CHM102

In covalent bonding the formation of the bonds is usually accompanied by?

Release of energy

Bond dissociation energy and bond energy are the same only if?

The molecule is diatomic

What are the two factors that determine the shape of a molecule in covalent bonding?

Bond length and bond angle

The measure of angle between the atoms forming the bond to the same atom is called?

Bond angle

Bond length decreases with increase in \_\_\_\_\_of bond.

Multiplicity

Bond length decreases with increase in size of bonded\_\_\_\_\_\_\_

Atoms

The chemical reactivity of an organic compound totally depends on \_\_\_\_.

Bond length

The structure which shows how various atoms are connected to each other is called?

Lewis structure

The formula CH3CH3 represents the \_\_\_\_\_\_\_\_for ethane.

Condense structure

Give the name of this compound. CH3(CH2)6CH3.

Octane

The condense formula for ethane is CH3CH3 while that of ethylene is?

H2C=CH2

Who proposed the model of orbital hybridization?

Pauline

When molecules are formed it can be deduced that?

All of the options.

The number of hybrid orbitals generated is equal to the number of\_\_\_\_ orbitals combined. True or false?

Atomic

The new orbitals formed in carbon and later interact with the orbitals of hydrogen to form?

Hybrid orbitals

The symbol SP3 hybrid simply means

One S and three P orbitals interaction

What type of hybridization is peculiar to ethylene?

SP2 hybridization

What is the bond angle between two SP3 hybrid orbitals?

109.5o

What is the name of the bond formed between carbon and hydrogen (C─H)?

Sigma bond

What is the measure of the length of C─C bond?

154 pm

The bond energy C─C is equivalent to?

348 Kjmo-1

Indicate the corresponding bond resulting from SP3, SP2 and SP hybridization

Single bond, double bond and triple bond.

Choose the correct option that best indicate the hybrid orbitals type, bond length and bond angle for methane.

SP2, 134 pm and 120o

Choose the correct option that best indicate the hybrid orbitals type, bond length and bond angle for acetylene?

SP, 120 pm and 180o

Grouping organic compounds base on their functional groups makes it easier to understand their\_\_\_\_\_\_\_?

Chemical properties only

-OH is a functional group for which organic compound?

Alcohol

What is the functional group of aldehyde?

─CHO

What is the functional group of esters?

RCOOR’

The hydrocarbons are broadly classified into\_\_\_?

Aliphatic, alicyclic and aromatic

Benzene is an example of which type of hydrocarbon?

Aromatic hydrocarbon

When a compound has a carbon-nitrogen single bond it is called?

Amine

When a compound has carbon-nitrogen double bond it is called?

Imine

When a compound has carbon-nitrogen triple bond it is called?

Nitrile

Depending on the number of alkyl group attached to the nitrogen atom, the amines are classified as?

Primary, secondary and tertiary amines

An alcohol in which the oxygen atom is replaced by a sulphur atom is called?

Thiol

Alkanes are also known as\_\_\_\_\_\_\_\_\_

\*Paraffins\*

It is observed that under ordinary conditions alkanes are \_\_\_\_\_\_\_\_\_towards reagents such as acids, alkanes etc.

\*inert\*

\_\_\_\_\_\_\_\_\_\_is the major source of acyclic and cyclic alkanes

\*Petroleum\*

\_\_\_\_\_\_\_is thick, inflammable and usually dark viscous liquid

\*Petroleum\*

The \_\_\_\_\_of petroleum varies with its locality of its occurrence.

\*composition\*

\_\_\_\_\_\_\_\_\_\_ is found along with petroleum whose major components are methane and ethane.

\*natural gas\*

Separating the crude petroleum into useful components is called \_\_\_\_\_\_\_

\*refining\*

Fractional distillation of petroleum separates the feed stoke into different fractions according to their differences in\_\_\_\_\_\_\_\_\_\_\_

\*Boiling point\*

Crude petroleum is heated in the furnace at \_\_\_\_\_\_\_\_\_\_

\*650 K\*

Each tray is provided with a \_\_\_\_\_\_ covered with a loose cap called bell cap

\*chimney\*

The \_\_\_\_\_\_\_boiling fractions condense in the lower portion of the tower

\*higher\*

The approximate carbon atoms contained in light petrol\_\_\_\_\_\_\_\_\_

\*C5-C7\*

In Bergius process, the carbon rings in coal undergo \_\_\_\_\_ to give smaller fragments which are then hydrogenated to open chain and cyclic hydrocarbons.

\*fission\*

Water gas is a mixture of\_\_\_\_\_\_\_\_\_\_\_

\*carbon monoxide and hydrogen\*

One of the catalyst mixture used in fischer-tropsch process is\_\_\_\_\_\_\_\_

\*cobalt\*

This water gas when hydrogenated and passed over a catalyst at \_\_\_\_\_\_\_\_ under 1-10 atm pressure yields crude oil

\*470-870 K\*

nCO + MH2 → \_\_\_\_\_\_\_\_\_ +H2O

\*Mixture of hydrocarbons\*

Another parameter for knowing good gasoline is through \_\_\_\_

\*ocatane number\*

\_\_\_\_\_\_\_ is given an octane number of 100

\*2,2,4-trimethylpentane\*

\_\_\_\_\_\_ is assign octane number 0

\*n-heptane\*

Good quality motor fuels used in modern automobiles have octane number in the range of \_\_\_\_\_\_\_\_\_

\*87-95\*

The use of \_\_\_\_\_\_\_\_\_\_\_\_ as octane number enhancer is being curtailed for environmental reasons.

\*Tetraethyllead\*

In \_\_\_\_\_\_\_, fuel having a lower octane number is much more useful than those having a higher octane number.

\*diesel engine\*

Quality of diesel fuel is expressed in terms of a parameter called\_\_\_\_\_\_\_\_\_\_.

\*Cetane number\*

\_\_\_\_\_\_\_is given a cetane number 100

\*Hexadecane\*

Good quality diesel fuel required for modern diesel engine has cetane number greater than \_\_\_\_\_\_\_\_\_\_

\*45\*

Boiling point of a covalent substance depends upon the\_\_\_\_\_\_\_\_\_\_ forces.

\*intermolecular\*

The \_\_\_\_\_\_\_\_\_\_\_ in a carbon chain with an odd number of carbon atoms lies on the same side whereas those in a carbon chain with an even number lie on the opposite side.

\*Terminal carbon atoms\*

The joining of the two alkyl groups from two molecules of alkyl halide with the lost of halogen occur in which method of preparation of alkanes. \_\_\_\_\_\_\_\_\_\_\_

\*wurtz\*

Preparation of alkanes from carboxylic acid is achieved by \_\_\_\_\_\_\_\_\_\_ method.

\*Kolbe’s electrolytic\*

Alkanes or cycloalkanes can be prepared by \_\_\_\_using platinum and palladium as a catalyst.

\*hydrogenation of unsaturated hydrocarbons\*

In Sabatier senderen’s reaction method, the hydrogenation of alkanes takes place in the presence of \_\_\_\_\_\_\_\_catalyst.

\*Nikel\*

Alkylmagnesium halide is also called\_\_\_\_\_\_\_

\*grignard reagent\*

Cyclopentanone is prepared from which salt\_\_\_\_\_\_\_\_\_.

\*barium adipate\*

When an alkene reacts with borane, addition to the carbon-carbon double bond takes place to yield an \_\_\_\_\_\_\_\_\_\_\_

\*organoborane\*