>

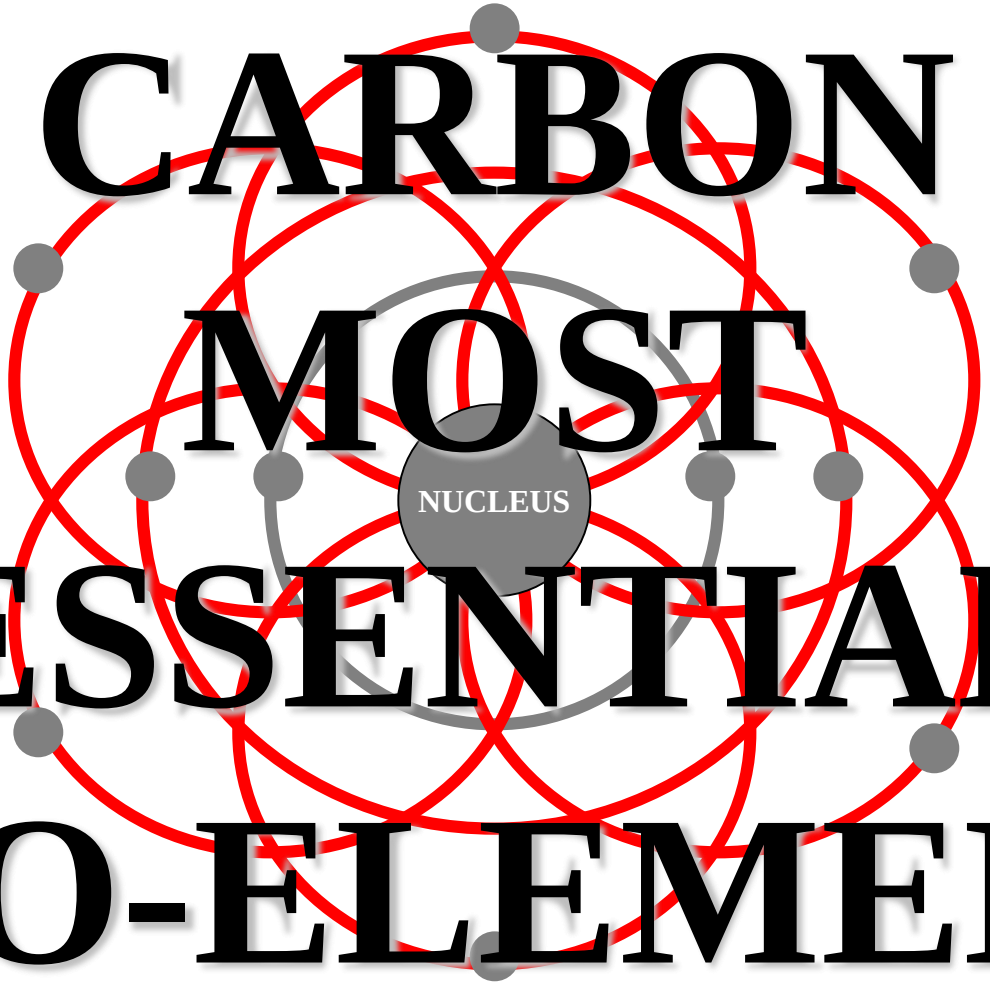
ANSWER

CARBON

ANSWER

CARBON

CARBON MOST ESSENTIAL BIO-ELEMENT

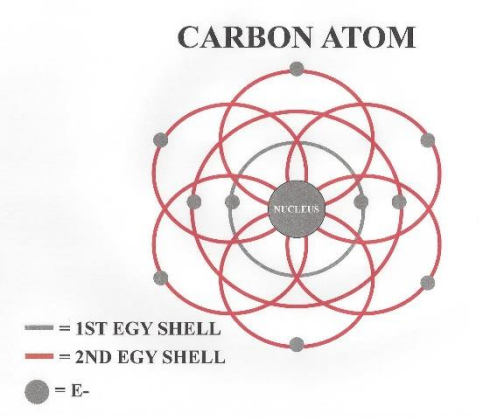


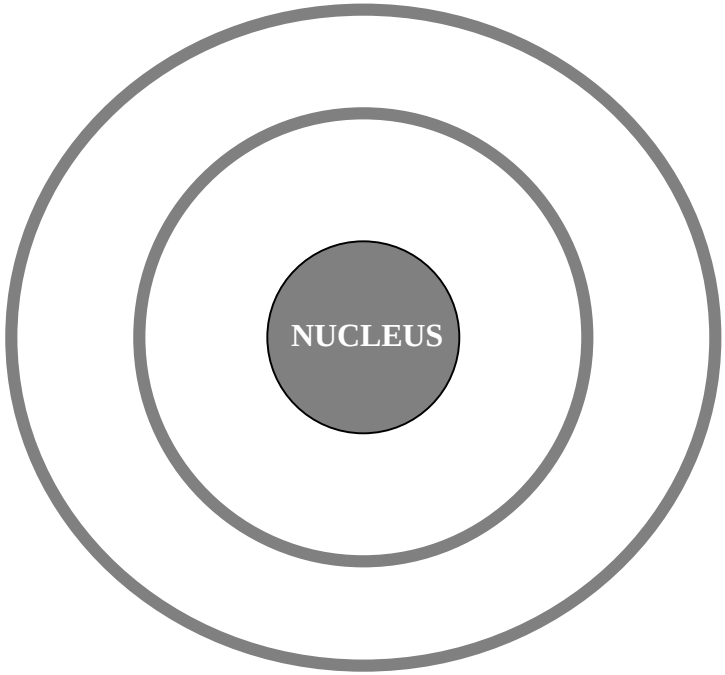
CARBON

CARBON'S CHEMICAL VERSATILITY

CARBON CHEMICAL BONDS

CARBON ATOM

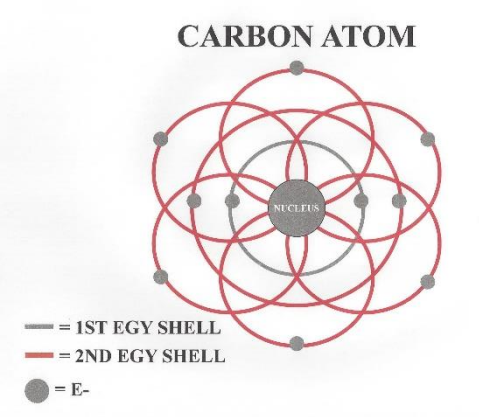


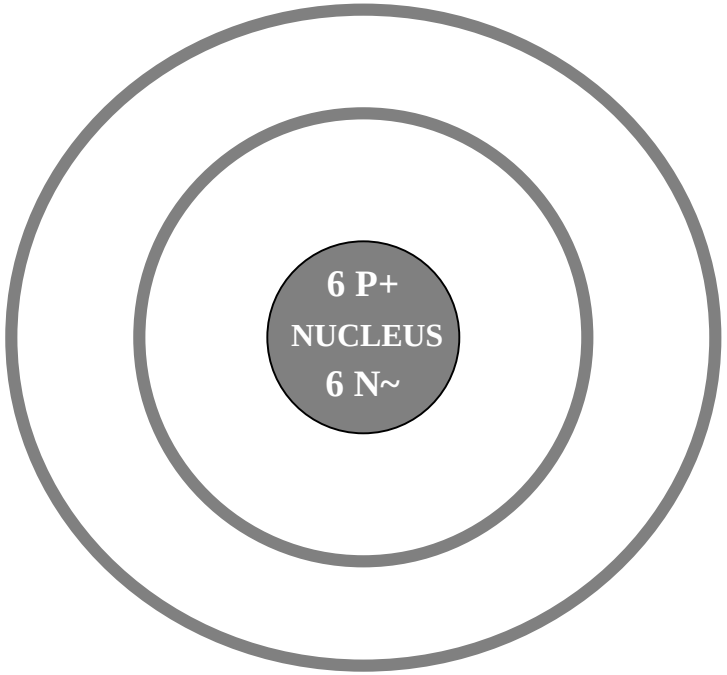


CARBON ATOM

= E-

CARBON ATOM





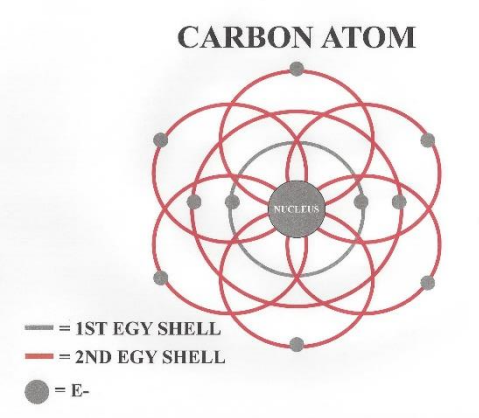
CARBON ATOMIC NO. = 6

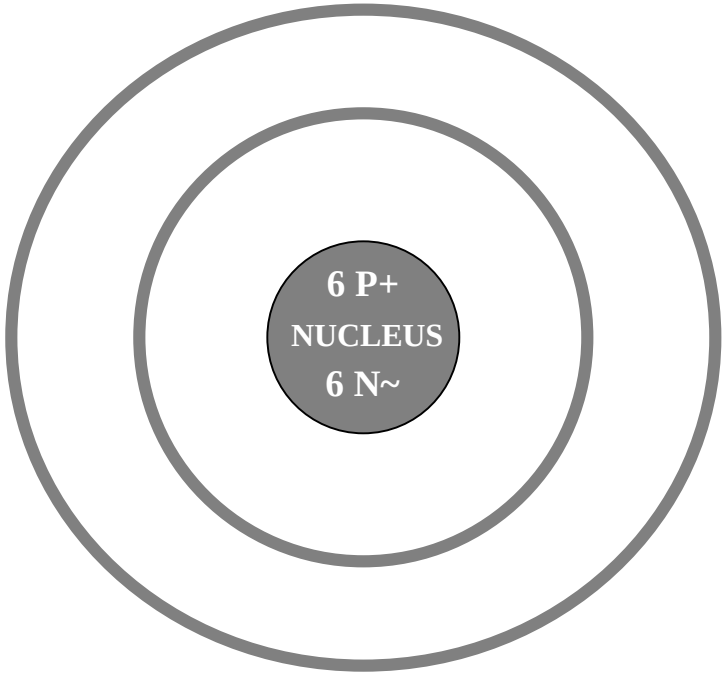
= E-

6

E-

CARBON ATOM

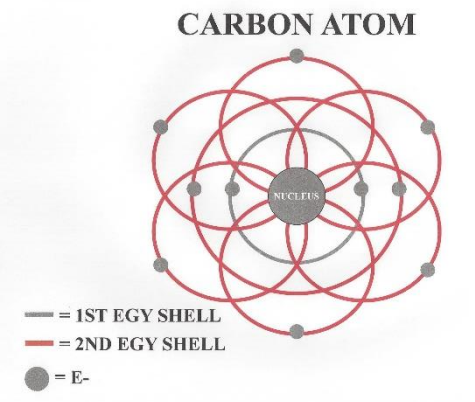


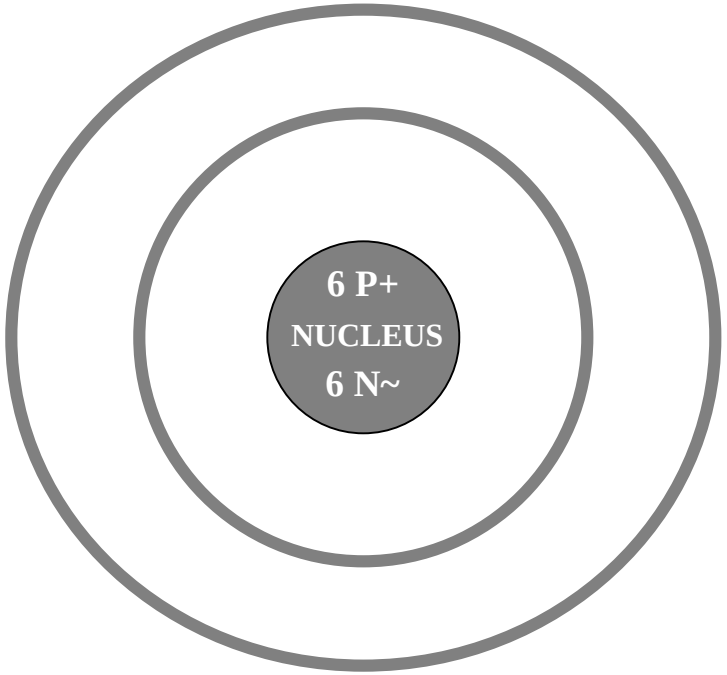


CARBON ATOM ~ CHARGE

= E-

CARBON ATOM

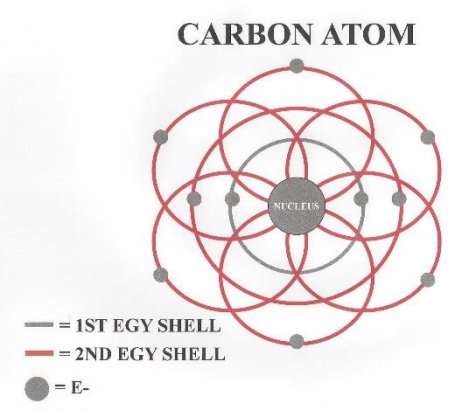


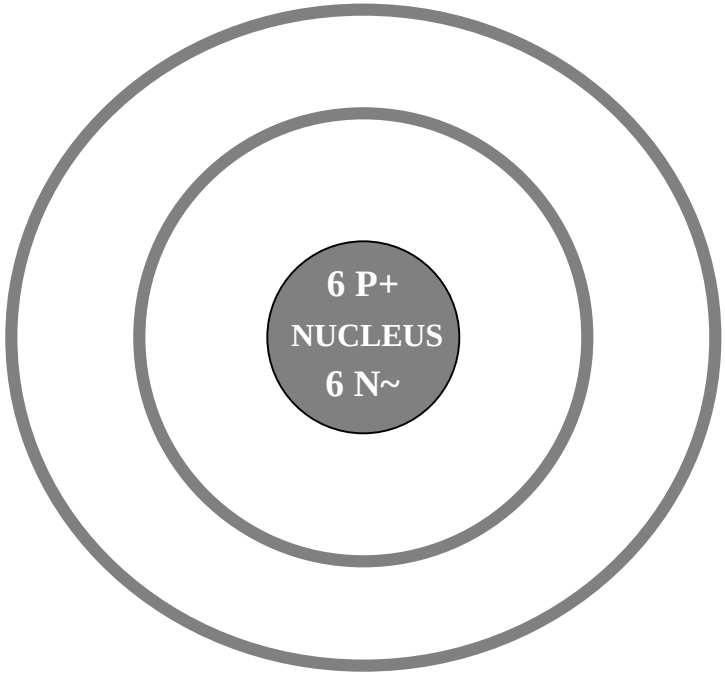


CARBON ATOM ~ CHARGE NO. E- = 6

= E-

CARBON ATOM



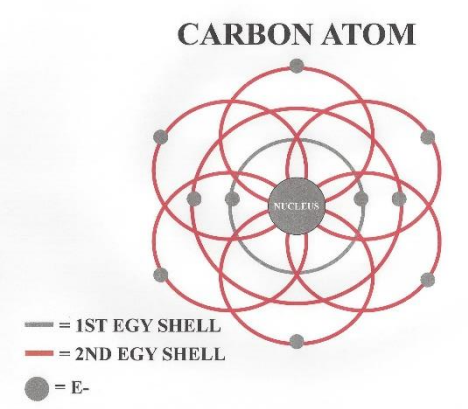


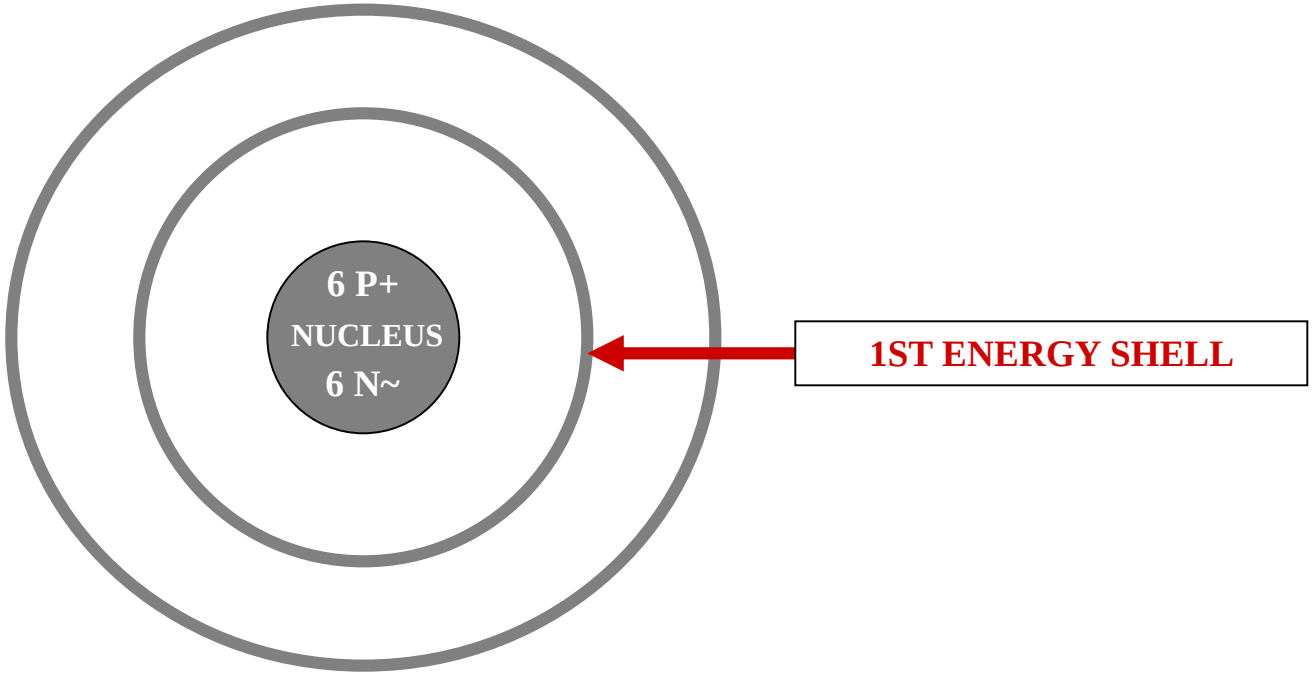
E- ENERGY SHELLS & ORBITALS

= E-

NO. E- = 6

CARBON ATOM





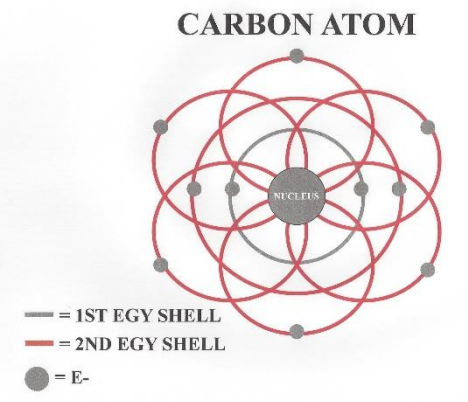
E- ENERGY SHELLS & ORBITALS

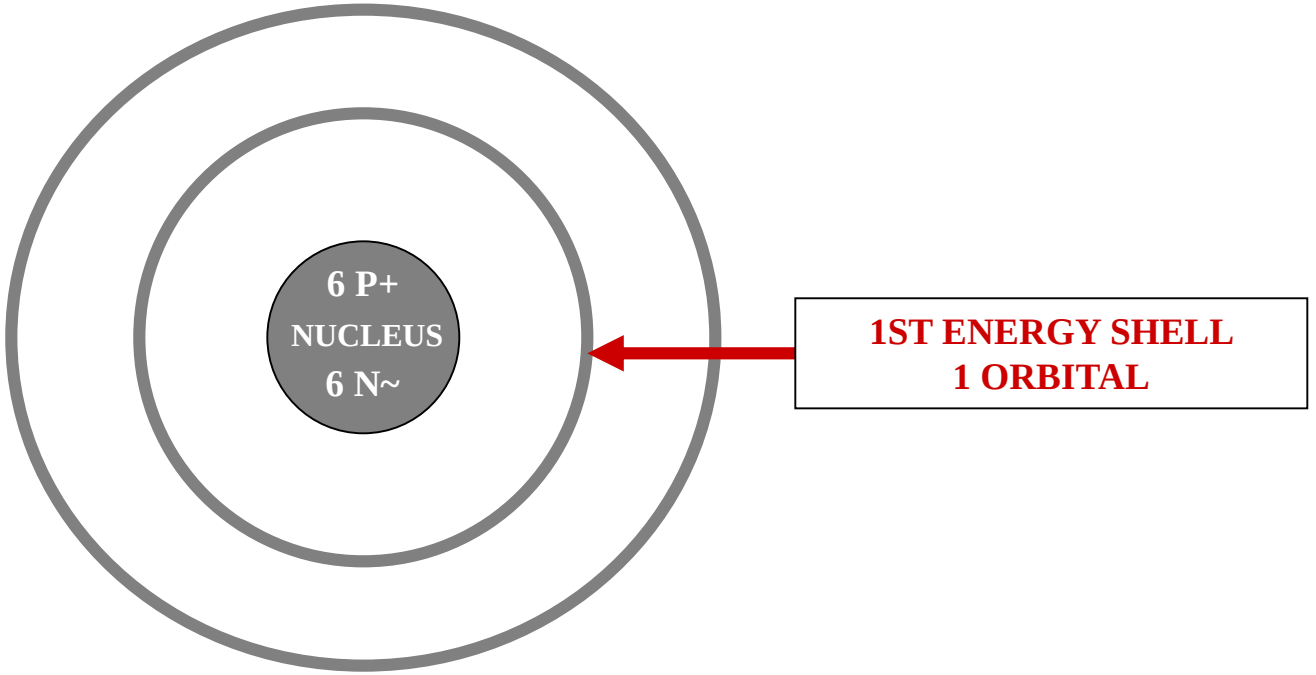
= E-

NO. E- = 6

E-

CARBON ATOM





E- ENERGY SHELLS & ORBITALS

= E-

NO. E- = 6

E-

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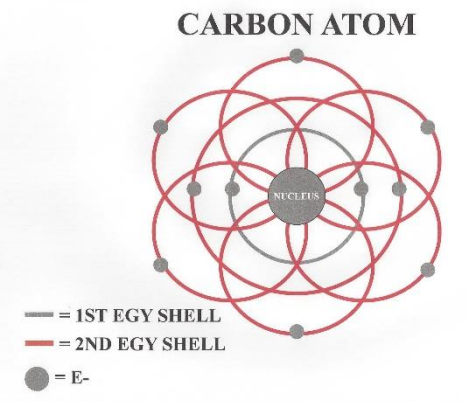
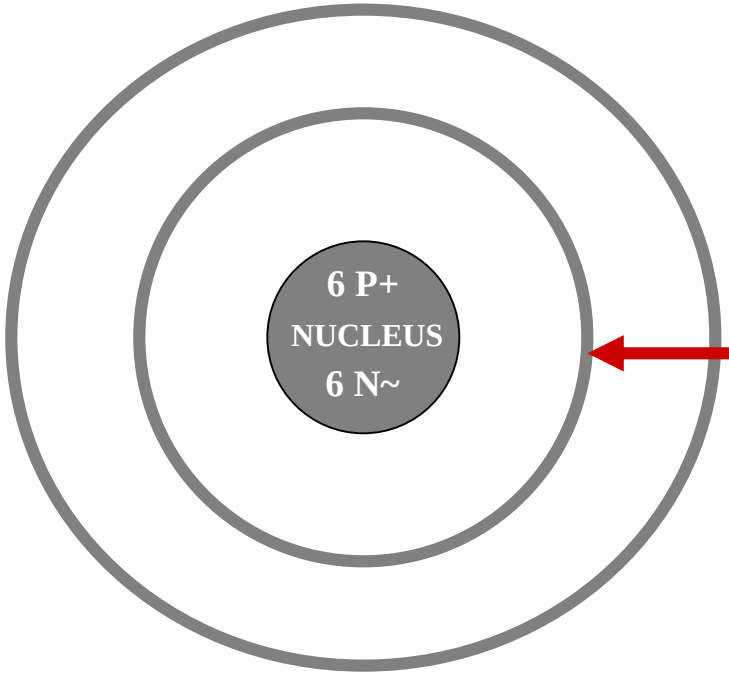
CARBON ATOM





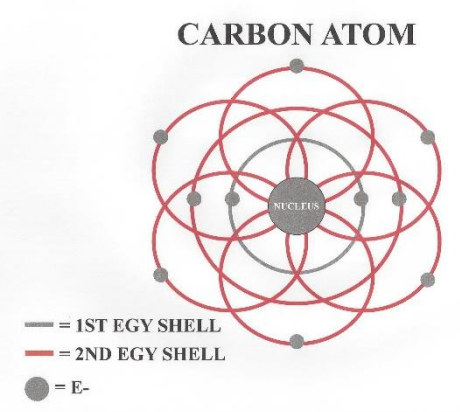
1ST ENERGY SHELL
1 ORBITAL
2 E- / ORBITAL

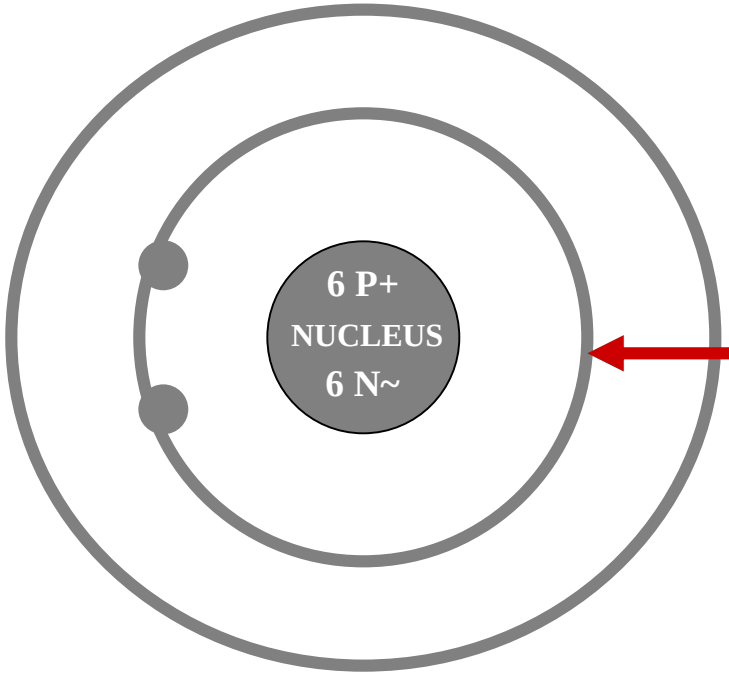
E- ENERGY SHELLS & ORBITALS

= E-

NO. E- = 6

CARBON ATOM





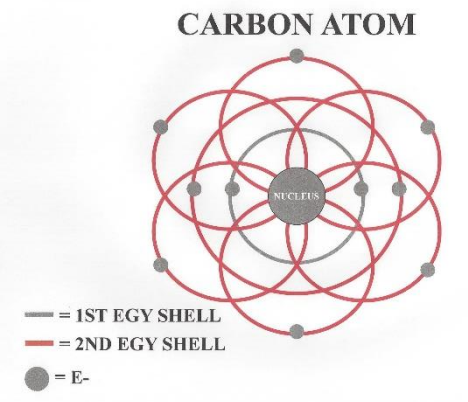
1ST ENERGY SHELL
1 ORBITAL
2 E- / ORBITAL

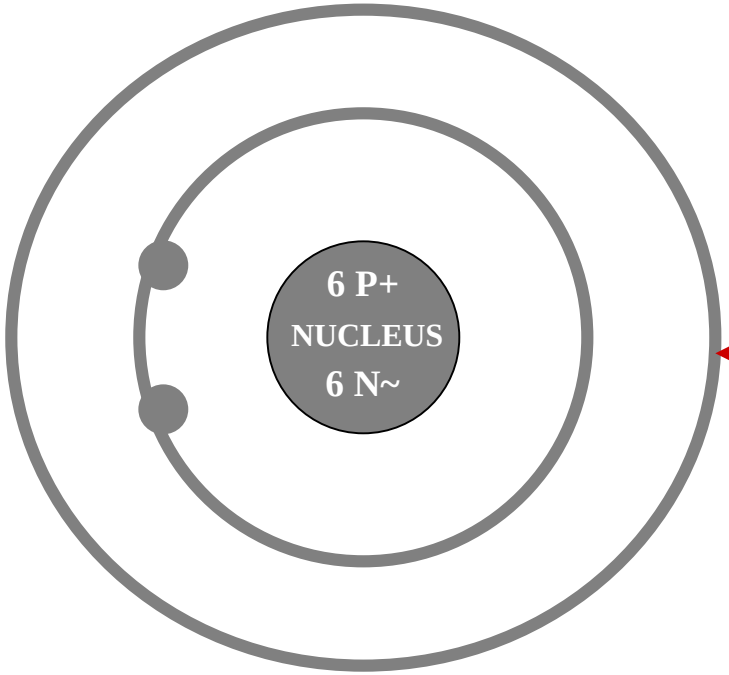
E- ENERGY SHELLS & ORBITALS

= E-

NO. E- = 6

CARBON ATOM





2ND ENERGY SHELL

E- ENERGY SHELLS & ORBITALS

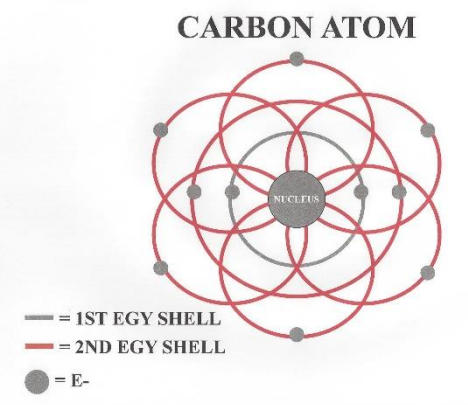
= E-

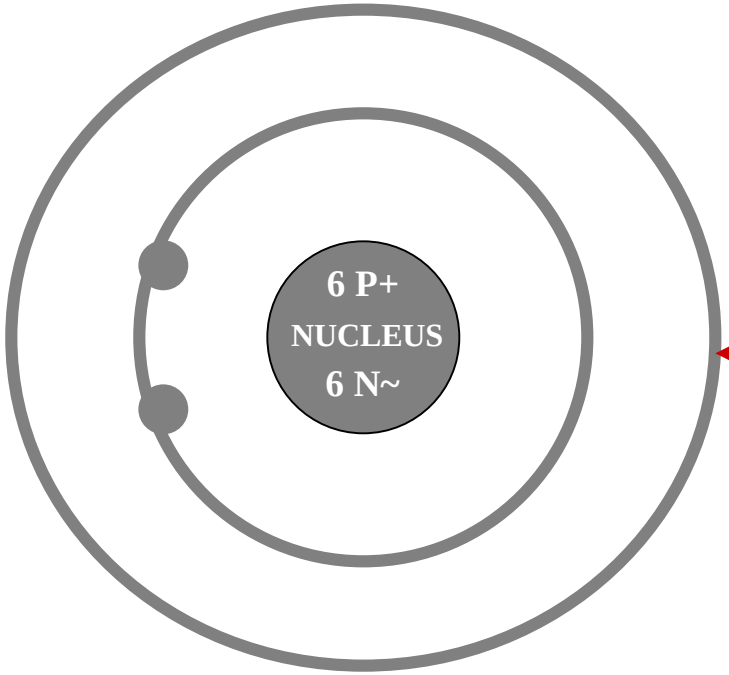
NO. E- = 6

E-

O

CARBON ATOM





2ND ENERGY SHELL
4 ORBITALS

E- ENERGY SHELLS & ORBITALS

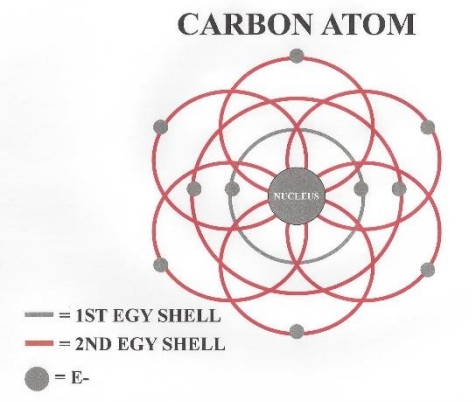
= E-

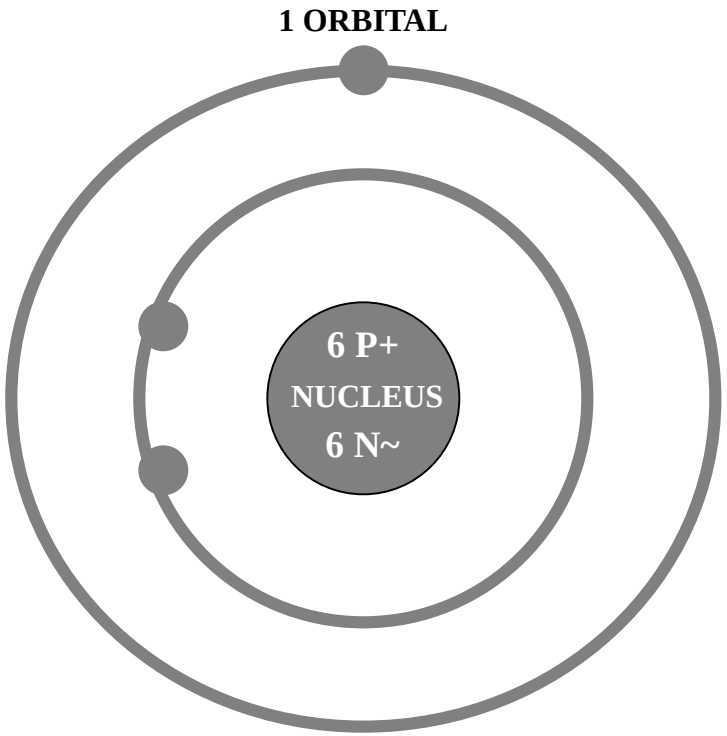
NO. E- = 6

E-

O

CARBON ATOM





E- ENERGY SHELLS & ORBITALS

= E-

NO. E- = 6

E-

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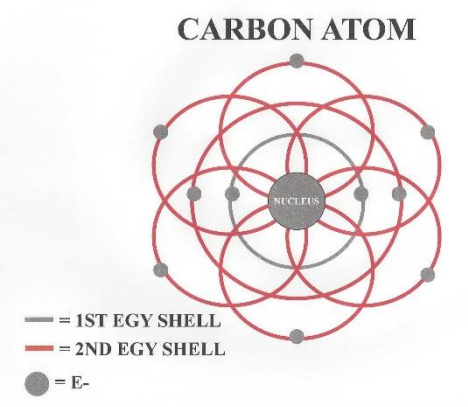
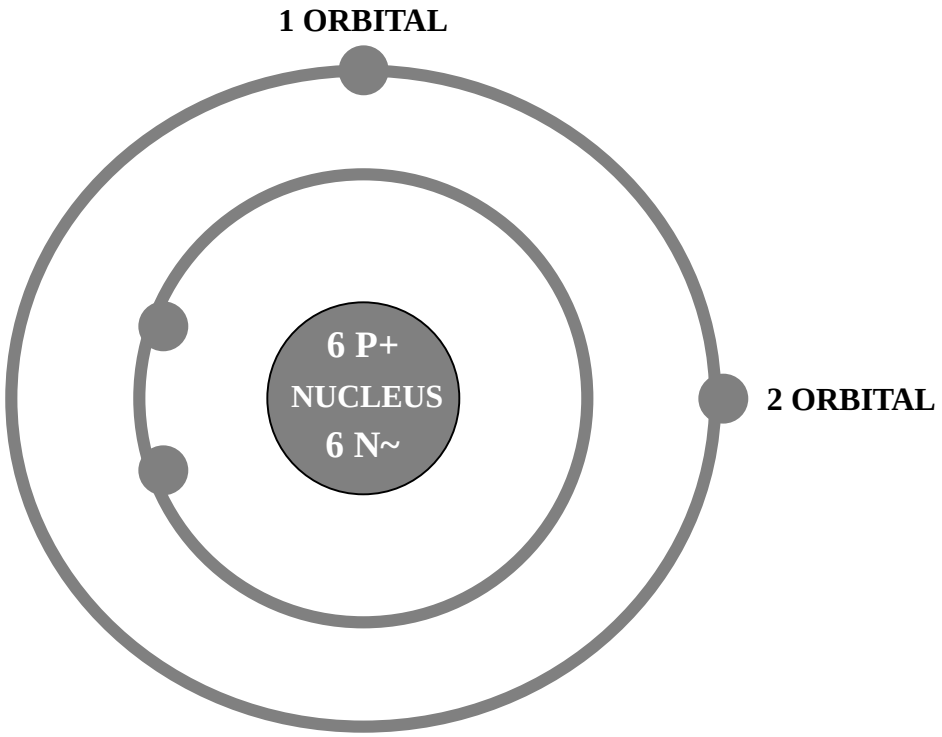
CARBON ATOM





E- ENERGY SHELLS & ORBITALS

= E-

NO. E- = 6

E-

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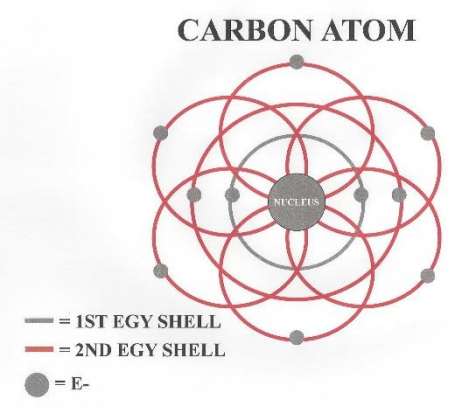
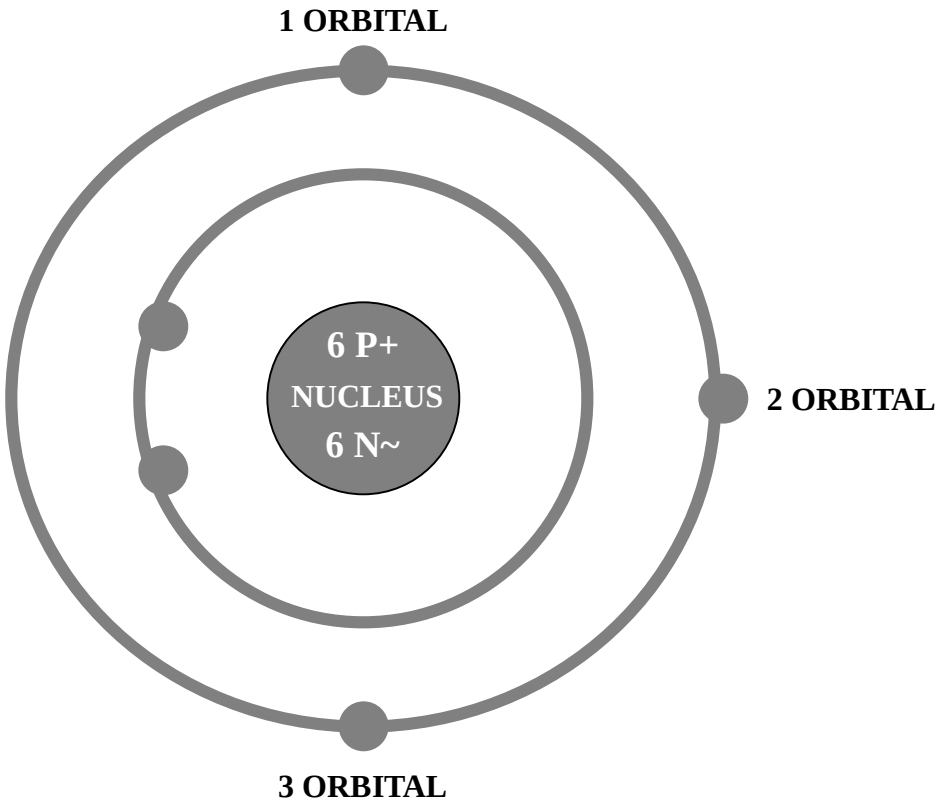




E- ENERGY SHELLS & ORBITALS

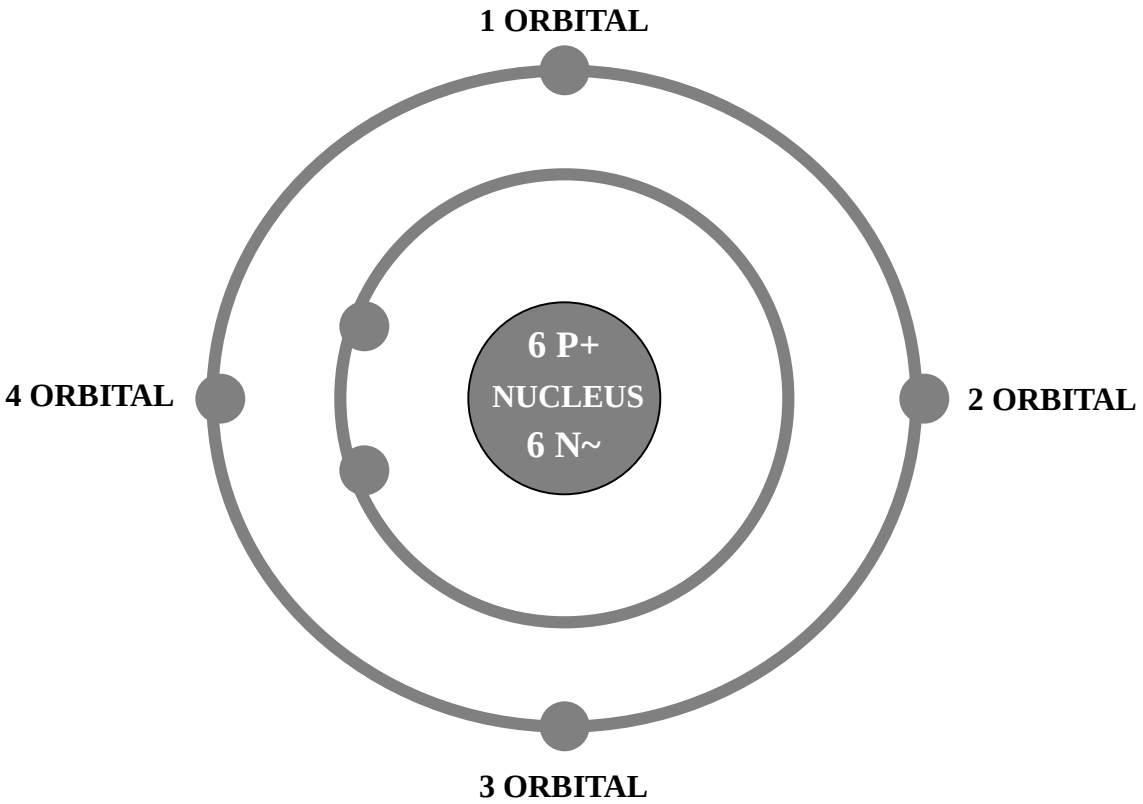
= E-

NO. E- = 6

E-

V

CARBON ATOM



E- ENERGY SHELLS & ORBITALS

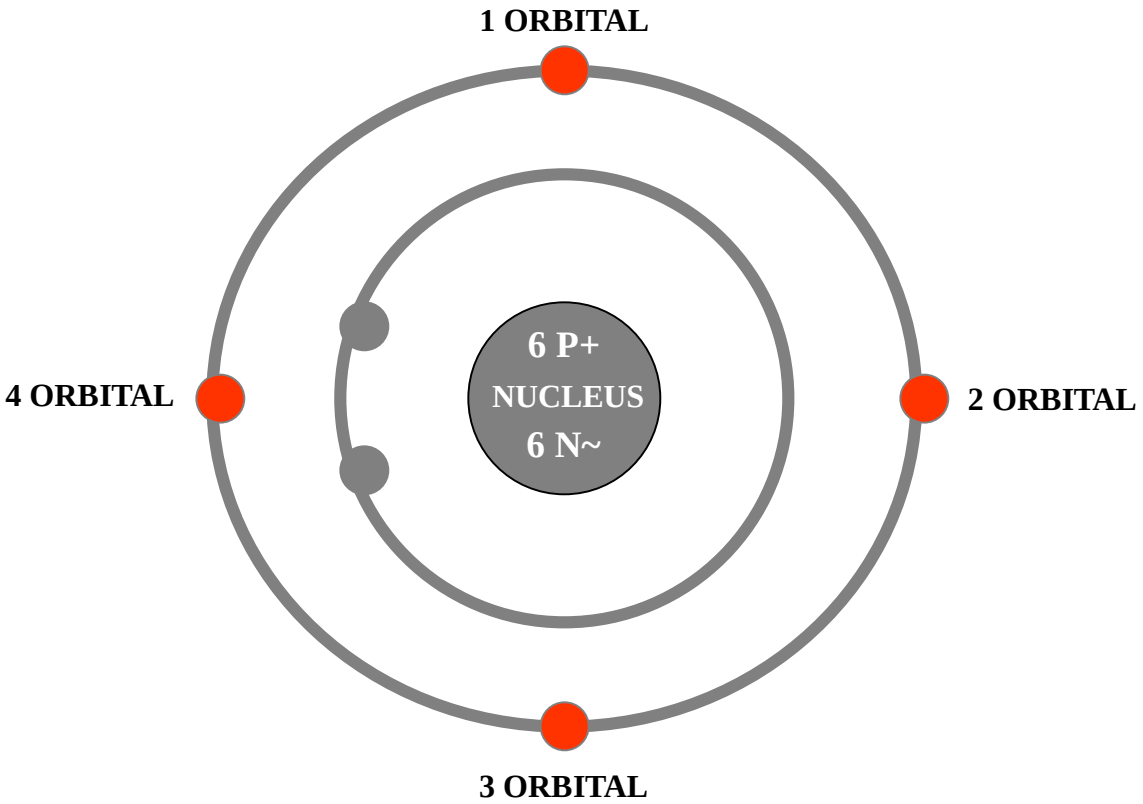
NO. E- = 6

= E-

E-

B

CARBON ATOM



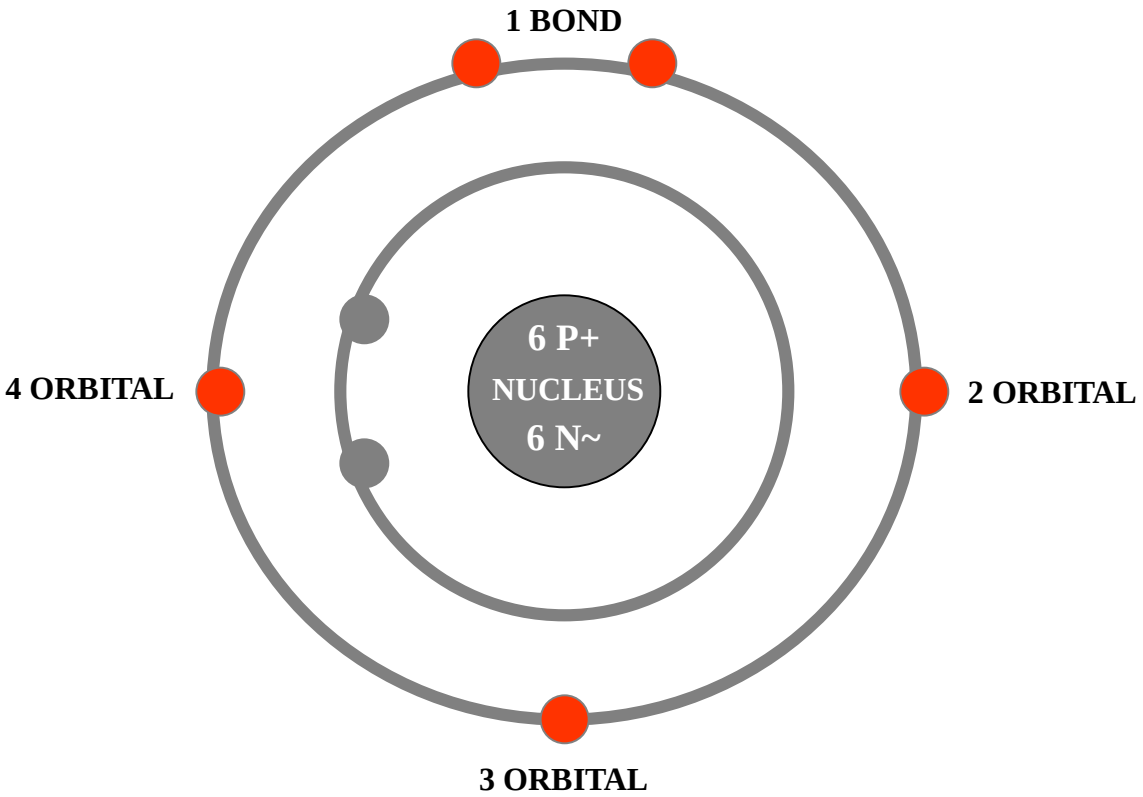
E- ENERGY SHELLS & ORBITALS

= VALENCE E-

E-

B

CARBON ATOM



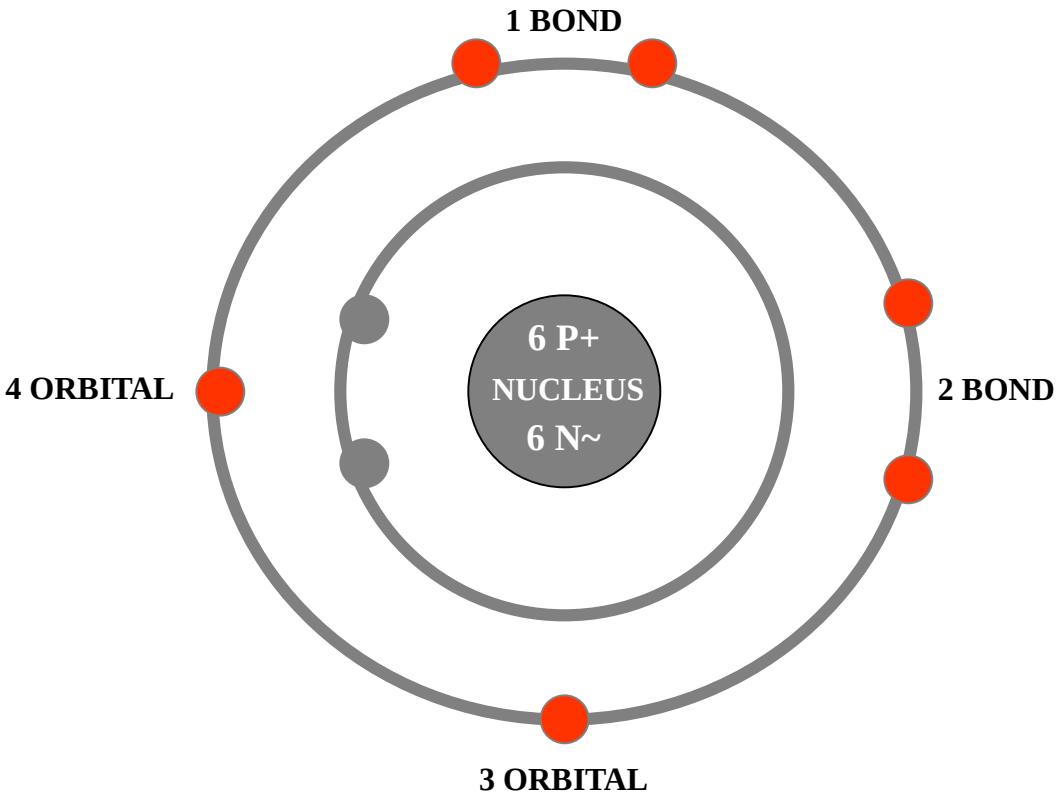
E- ENERGY SHELLS & ORBITALS

= VALENCE E-

E-

B

CARBON ATOM



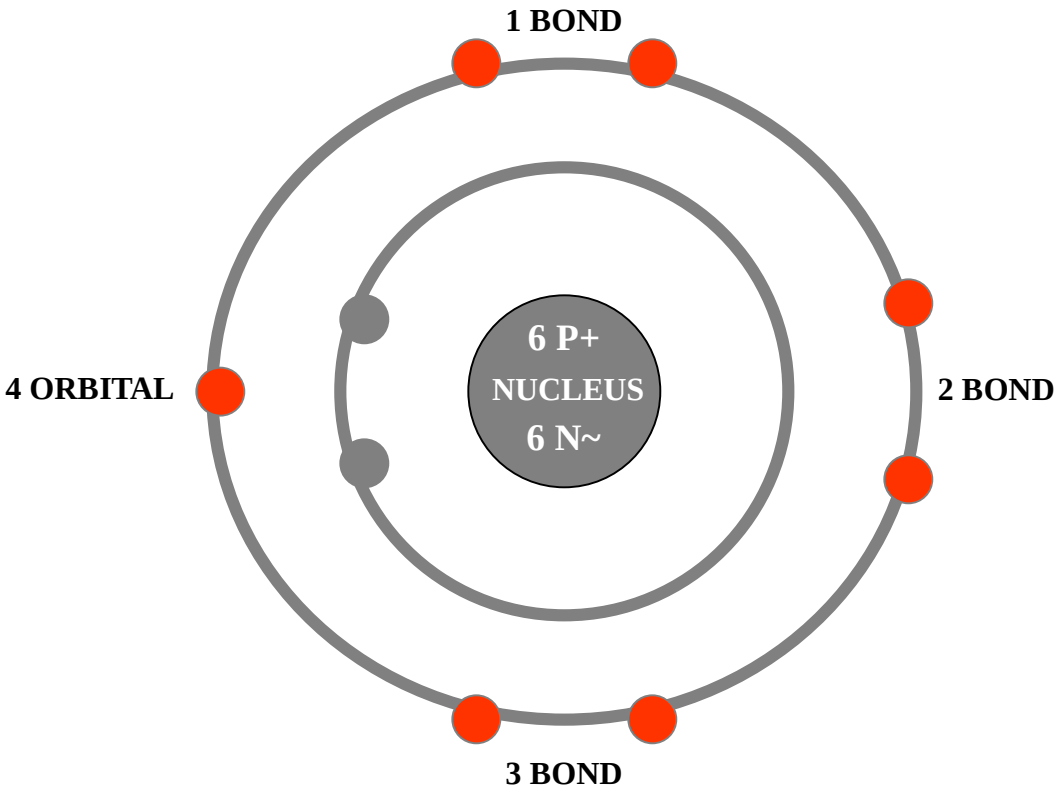
E- ENERGY SHELLS & ORBITALS

= VALENCE E-

E-

B

CARBON ATOM



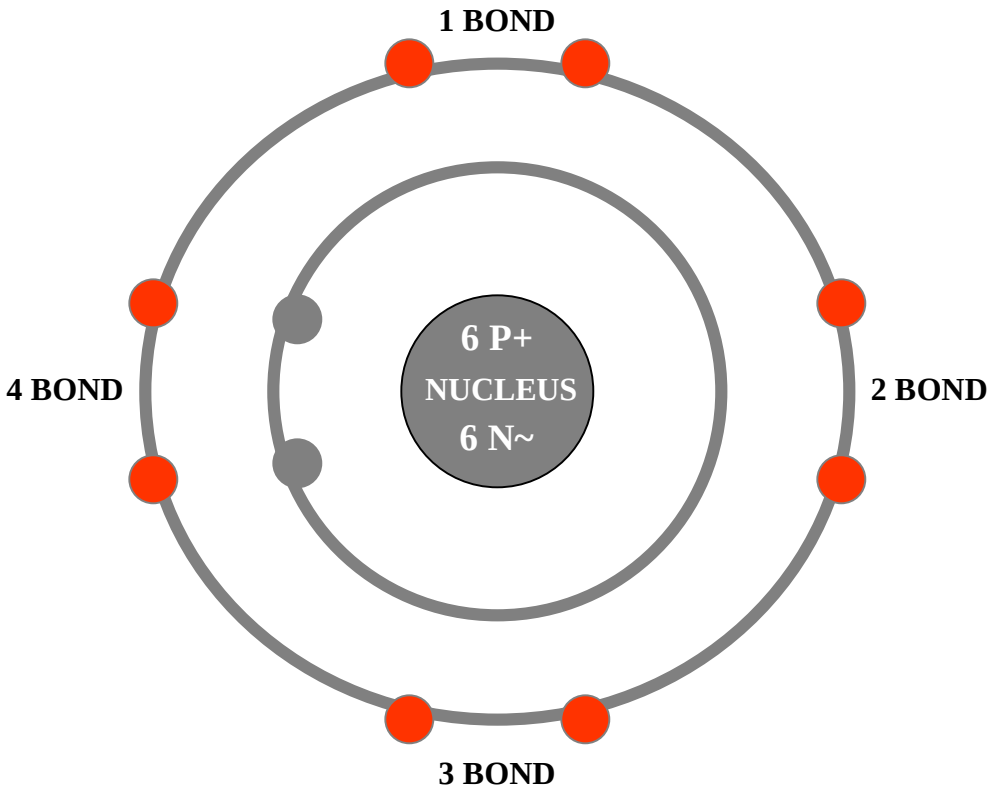
E- ENERGY SHELLS & ORBITALS

= VALENCE E-

¿

4

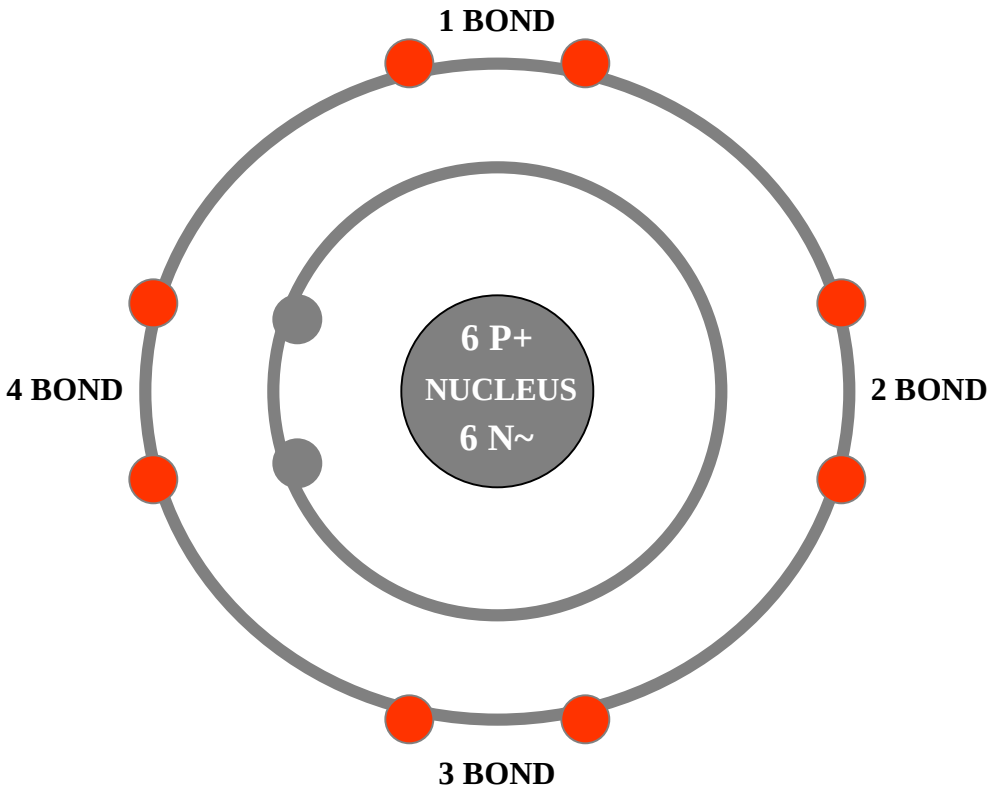
CARBON ATOM



E- ENERGY SHELLS & ORBITALS

● = VALENCE E-

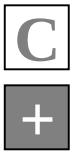
CARBON ATOM



4 CHEMICAL BONDS

= VALENCE E-

TETRAVALENT



TETRAVALENT

1 CARBON ATOM CAN FORM 4 CHEMICAL BONDS

TETRAVALENT

*
B

CARBON ATOM

C

TETRAVALENT

* = 4 CHEMICAL BONDS

*
B

CARBON ATOM

BOND

*

C

TETRAVALENT

* **= 4 CHEMICAL BONDS**

*
B

CARBON ATOM

BOND

*

C *

BOND

TETRAVALENT

* = 4 CHEMICAL BONDS

*
B

CARBON ATOM

BOND

*

C *

BOND

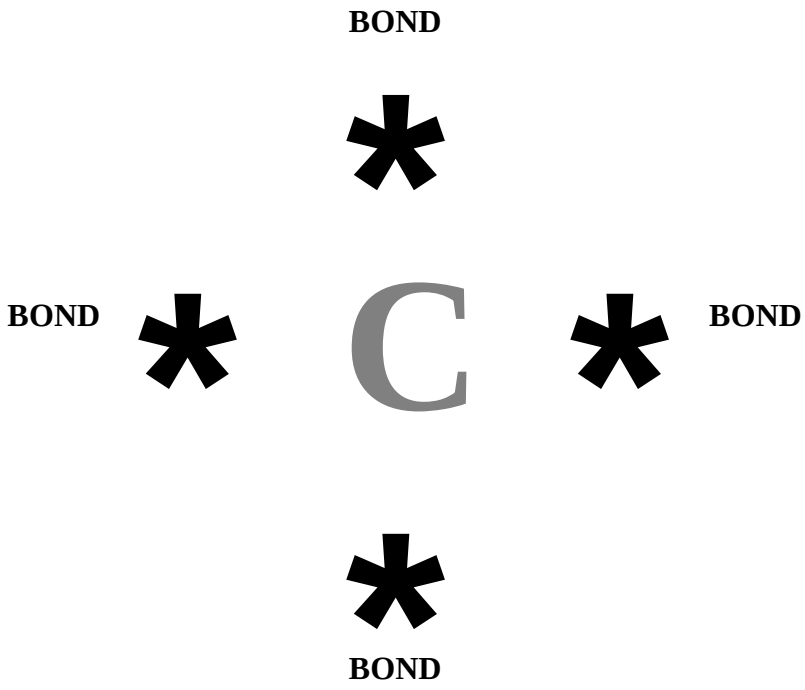
*

BOND

TETRAVALENT

* = 4 CHEMICAL BONDS

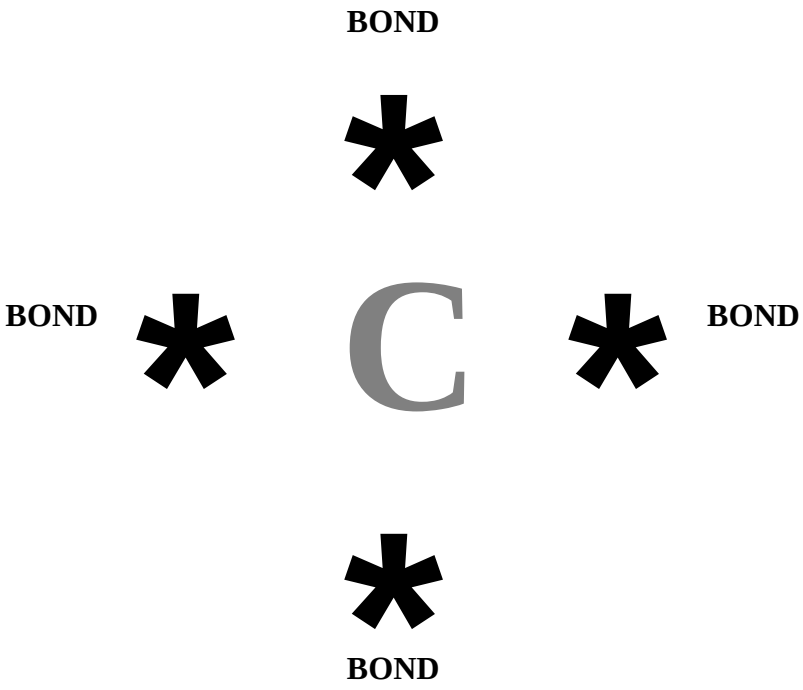
CARBON ATOM



TETRAVALENT

= 4 CHEMICAL BONDS →

CARBON ATOM



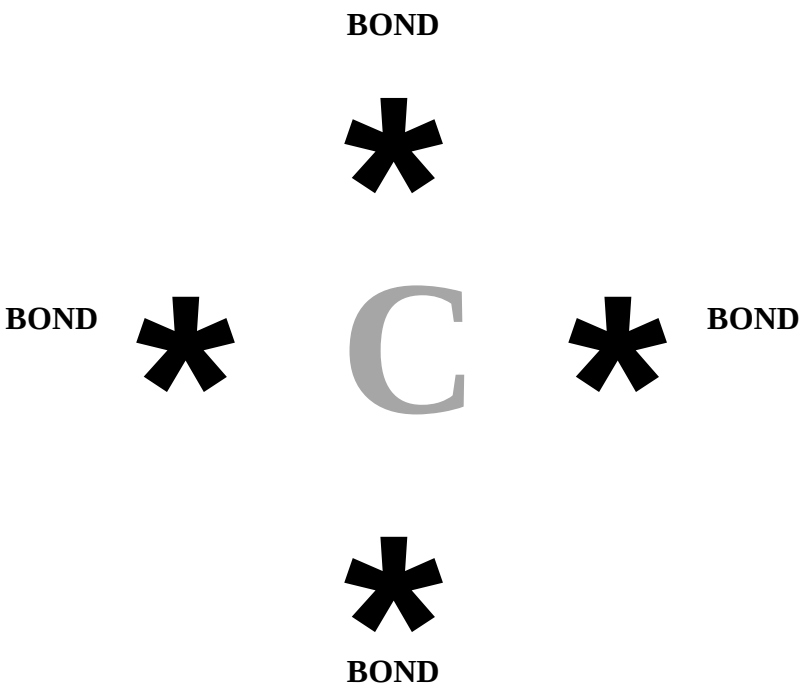
TETRAVALENT

= 4 CHEMICAL BONDS → C CHEMICAL VERSATILITY

CARBON BONDS WITH OTHER CARBON

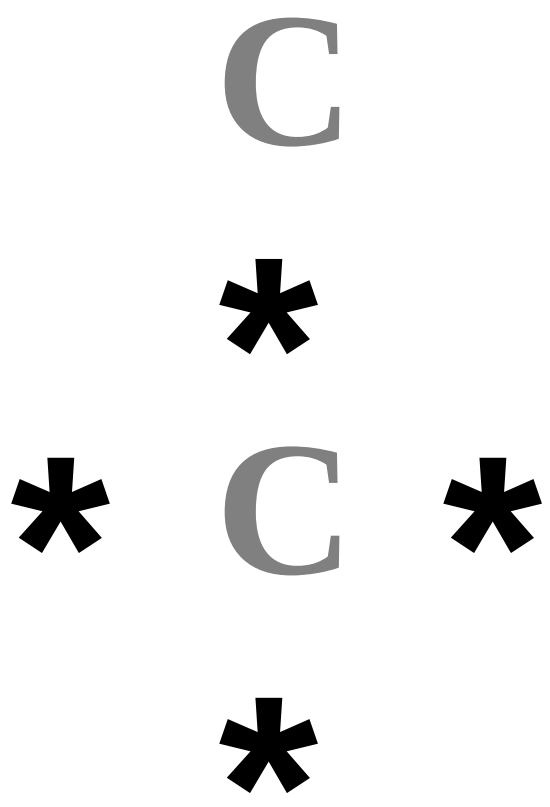
C

CARBON ATOM

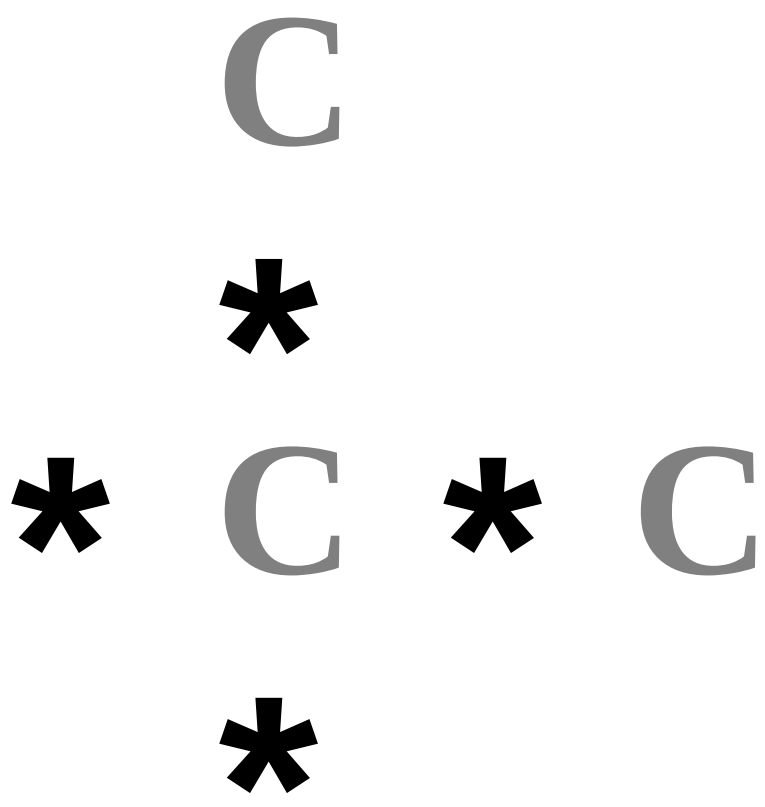


TETRAVALENT

* = 4 CHEMICAL BONDS → C CHEMICAL VERSATILITY

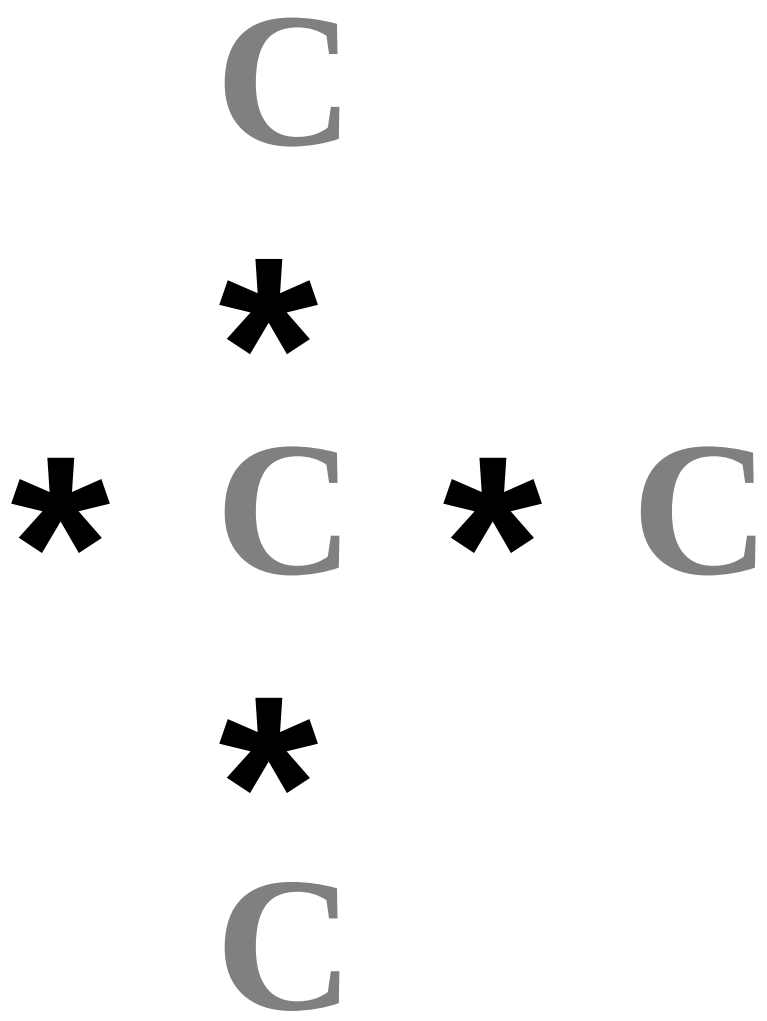


* = COVALENT BOND



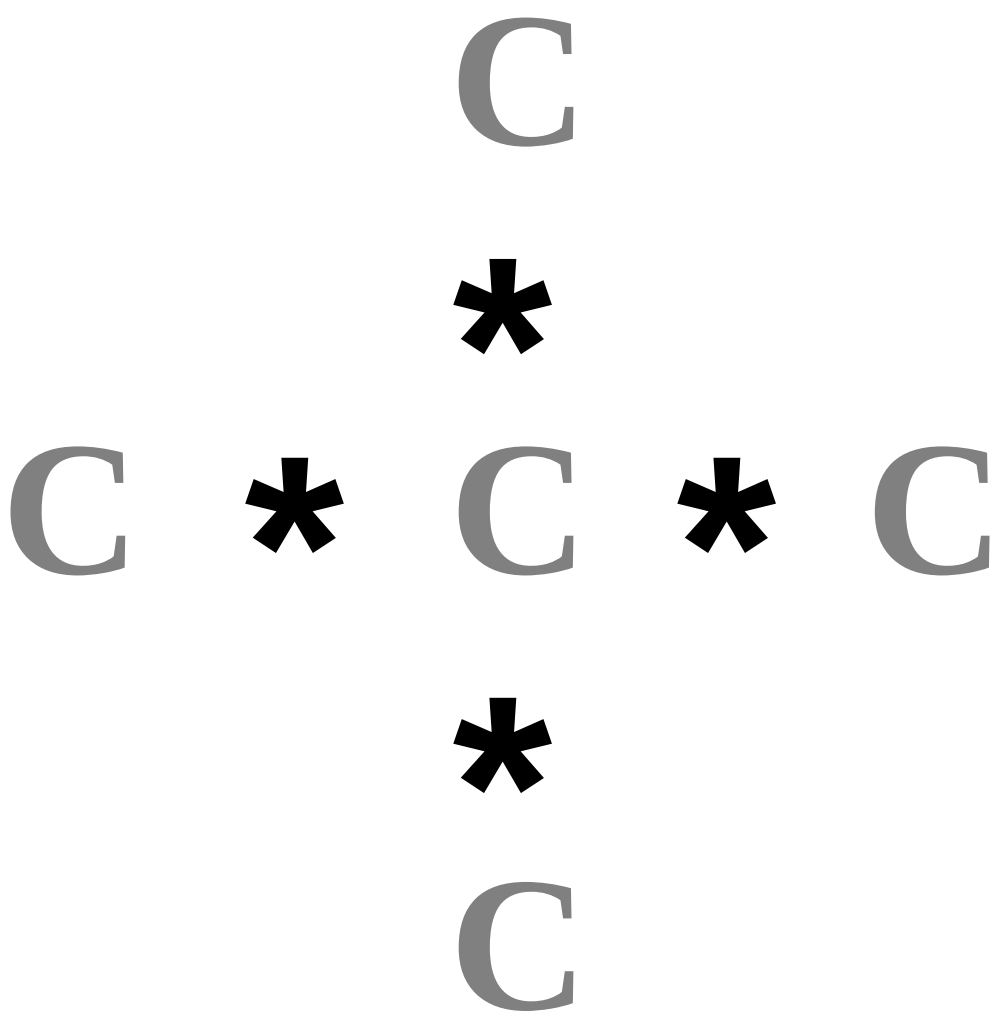
* = COVALENT BOND

C



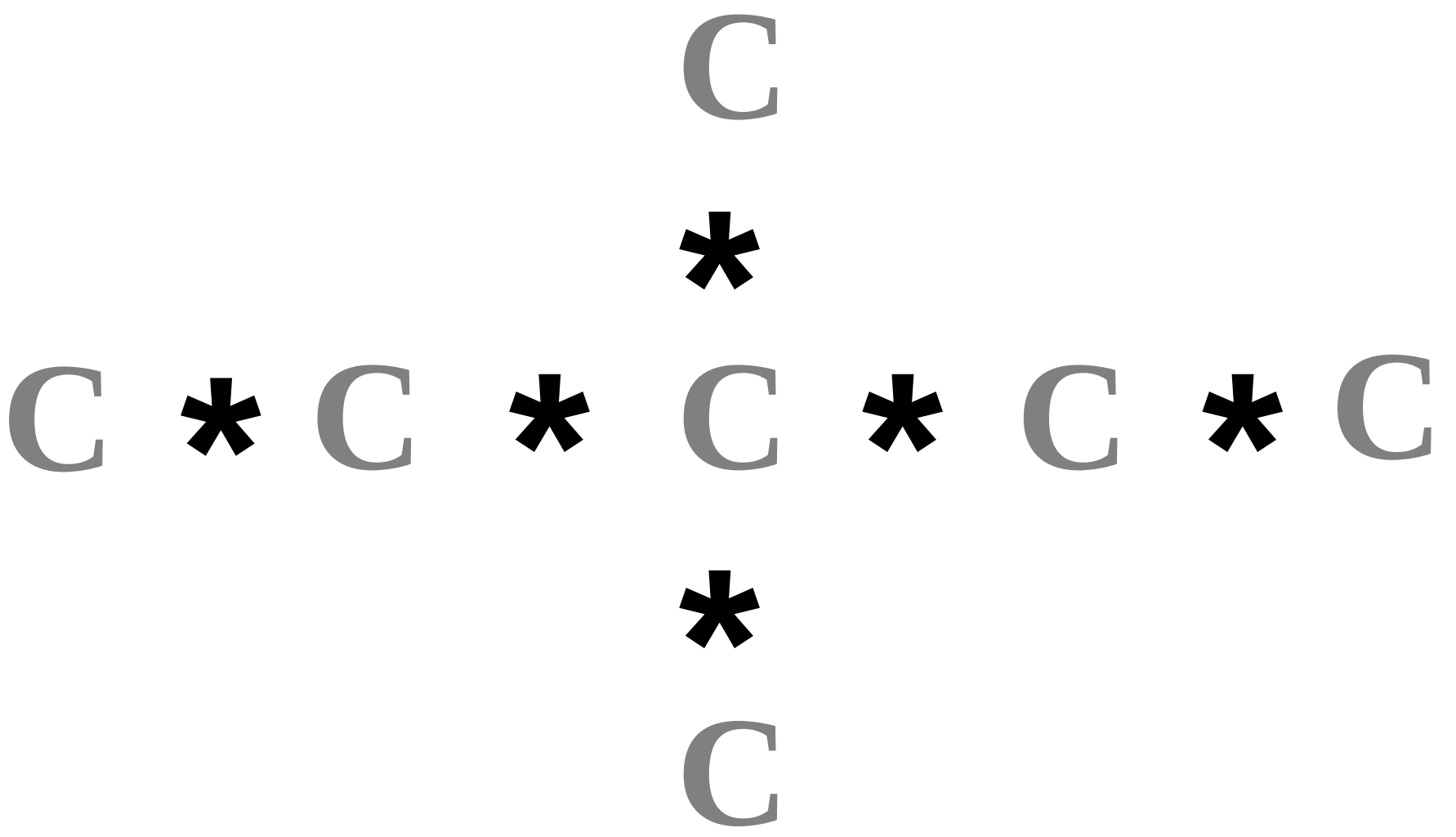
* = COVALENT BOND

C
+



* = COVALENT BOND

CC

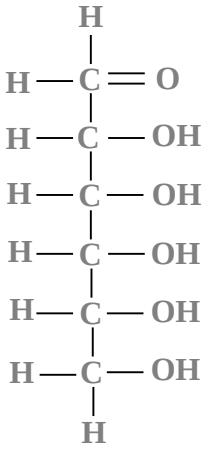


* = COVALENT BOND

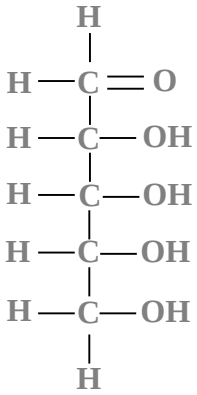
RC

CARBON-CARBON BONDS

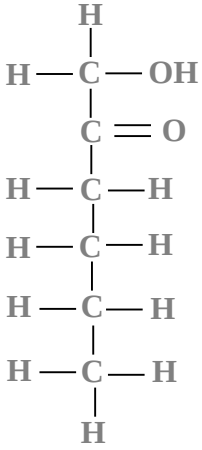
CHAIN CARBON COMPOUNDS



GLUCOSE



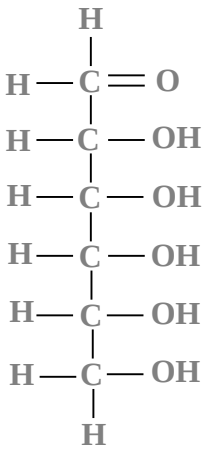
RIBOSE



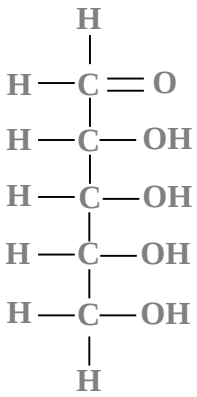
FRUCTOSE

CARBON-CARBON BONDS

CHAIN CARBON COMPOUNDS



GLUCOSE



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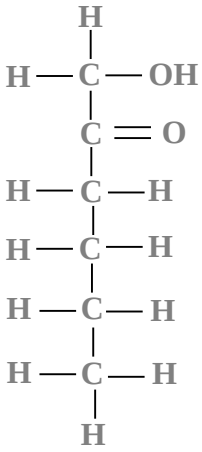
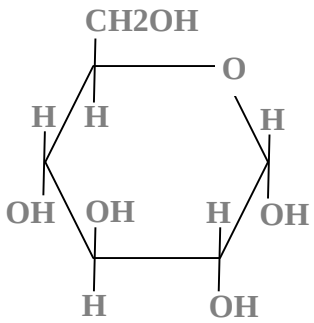
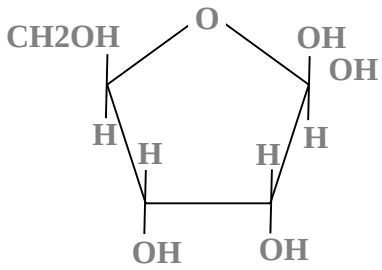
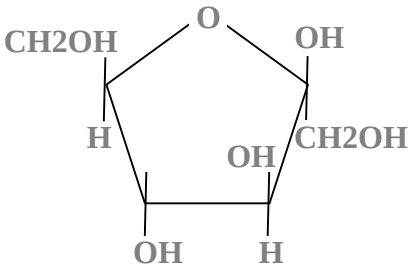


FRUCTOSE







RING CARBON COMPOUNDS

A

QUESTION

WHAT DO BIOLOGISTS CALL A COMPOUND BASED ON CARBON?

QUESTION

O

ANSWER

ORGANIC COMPOUND

ANSWER

ORGANIC COMPOUND

EG

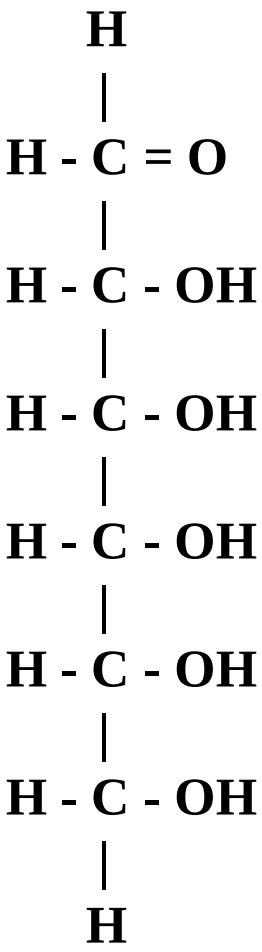
ORGANIC COMPOUND

CARBON BASED COMPOUND

ORGANIC COMPOUND

ORGANIC COMPOUND EXAMPLE

ORGANIC COMPOUND



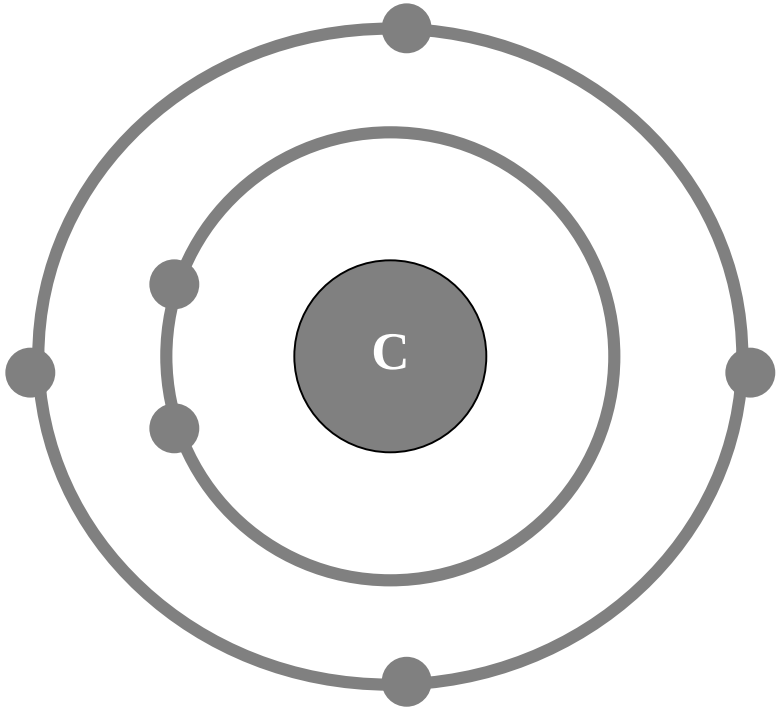
GLUCOSE

CARBON BONDS WITH OTHER ELEMENTS

H

B

CARBON ATOM

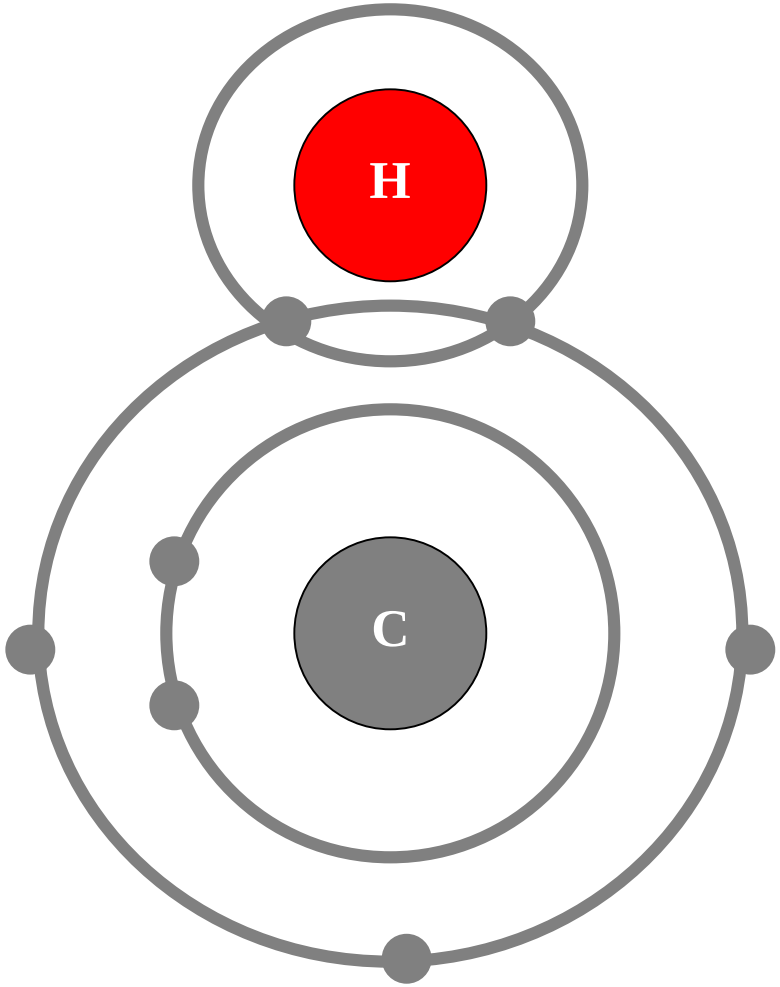


TETRAVALENT

= E-

H

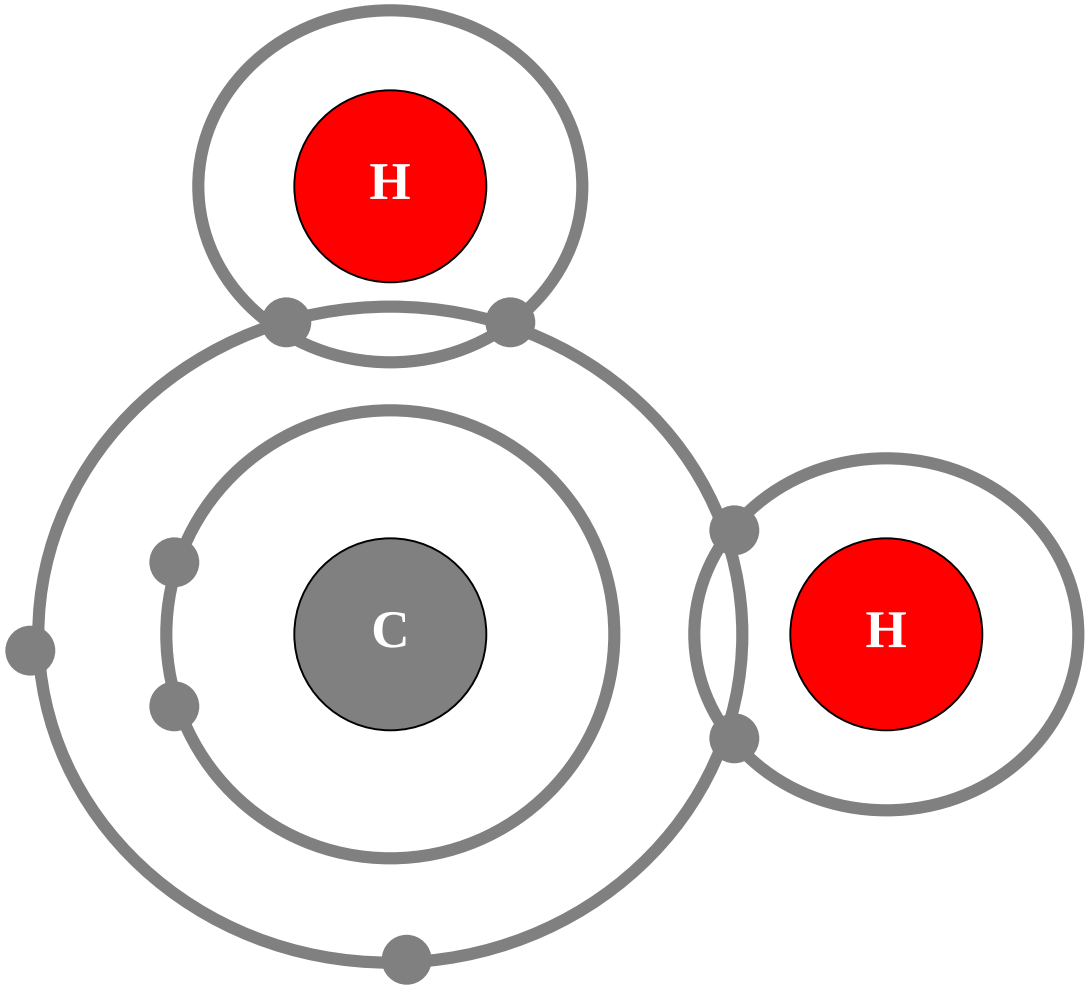
B



= E-

H

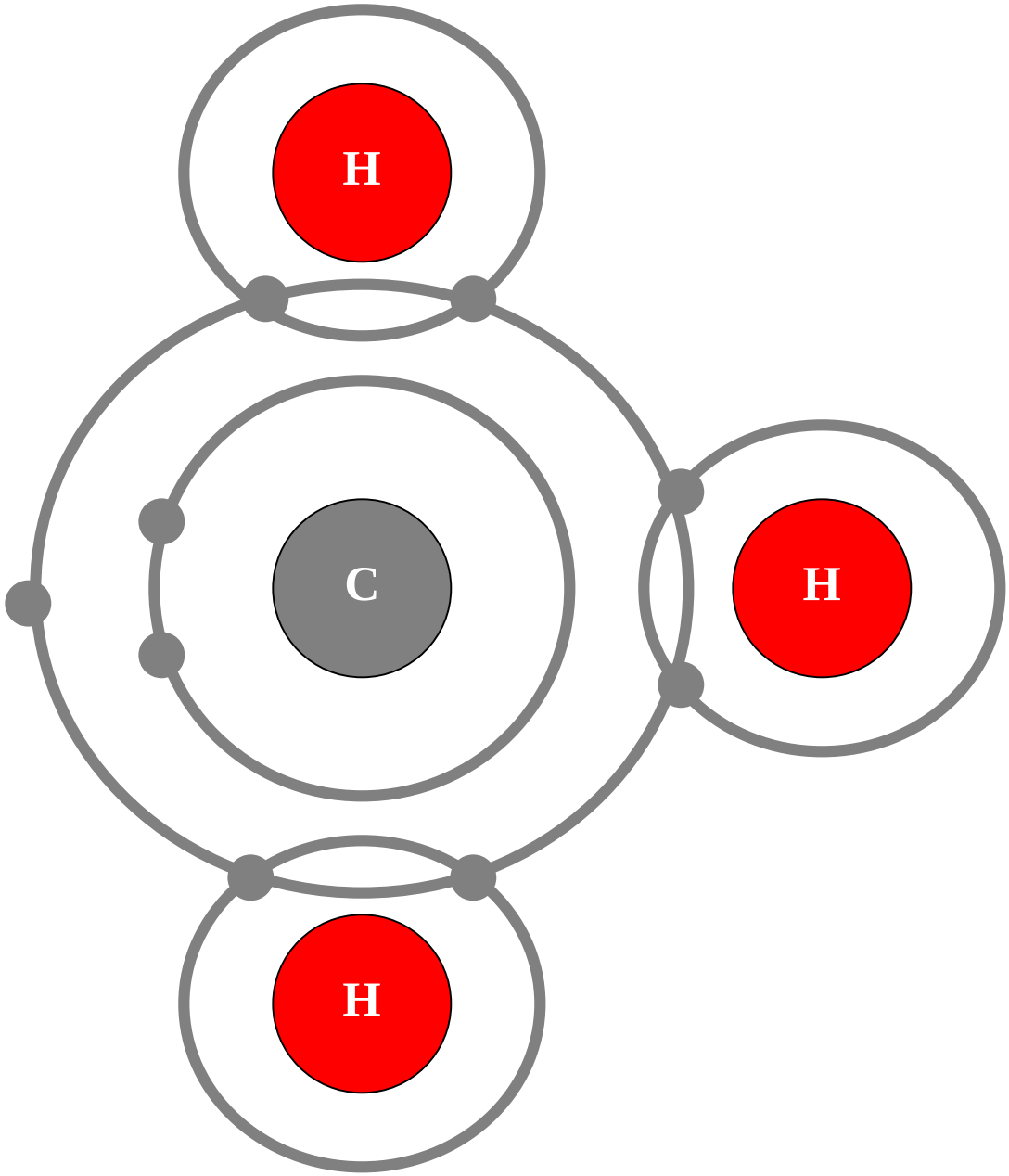
B



= E-

H

B

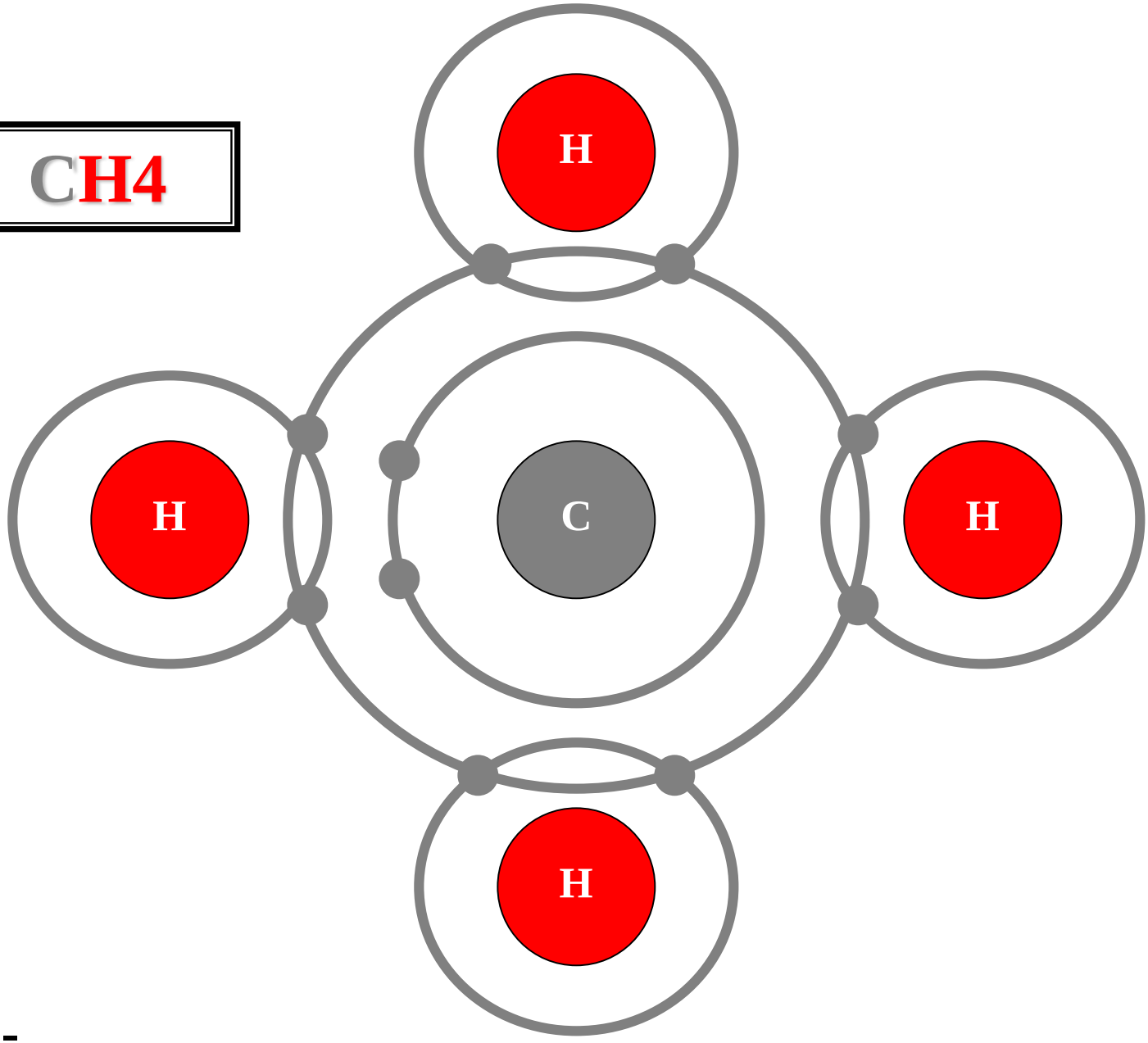


= E-

¿

M

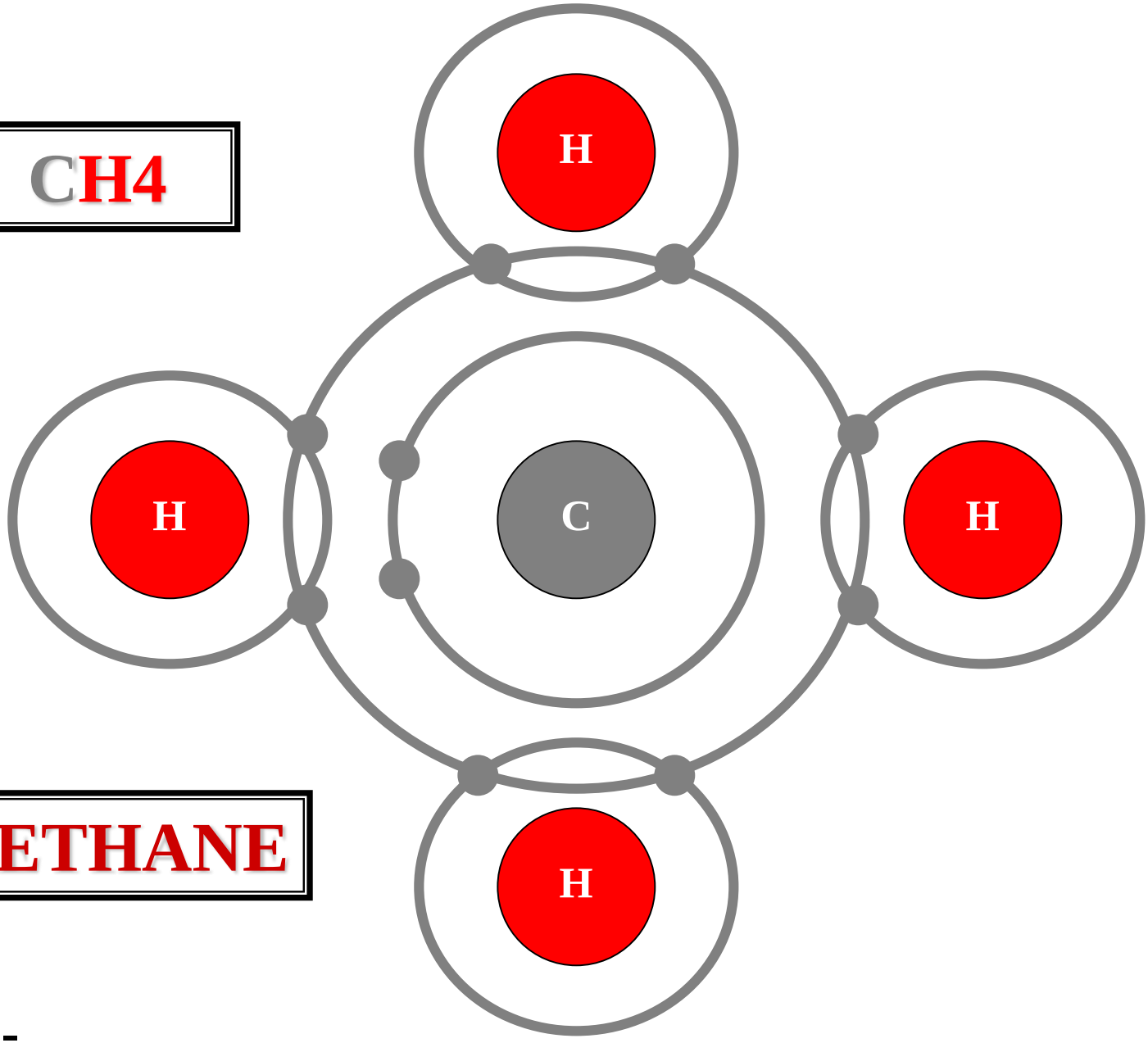
CH4



= E-

?

CH4



METHANE

= E-

A

QUESTION

WHAT DO BIOLOGISTS CALL A COMPOUND BASED ON H AND C?

QUESTION

ANSWER

HYDROCARBON

ANSWER

HYDROCARBONS

HYDROCARBON

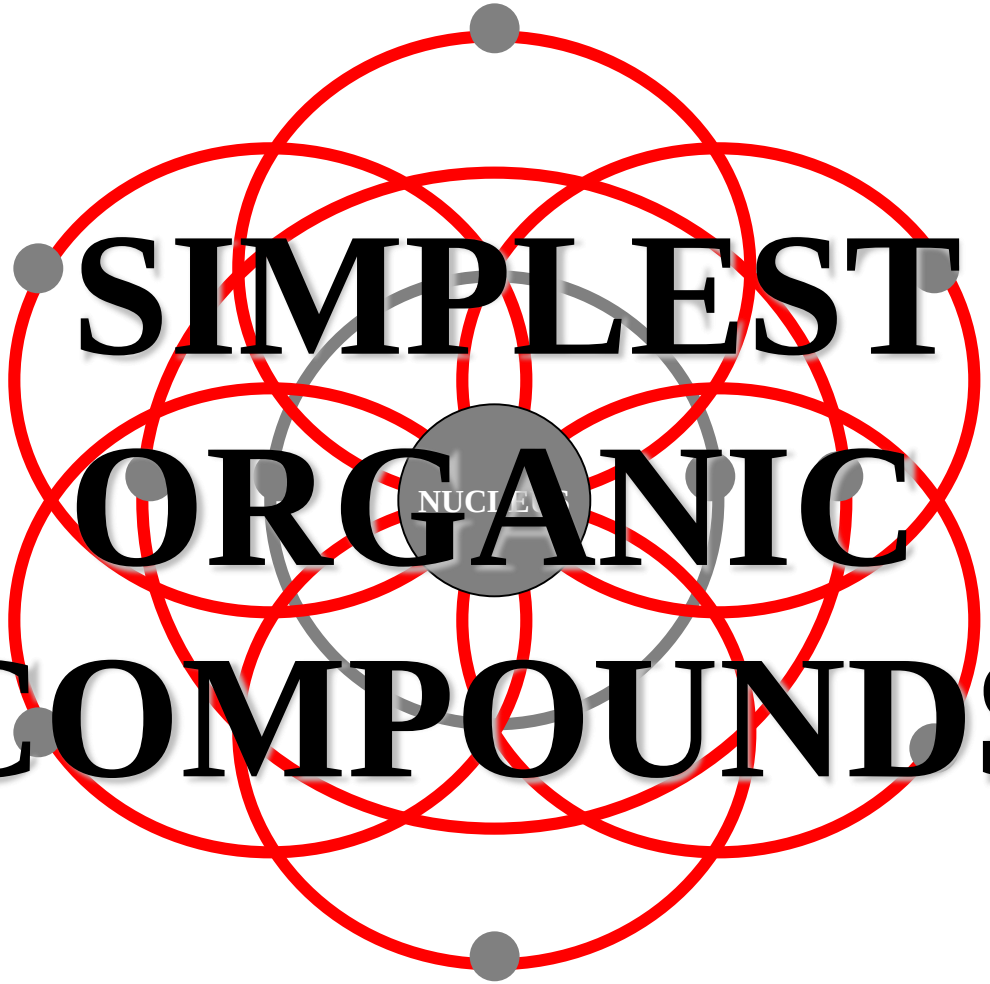
HYDROCARBON

ORGANIC COMPOUND BASED ON HYDROGEN & CARBON

HYDROCARBON

HYDROCARBON COMPOUNDS

EG

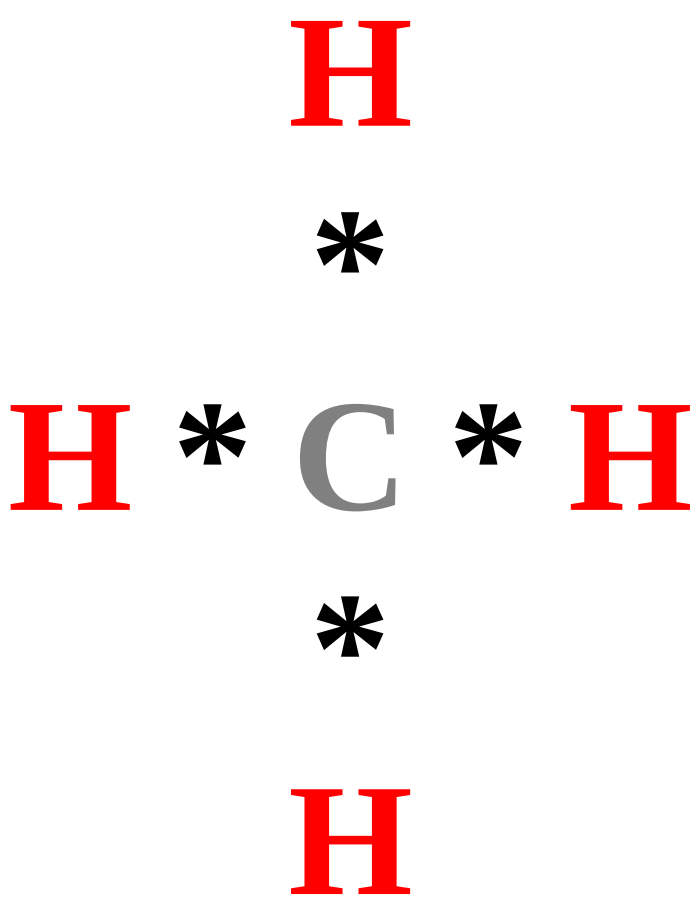


SIMPLEST ORGANIC COMPOUNDS

HYDROCARBON COMPOUNDS

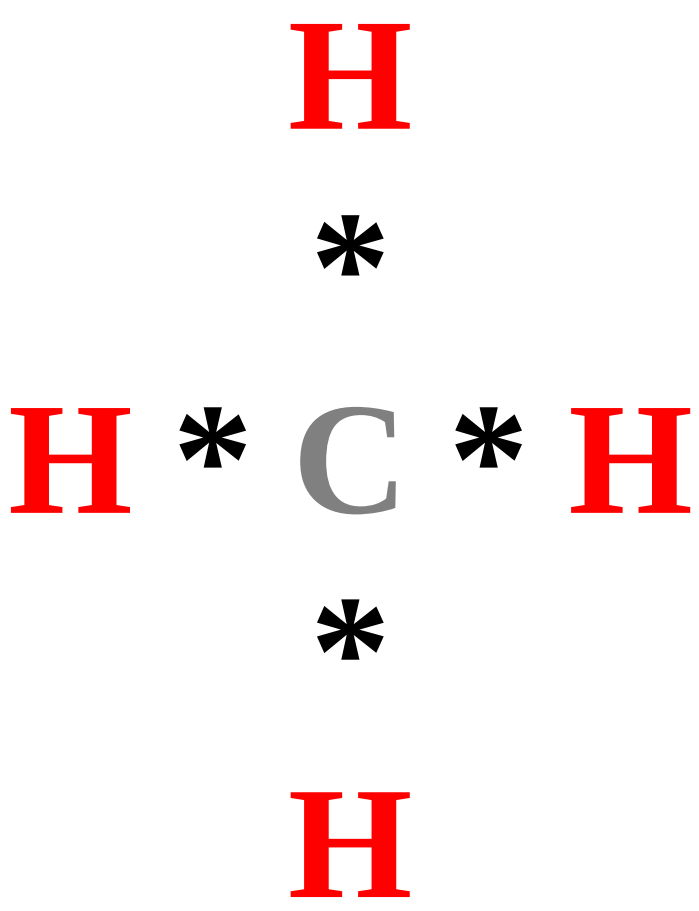
HYDROCARBON EXAMPLES

M



CH4

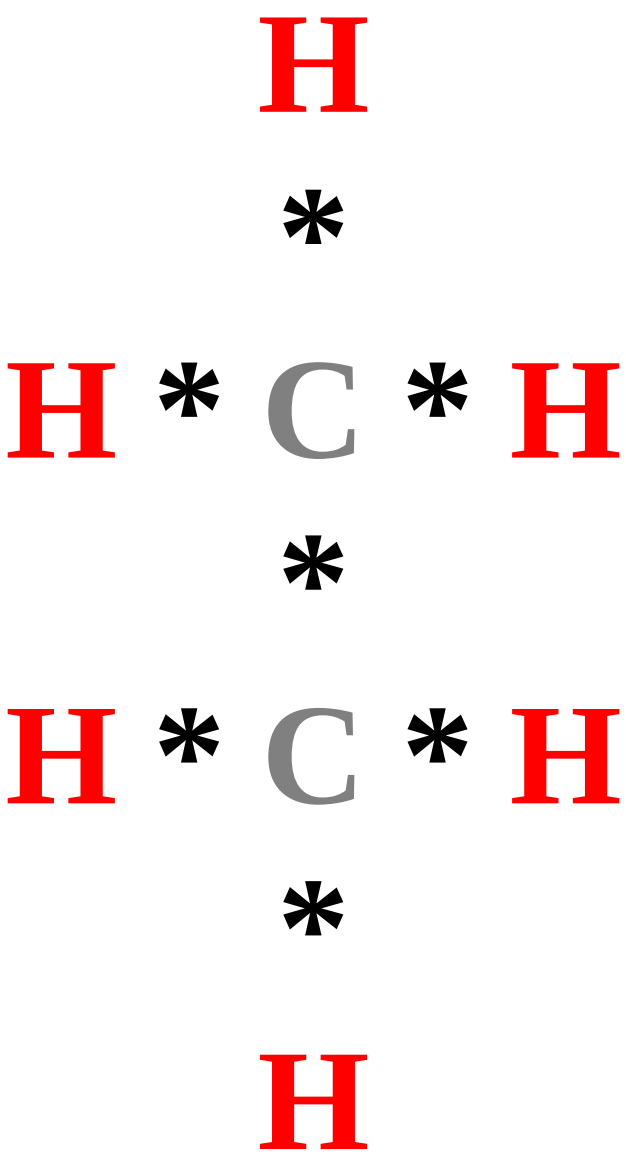
* = BOND



METHANE (CH4)

*** = BOND**

E



* = BOND

C2H6

H

*

H * C * H

*

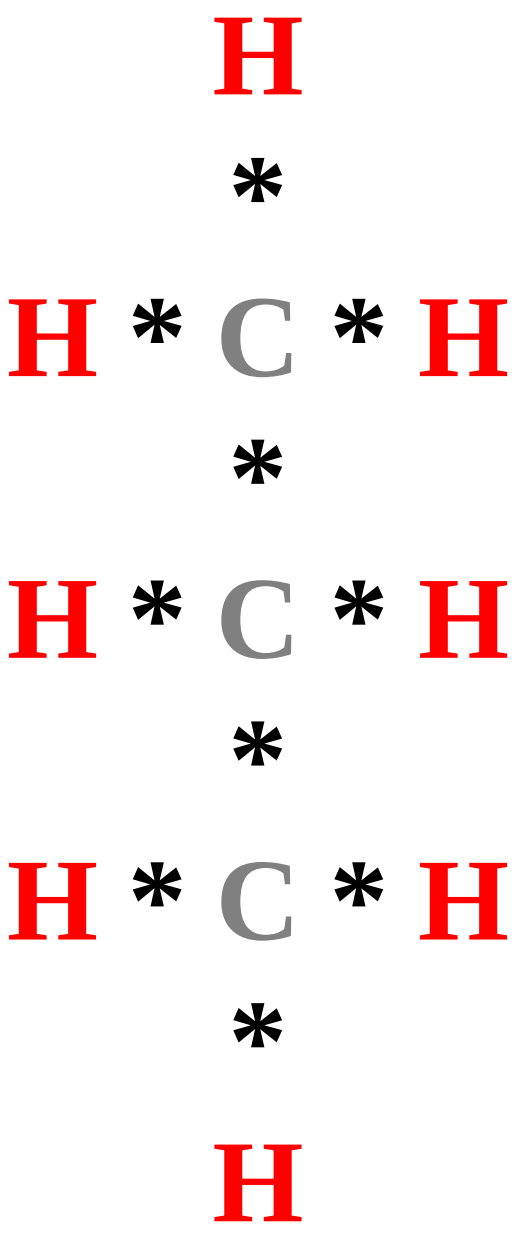
H * C * H

*

H

* = BOND

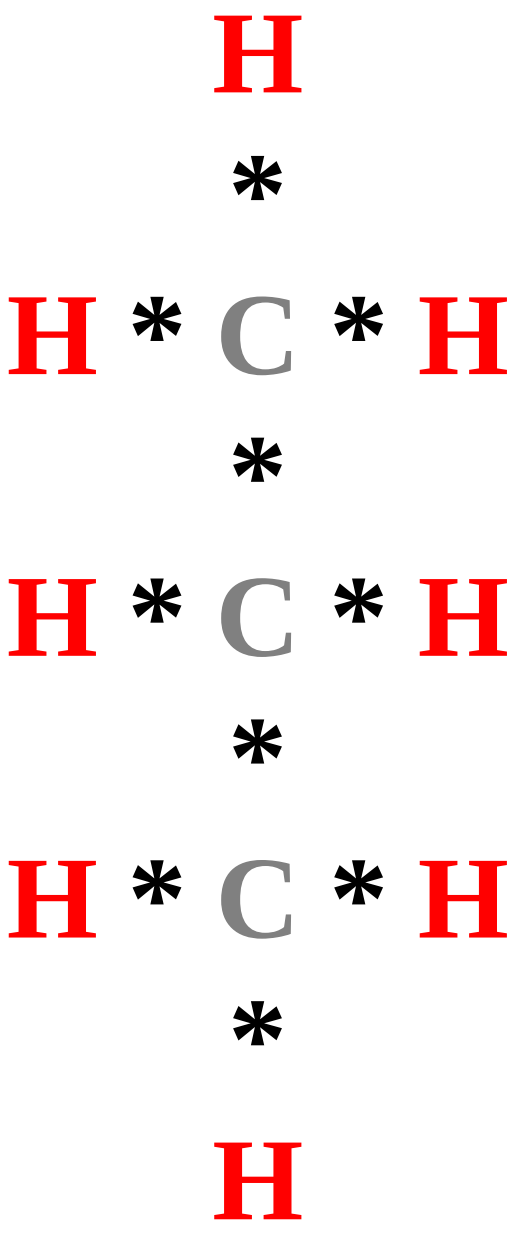
ETHANE (C2H6)



* = BOND

C3H8

D

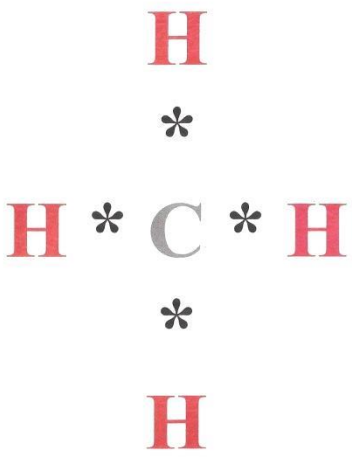


* = BOND

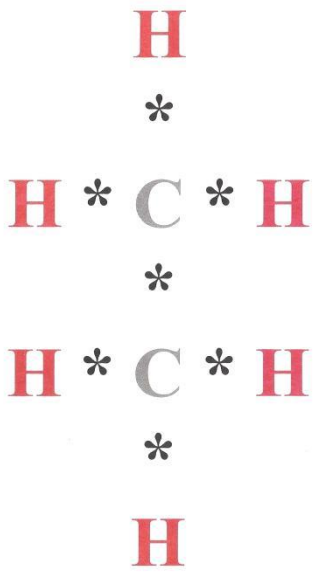
PROPANE (C3H8)

HYDROCARBON COMPOUNDS

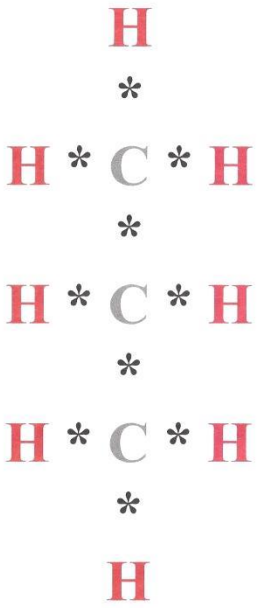
D



METHANE (CH4)



ETHANE (C2H6)

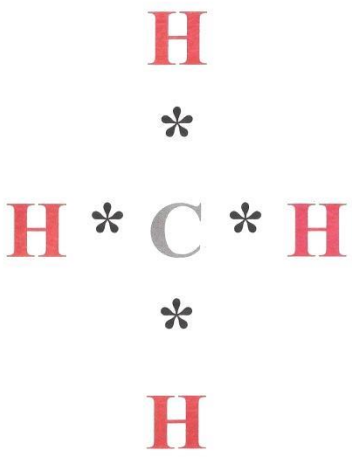


PROPANE (C3H8)

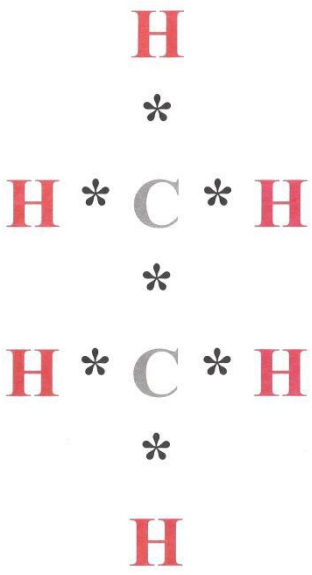
DIFFERENT NUMBER BONDED H & C ATOMS

HYDROCARBON COMPOUNDS

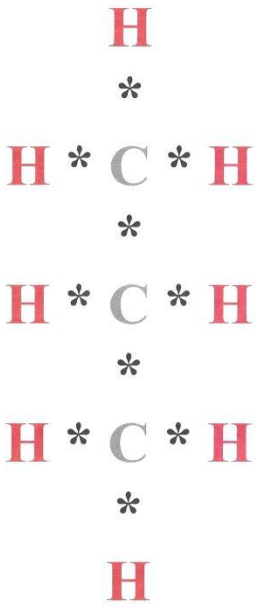
D



METHANE (CH4)



ETHANE (C2H6)

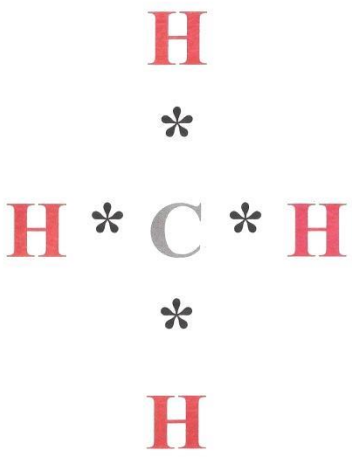


PROPANE (C3H8)

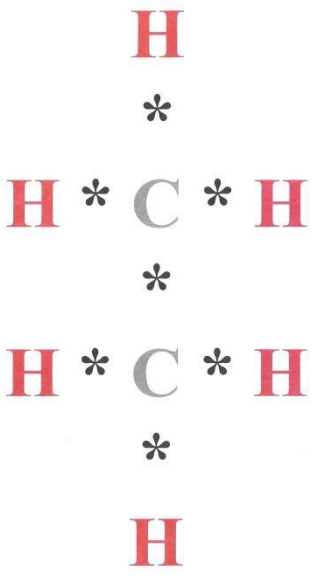
DIFFERENT NUMBER BONDED H & C ATOMS
DIFFERENT HYDROCARBONS

HYDROCARBON COMPOUNDS

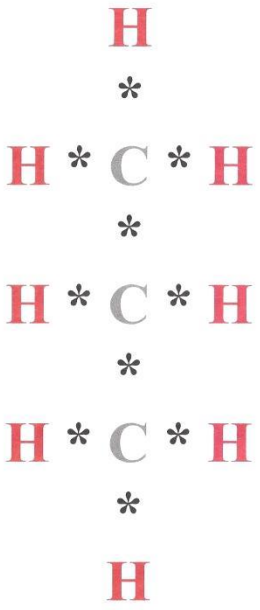
D



METHANE (CH4)



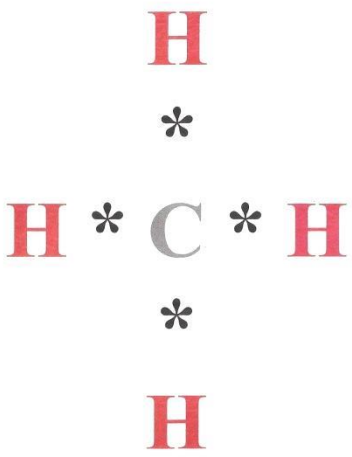
ETHANE (C2H6)



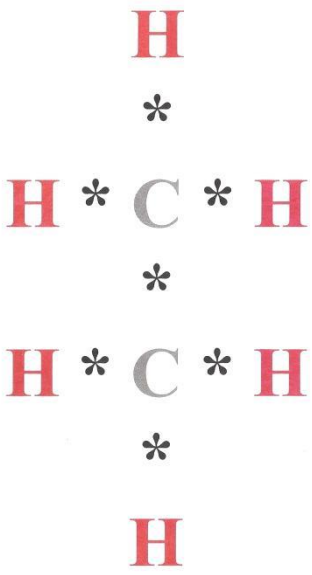
PROPANE (C3H8)

DIFFERENT NUMBER BONDED H & C ATOMS
DIFFERENT HYDROCARBONS
DIFFERENT STRUCTURE

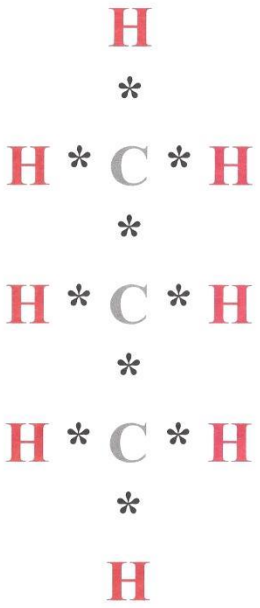
HYDROCARBON COMPOUNDS



METHANE (CH4)



ETHANE (C2H6)



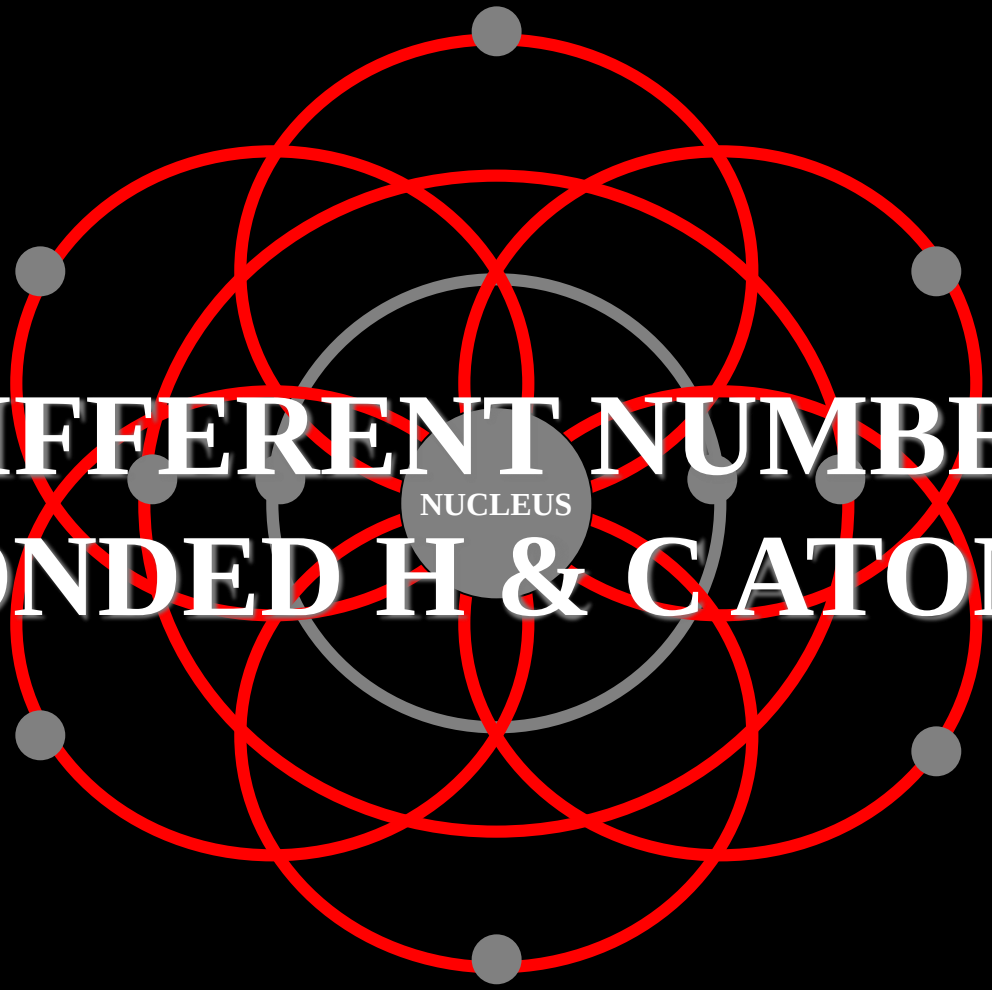
PROPANE (C3H8)

DIFFERENT NUMBER BONDED H & C ATOMS
DIFFERENT HYDROCARBONS
DIFFERENT STRUCTURE
DIFFERENT CHEMICAL PROPERTIES

HYDROCARBONS SUMMARY

HYDROCARBON COMPOUNDS

D

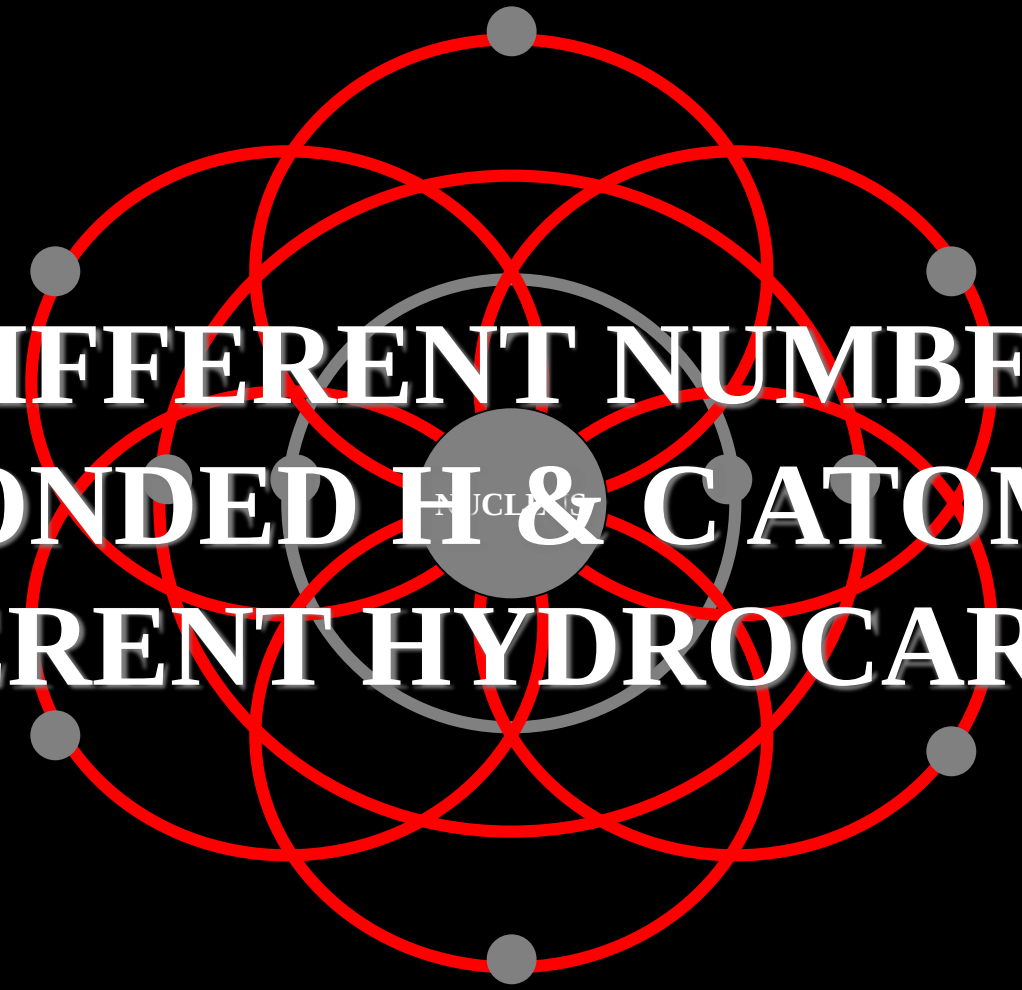


DIFFERENT NUMBER BONDED H & C ATOMS

HYDROCARBON COMPOUNDS

HYDROCARBON COMPOUNDS

D

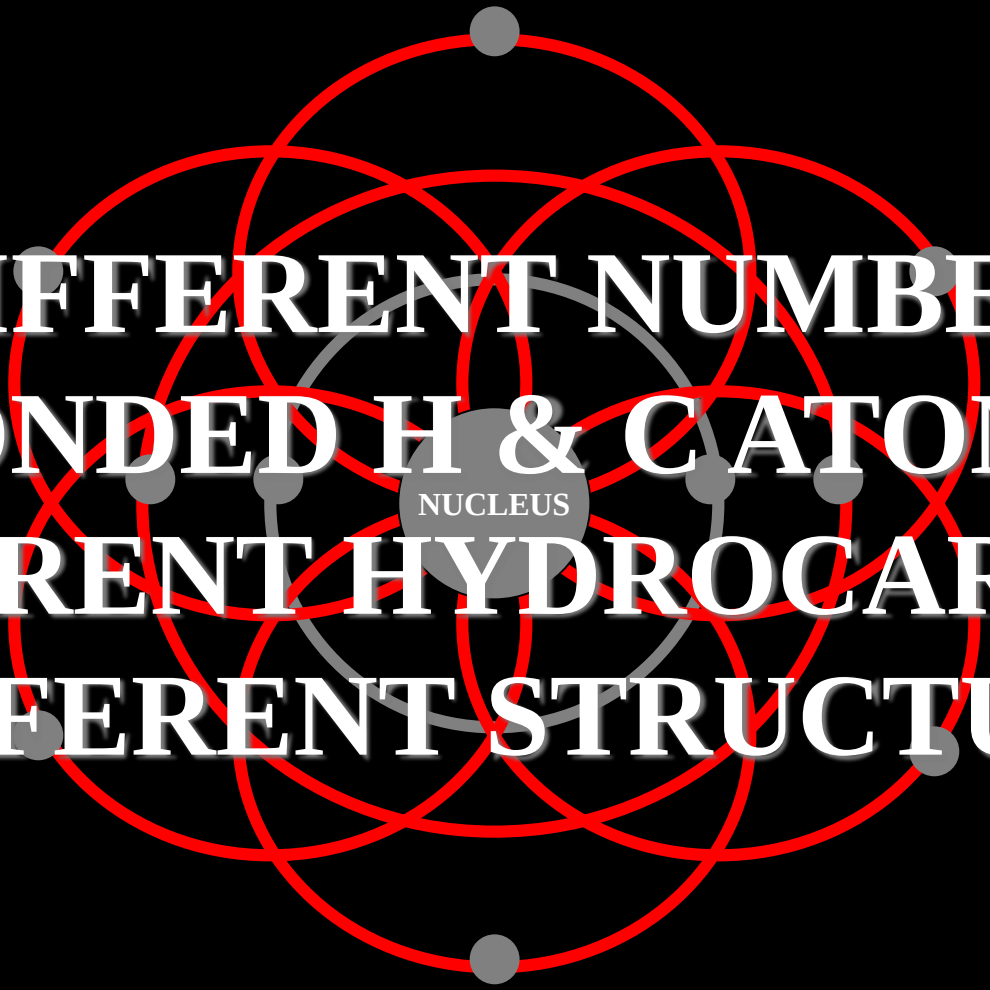


DIFFERENT NUMBER
BONDED H & C ATOMS
DIFFERENT HYDROCARBONS

HYDROCARBON COMPOUNDS

HYDROCARBON COMPOUNDS

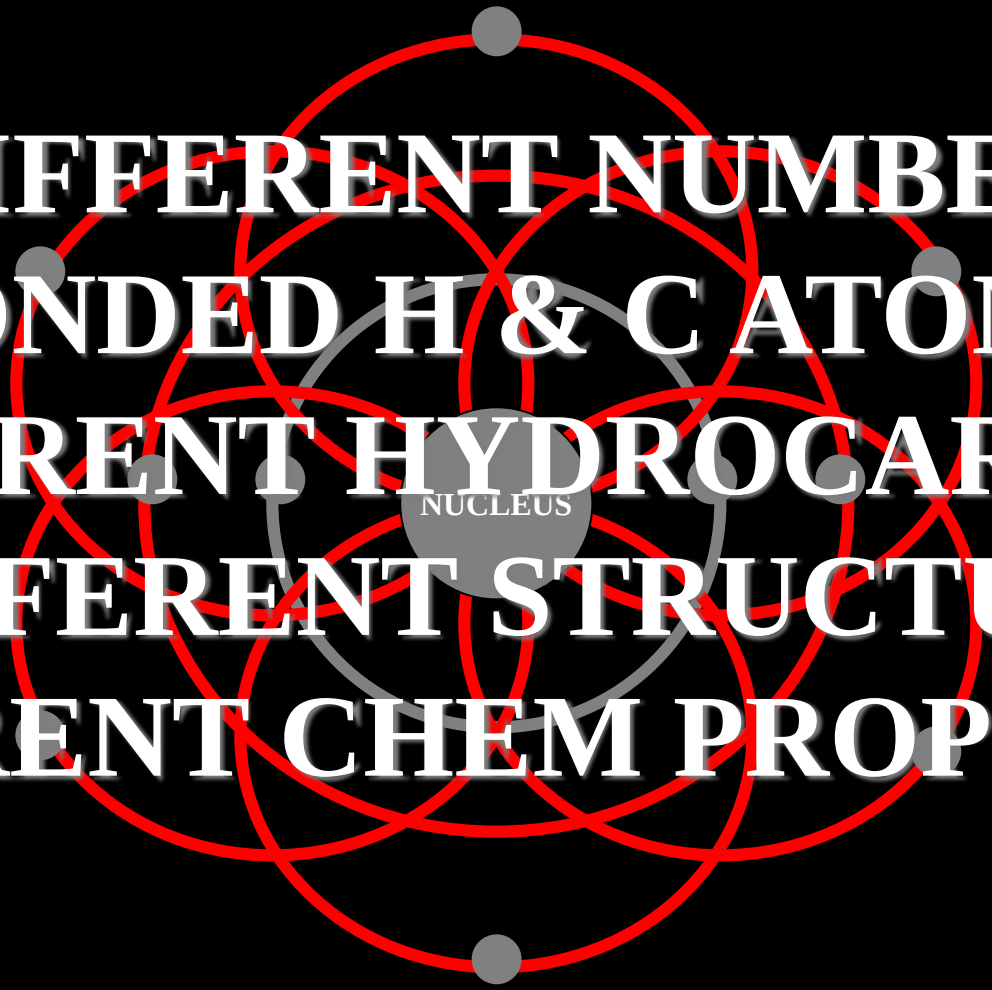
D



DIFFERENT NUMBER
BONDED H & C ATOMS
DIFFERENT HYDROCARBONS
DIFFERENT STRUCTURE

HYDROCARBON COMPOUNDS

HYDROCARBON COMPOUNDS



DIFFERENT NUMBER BONDED H & C ATOMS

DIFFERENT HYDROCARBONS

DIFFERENT STRUCTURE

DIFFERENT CHEM PROPERTIES

HYDROCARBON COMPOUNDS

ISOMERS

ISOMERS

EG

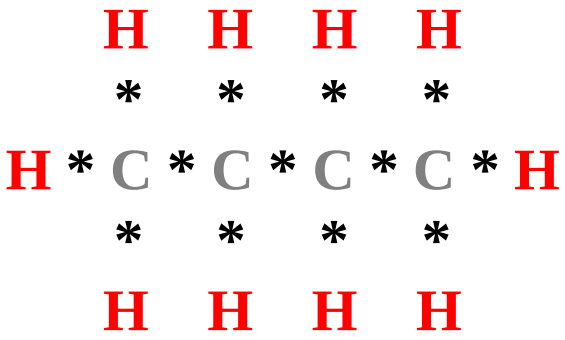
ISOMERS

COMPOUNDS SAME MOLECULAR FORMULA

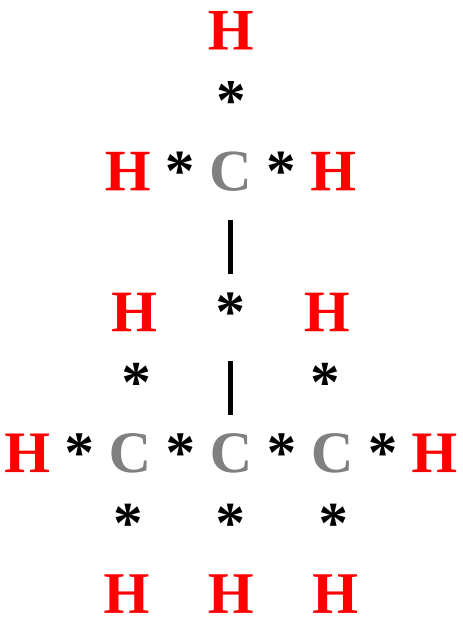
BUT DIFFERENT STRUCTURE

ISOMERS

ISOMERS EXAMPLE



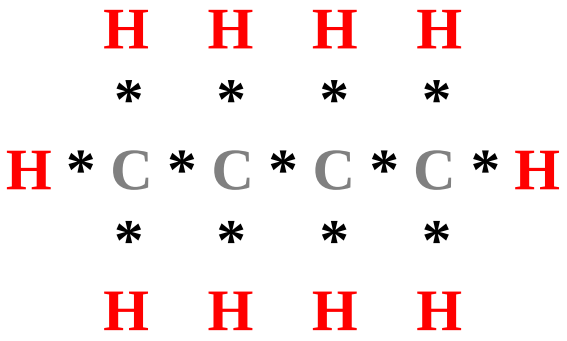
BUTANE



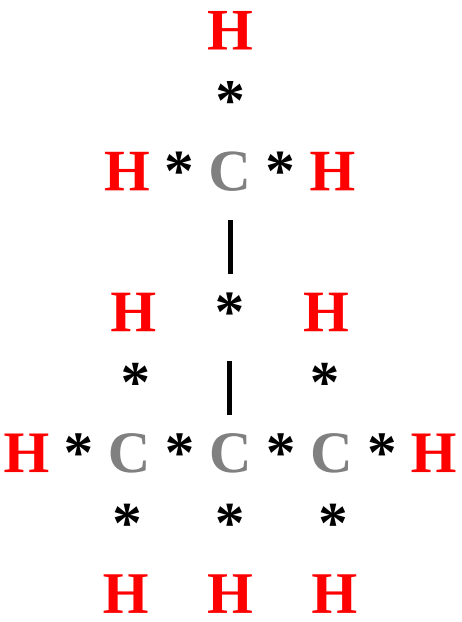
ISOBUTANE

*** = BOND**

D



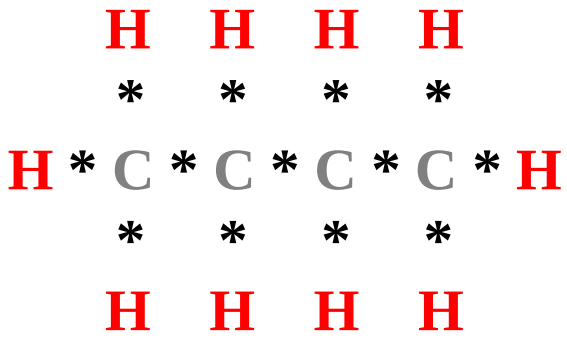
BUTANE (C4H10 – SAME FORMULA)



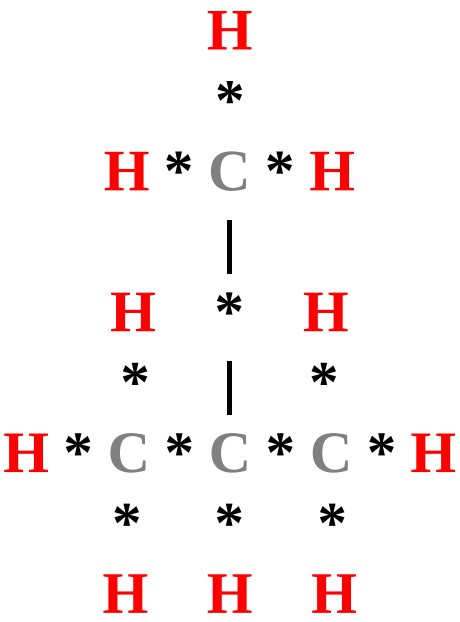
* = BOND

ISOBUTANE (C4H10 – SAME FORMULA)

D

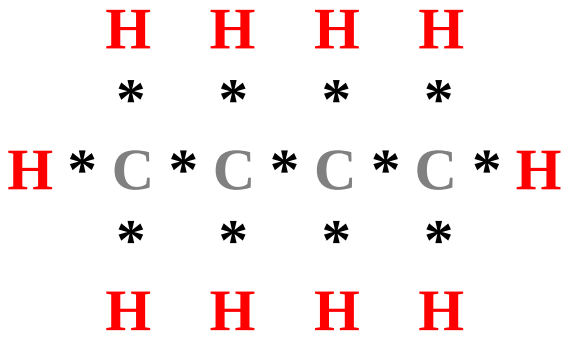


BUTANE (C4H10 – DIFF STRUCTURE)

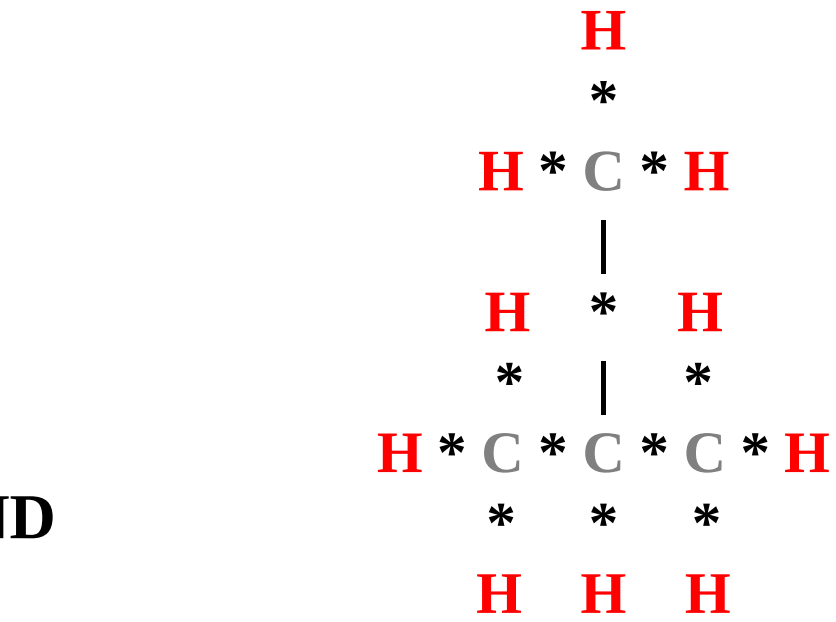


* = BOND

ISOBUTANE (C4H10 – DIFF STRUCTURE)



BUTANE (C4H10 – DIFF CHEM PROPERTIES)



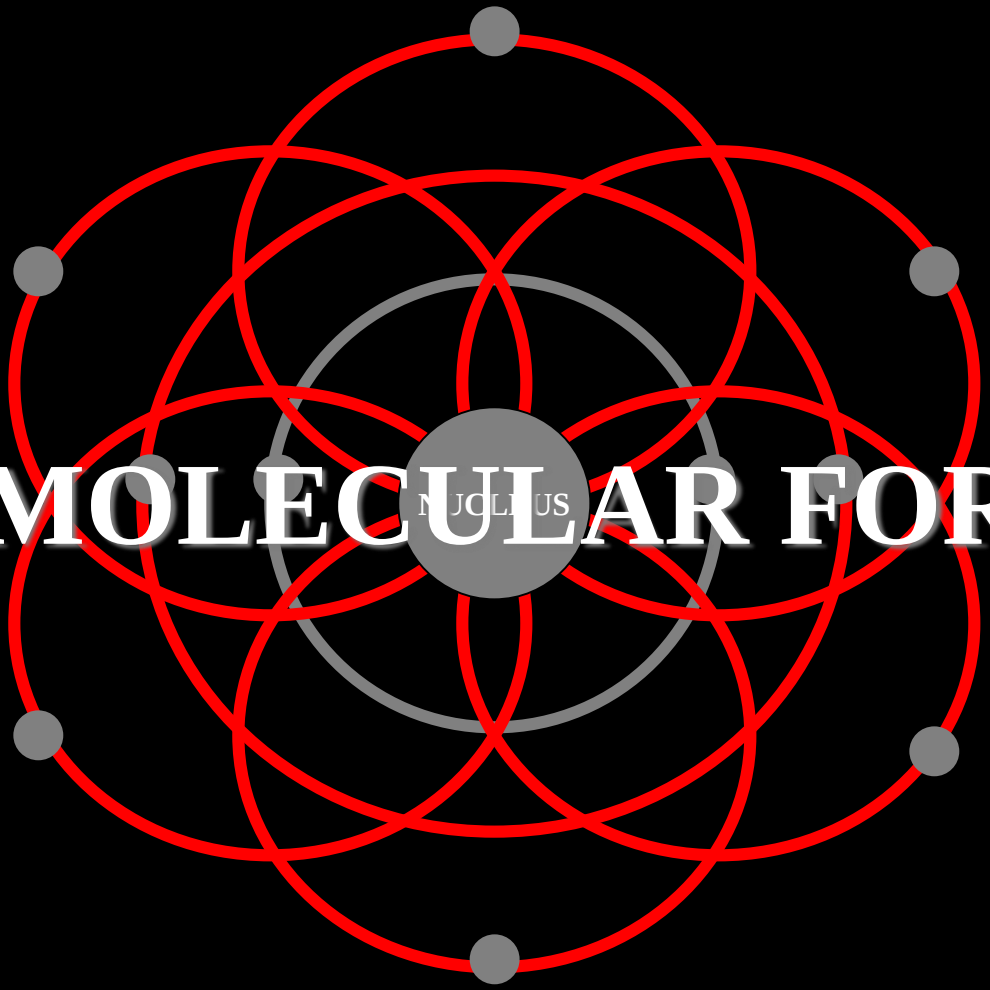
* = BOND

ISOBUTANE (C4H10 – DIFF CHEM PROPERTIES)

ISOMERS SUMMARY

D

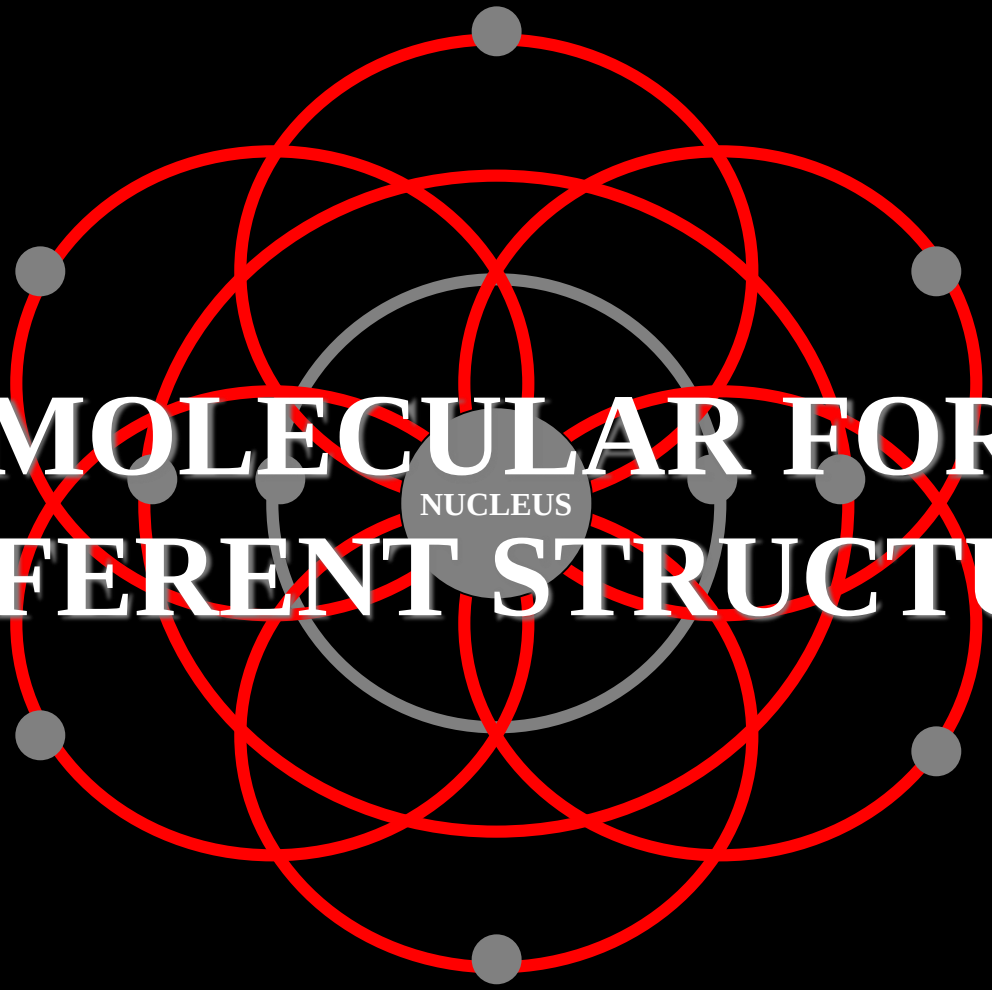
ISOMERS



SAME MOLECULAR FORMULA

ISOMERS

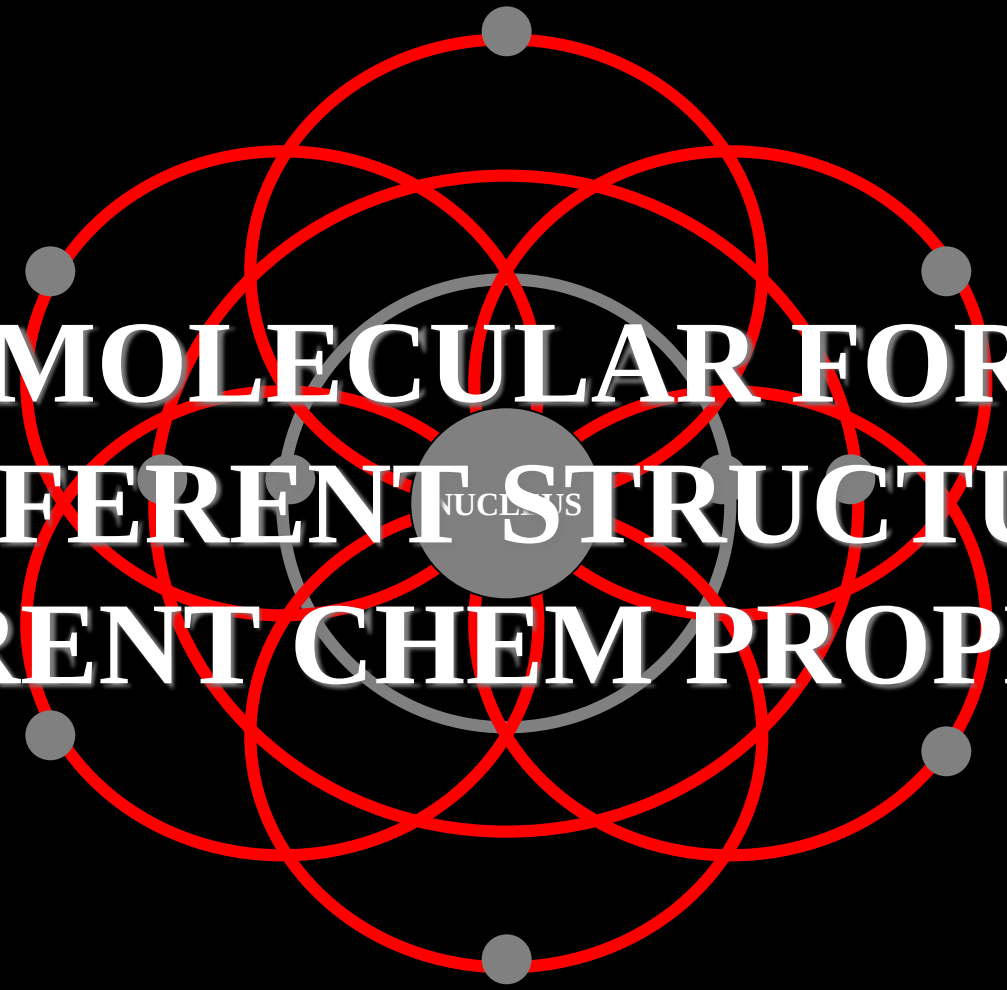
ISOMERS



SAME MOLECULAR FORMULA
DIFFERENT STRUCTURE

ISOMERS

ISOMERS



SAME MOLECULAR FORMULA
DIFFERENT STRUCTURE
DIFFERENT CHEM PROPERTIES

ISOMERS

F

CARBON BONDS WITH FUNCTIONAL GROUPS

FUNCTIONAL GROUP

FUNCTIONAL GROUP

UNIQUE ATOM CONFIGURATION

FUNCTIONAL GROUP

FUNCTIONAL GROUP TYPES

FUNCTIONAL GROUPS

-OH = HYDROXYL GROUP

FUNCTIONAL GROUPS

FUNCTIONAL GROUPS

-OH = HYDROXYL GROUP

-CO = CARBONYL GROUP

FUNCTIONAL GROUPS

FUNCTIONAL GROUPS

-OH = HYDROXYL GROUP

-CO = CARBONYL GROUP

-COOH = CARBOXYL GROUP

FUNCTIONAL GROUPS

FUNCTIONAL GROUPS

-OH = HYDROXYL GROUP

-CO = CARBONYL GROUP

-COOH = CARBOXYL GROUP

-PO3 = PHOSPHATE GROUP

FUNCTIONAL GROUPS

FUNCTIONAL GROUPS

-OH = HYDROXYL GROUP

-CO = CARBONYL GROUP

-COOH = CARBOXYL GROUP

-PO3 = PHOSPHATE GROUP

-NH2 = AMINO GROUP

FUNCTIONAL GROUPS

FUNCTIONAL GROUPS

IMPART DIFFERENT CHEMICAL PROPERTIES TO THE HYDROCARBON

FUNCTIONAL GROUPS

FUNCTIONAL GROUPS

VIA THEIR NO. & ARRANGEMENT UPON THE HYDROCARBON

FUNCTIONAL GROUPS