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