

**NDA-CDS-AFCAT 2024**

**TOP 25 MCQs**  
**CHEMISTRY**

**CARBON**

**AND ITS COMPOUNDS**

SSBCrack



**SHIVANGI MA'AM**

**Buckminster Fullerene Is An Example Of \_\_\_\_\_ Of Carbon.**

- a) an isomer
- b) an isotope
- c) an allotrope
- d) More than one of the above

# Buckminster Fullerene Is An Example Of \_\_\_\_\_ Of Carbon.

a) an isomer

b) an isotope

**c) an allotrope**

d) More than one of the above

- Allotrope: The different structure of same chemical compound is called Allotrope.
- Buckminster fullerene is a stable structure of 60 carbon atoms.

# The Arrangement Of Carbon Atoms In Diamond Is

- a) Regular Hexagons
- b) Tetrahedral
- c) Pentagons
- d) More than one of the above

# The Arrangement Of Carbon Atoms In Diamond Is

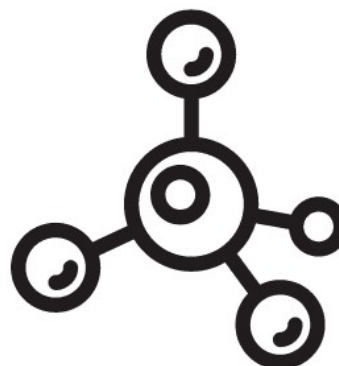
a) Regular Hexagons

**b) Tetrahedral**

c) Pentagons

d) More than one of the above

Atomic Structure of carbon

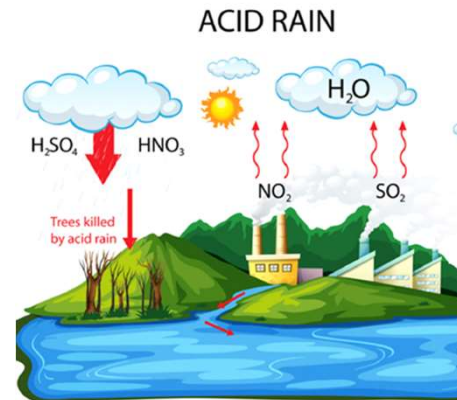


# Acid Rain Happens Because

- a) sun leads to heating of upper layer of atmosphere
- b) burning of fossil fuels release oxides of carbon, nitrogen and sulphur in the atmosphere
- c) electrical charges are produced due to friction amongst clouds
- d) earth atmosphere contains acids

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# Which Of The Following Is The Hardest Substance Known?

- a) Buckminster fullerene
- b) Diamond
- c) Graphite
- d) Iron



# Which Of The Following Is The Hardest Substance Known?

a) Buckminster fullerene

**b) Diamond**

c) Graphite

d) Iron

- Diamond is the hardest substance on Earth.
- It has carbon atoms with four covalent bonds (four valence electrons is connected with four other carbon atoms).

**When Carbon Dioxide Dissolves In Water, It Gives \_\_\_\_\_?**

- a) Citric Acid
- b) Carbonic Acid
- c) Sulphuric Acid
- d) Acetic Acid

# When Carbon Dioxide Dissolves In Water, It Gives \_\_\_\_\_?

a) Citric Acid

**b) Carbonic Acid**

c) Sulphuric Acid

d) Acetic Acid

- Carbonic acid is widely used in the production of soft drinks, artificially carbonated sparkling wines, and other bubbly beverages.

# Chemistry Of Carbon Compounds Is Known As

\_\_\_\_\_.

- a) Biochemistry
- b) Physical chemistry
- c) Inorganic chemistry
- d) Organic chemistry

# Chemistry Of Carbon Compounds Is Known As

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a) Biochemistry

b) Physical chemistry

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**d) Organic chemistry**

- Organic chemistry is the study of the structure, properties, composition, reactions, and preparation of carbon-containing compounds, which include not only hydrocarbons but also compounds with any number of other elements such as carbon hydrogen etc.

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

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

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Carbon forms large no. of compounds as it has the following 3 properties,

1. It has a valency of 4 so can make bonds with large no. of atoms.

2. It has a small nucleus as it has only 6 protons and 6 neutrons and hence attract more electrons easily.

3. And last is the most important property of carbon that is catenation which means it has the capability to form large no. of bonds.

# The Cooking Gas Is Mainly A Mixture Of The Following Two Gases

- a) Methane and Ethane
- b) Ethane and Propane
- c) Propane and Butane
- d) Butane and Pentane



# The Cooking Gas Is Mainly A Mixture Of The Following Two Gases

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- Liquefied petroleum gas (LPG) mainly consists of propane and butane.
- It is odorless that's why Ethyl Mercaptan is added to it so there may be a smell if LPG leaks from its storage container.

## How Many Isomers Does C<sub>6</sub>H<sub>14</sub> Have?

a) 3

b) 6

c) 4

d) 5

# How Many Isomers Does C<sub>6</sub>H<sub>14</sub> Have?

a) 3

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c) 4

**d) 5**

- C<sub>6</sub>H<sub>14</sub> is hexane. It has 5 structural isomers like n-hexane, 2-methyl pentane, 3-methyl pentane, 2,2-dimethyl butane, 2,3-dimethyl butane.

# Which Of The Following Products Is Used For Construction Of Roads?

- a) Coke
- b) Bitumen
- c) Paraffin
- d) Naphthalene

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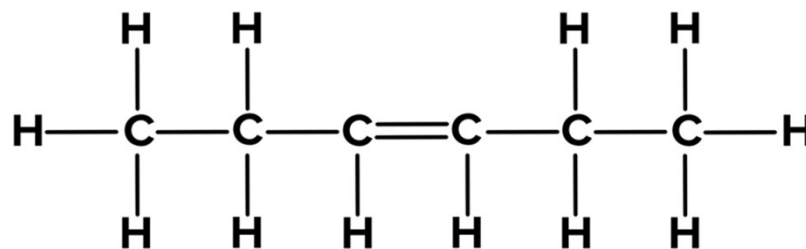
Bitumen is a mixture of 500-700 organic compounds (hydrocarbons) in which also contain small proportions of Nitrogen, Sulphur and Oxygen.

# Which Of The Following Substances Is Not An Aromatic Compound?

- a) Benzene
- b) Naphthalene
- c) Anthracene
- d) Hexene

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- b) Naphthalene
- c) Anthracene



d) Hexene

**Petroleum Is A Mixture Of\_\_\_\_\_.**

a) Hydrocarbon

b) Salts

c) Polymer

d) Elements



# Petroleum Is A Mixture Of\_\_\_\_\_.

a) **Hydrocarbon**

b) Salts

c) Polymer

d) Elements

Crude oil (Petroleum)

- A **mixture** of **hydrocarbons** (chemicals which contain only **hydrogen** and **carbon** atoms)



# Most Of The Explosions In Mines Occur Due To The Mixing Of

- a) Hydrogen with oxygen
- b) Oxygen with acetylene
- c) Methane with air
- d) Carbon dioxide with ethane

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**MINE EXPLOSIONS**

- ▣ Mine explosions are generally regarded as a serious and constant hazard in underground coal mines.
- ▣ In coal mines, explosions are caused
  - ▣ By ignition of firedamp (Fire damp explosion) or
  - ▣ By ignition of coal dust (Coal dust explosion) or
  - ▣ By both (Mixed explosion)
- ▣ In metal mines, explosions are due to sulphide dust (iron pyrite).

**How Many Neutrons Are There In  ${}_{92}\text{U}^{238}$  Atom?**

a) 92

b) 238

c) 146

d) 330

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U

Uranium

Atomic number  
protons / electrons

92

Neutrons  
(most common isotope)

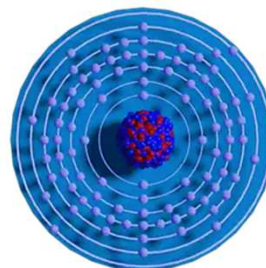
146

Atomic weight  
(amu)

238.03

Atomic radius  
(pm)

196



[Rn] 5f<sup>3</sup> 6d<sup>1</sup> 7s<sup>2</sup>

7s  7p

6s  6p  6d

5s  5p  5d  5f

4s  4p  4d

3s  3p  3d

2s  2p

1s

# Which Of The Following Compounds Has A Triple Bond?

a)  $C_2H_6$

b)  $C_3H_4$

c)  $C_3H_8$

d)  $C_3H_6$

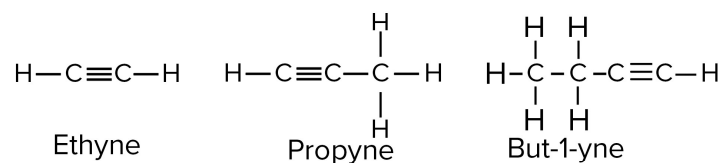
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d) C<sub>3</sub>H<sub>6</sub>



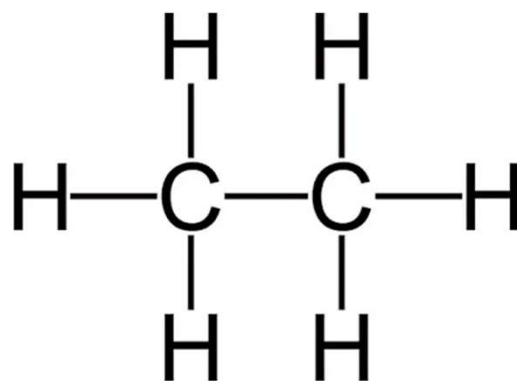
# Which Is A Saturated Hydrocarbon

- a) Acetylene
- b) Propene
- c) Ethene
- d) Ethane



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- c) Ethene
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# Incomplete Combustion Of A Fuel Gives Poisonous \_\_\_\_\_ Gas.

- a) Carbon dioxide
- b) Isocyanate
- c) Carbon monoxide
- d) Nitrogen

# Incomplete Combustion Of A Fuel Gives Poisonous \_\_\_\_\_ Gas.

a) Carbon dioxide

b) Isocyanate

**c) Carbon monoxide**

d) Nitrogen

Carbon Monoxide is formed when there is not enough air for proper combustion to take place.

# Which Of The Following Statements Are Correct For Carbon Compounds?

- (i) Most carbon compounds are good conductors of electricity.
  - (ii) Most carbon compounds are poor conductors of electricity.
  - (iii) Force of attraction between molecules of carbon compounds is not very strong.
  - (iv) Force of attraction between molecules of carbon compounds is very strong.
- 
- (a) (ii) and (iv)
  - (b) (ii) and (iii)
  - (c) (i) and (iv)
  - (d) (i) and (iii)

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(a) (ii) and (iv)

**(b) (ii) and (iii)**

(c) (i) and (iv)

(d) (i) and (iii)

**Diamond** is a **bad conductor of electricity** but good **conductor** of heat. **Electricity** is conducted in a crystal by electrons that are relatively free. But in **diamond**, each carbon atom is covalently bonded with four other carbon atoms and there are no free electrons.

# Addition Reactions Are Undergone By

(a) saturated hydrocarbons (alkanes)

(b) only alkenes

(c) only alkynes

(d) both alkenes and alkynes

# Addition Reactions Are Undergone By

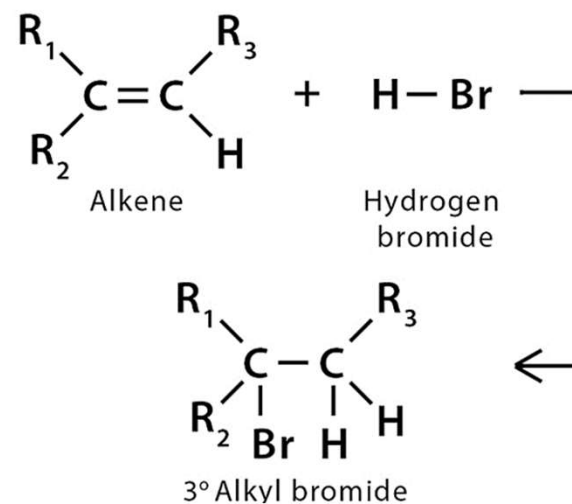
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## Addition Reaction



# **In Diamond, Each Carbon Atom Is Bonded To Four Other Carbon Atoms To Form**

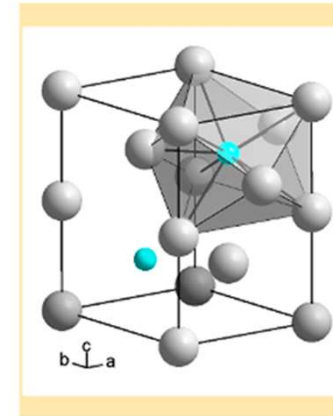
- a) a hexagonal array
- b) a rigid three-dimensional structure
- c) a structure in the shape of a football
- d) a structure of a ring



# In Diamond, Each Carbon Atom Is Bonded To Four Other Carbon Atoms To Form

- a) a hexagonal array
- b) a rigid three-dimensional structure**
- c) a structure in the shape of a football
- d) a structure of a ring

Diamond structure



# Coke is

- a) 50% Carbon
- b) 75% Carbon
- c) 90% Carbon
- d) 98% Carbon

# Coke is

- a) 50% Carbon
- b) 75% Carbon
- c) 90% Carbon
- d) 98% Carbon**

- Coke is a product of Coal.
- It is a tough, porous and black substance.
- It is an almost pure form of carbon.
- Coke contains 98 % carbon.
- Characteristics of coke:
  - It is the purest form of carbon.
  - It is black, porous, and tough as a substance.
  - When coke is burnt, there is no smoke produced.
  - Coke is made by burning coal in the absence of air.

# Which Of The Following Has The Highest Catenation Capability?

- a) Oxygen
- b) Sulphur
- c) Carbon
- d) More than one of the above

# Which Of The Following Has The Highest Catenation Capability?

a) Oxygen

b) Sulphur

**c) Carbon**

d) More than one of the above

- Catenation is the ability of atoms of a particular chemical element to bind with each other to form a chain or ring structure.

# What Is The Chemical Name Of Molecular Formula $C_3H_8$ ?

- a) Propane
- b) Methane
- c) Butane
- d) More than one of the above

# What Is The Chemical Name Of Molecular Formula C<sub>3</sub>H<sub>8</sub>?

a) Propane

b) Methane

c) Butane

d) More than one of the above

- The chemical name of molecular formula C<sub>3</sub>H<sub>8</sub> is Propane.
- Propane, with molecular formula C<sub>3</sub>H<sub>8</sub> has 10 covalent bonds in its structure.
- Covalent bond: The chemical bond formed by sharing of two valence electron between the two atoms.
- There are 8 carbon-hydrogen covalent bonds and 2 carbon-carbon covalent bonds present in the propane molecule. So, the total number of covalent bonds present in propane is (8 + 2 = 10)

## **Which Alkane Is Known As Marsh Gas?**

- a) Methane
- b) Ethane
- c) Propane
- d) Butane



# Which Alkane Is Known As Marsh Gas?

a) Methane

b) Ethane

c) Propane

d) Butane

- Methane is the lightest hydrocarbon having one carbon and four hydrogen atoms. Its molecular weight is 16. It is also a fuel gas commonly called marsh gas because it is produced from marshy lands. Some facts about it:
- Methane is produced when vegetation decomposes naturally within some geographical marshes, swamps.
- The main process behind the production of methane is anaerobic digestion.
- Biogas or Gobar gas also contains 60-70% of methane.
- Methane is one of the greenhouse gases. Other greenhouse gases are- carbon dioxide, water vapour, nitrous oxide and ozone.
- Methane is produced in the soil during microbial decomposition of organic matter and reduction of CO<sub>2</sub> under strictly anaerobic conditions.

**The Chemical Formula Of Urea Is \_\_\_\_\_.**

a)  $(\text{NH}_4)_2\text{CO}_2$

b)  $(\text{NH}_2)\text{CO}$

c)  $(\text{NH}_4)_2\text{CO}$

d)  $\text{NH}_2\text{CONH}_2$

The Chemical Formula Of Urea Is \_\_\_\_\_.

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b)  $(\text{NH}_2)\text{CO}$

c)  $(\text{NH}_4)_2\text{CO}$

d)  **$\text{NH}_2\text{CONH}_2$**

- Urea, also known as carbamide, is an organic compound with the chemical formula  $\text{NH}_2\text{CONH}_2$  or  $\text{CH}_4\text{N}_2\text{O}$ .

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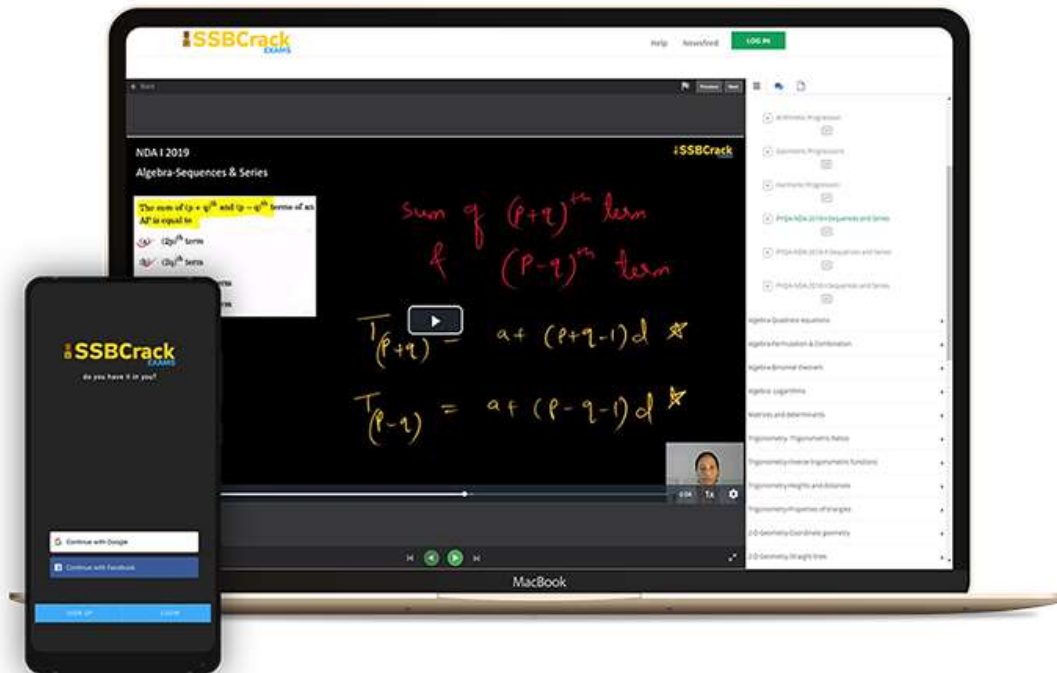
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