on the surface in the form of a thin layer.
  - To provide a binder for the ingredients of paint so that they may stick or adhere to the surface.

**Lead is used as \_\_\_\_\_ in paint**

- a) Base
- b) Carrier
- c) Drier
- d) Pigment

# Lead is used as \_\_\_\_\_ in paint

a) Base

b) Carrier

c) Drier

d) Pigment

- It is a principal constituent of paint. It also possesses the binding properties. It forms an opaque coating. It also reduces the shrinkage cracks in the film on drying. Commonly used bases for paints are white lead, red lead, zinc oxide, iron oxide, titanium white, aluminium powder and lithophone.

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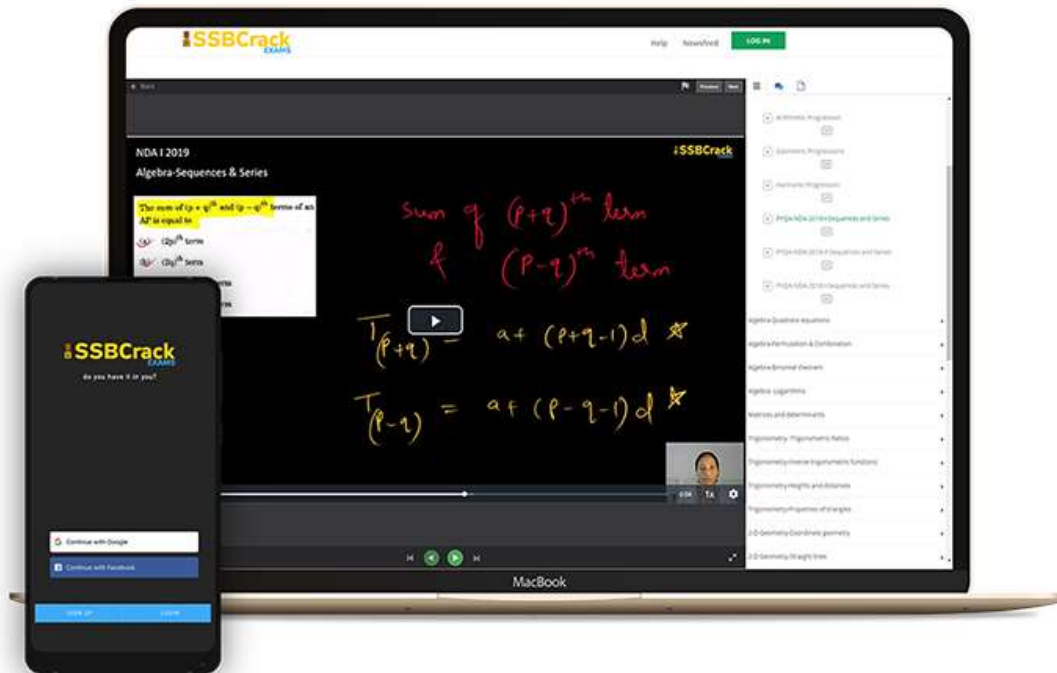
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