## WORK SHEET 1

Sl No	STRUCTURAL FORMULA	IUPAC NAME
1	CH <sub>4</sub>	
2	CH <sub>3</sub> -CH <sub>3</sub>	
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
4	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
5	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
6	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	

#### Give the structures of the following

1	Methane	
2	Propane	
3	Pentane	
4	Decane	

**Space for rough work** 

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 2**

1	CH <sub>3</sub> - CH-CH <sub>3</sub> CH <sub>3</sub>	
2	CH <sub>3</sub> - CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub>	
3	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub> CH <sub>3</sub>	
4	CH <sub>3</sub> -CH <sub>-</sub> CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub>	
5	CH <sub>3</sub> -CH <sub>2</sub> - CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub>	

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**Space for rough work** 

#### **WORK SHEET 3**

1	CH <sub>3</sub> - CH-CH <sub>3</sub> CH <sub>2</sub> - CH <sub>3</sub>	
2	CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
3	CH <sub>3</sub> -CH <sub>2</sub> - CH-CH <sub>3</sub> CH <sub>2</sub> - CH <sub>2</sub> - CH <sub>2</sub> - CH <sub>3</sub>	
4	CH <sub>2</sub> - CH <sub>3</sub> CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	

#### Give the structures of the following

1	2- Methylhexane	
2	3-Methylpentane	

#### Space for rough work

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 4**

1	CH <sub>3</sub> CH <sub>3</sub> -CH-CH-CH <sub>3</sub>	
1	CH <sub>3</sub> -CH-CH <sub>3</sub>	
2	CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> -CH-CH <sub>2</sub> -CH-CH <sub>3</sub>	
3	CH <sub>3</sub> CH <sub>3</sub> - CH - CH-CH <sub>3</sub> CH <sub>3</sub>	
4	CH <sub>3</sub> CH <sub>3</sub> -C-CH <sub>3</sub> CH <sub>3</sub>	

#### Give the structures of the following

1	2,3-Dimethylhexane	
2	2,2-Dimethylpentane	
3	3,4-Dimethyloctane	
4	3,3-Dimethylpentane	

\* Question:

**A student wrote** the IUPAC name of the compound as **2-Ethyl Butane. Is it Correct? Justify** your answer

Your Answer	Reason

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 5**

1	CH <sub>3</sub> -CH <sub>2</sub> - CH <sub>2</sub> -CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	
2	CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub> -CH <sub>2</sub> -C-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	
3	CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub> -CH <sub>2</sub> - CH-CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	
4	CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	

#### Give the structures of the following

1	3,3-Di ethylhexane	
2	3,3-Di ethylpentane	
3	3,4-Di ethyloctane	

#### Space for rough work

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 6**

1	CH <sub>3</sub> CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	
2	CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> -CH <sub>2</sub> - CH-CH-CH <sub>3</sub> CH <sub>3</sub>	
3	CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> -CH- CH-CH-CH <sub>3</sub> CH <sub>3</sub>	
4	CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> -CH- CH-CH <sub>2</sub> -CH-CH <sub>3</sub>	

**Space for rough work** 

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 7**

	CH <sub>2</sub> -CH <sub>3</sub>	
1	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH-CH <sub>3</sub>	
	CH <sub>3</sub>	
2	CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	
	CH <sub>3</sub> -CH- CH-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
	CH <sub>3</sub> CH <sub>3</sub>	
3	CH <sub>3</sub> -CH-CH-CH <sub>2</sub> -CH <sub>3</sub>	
	CH <sub>2</sub> -CH <sub>3</sub>	
	CH <sub>3</sub> CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	
4	CH <sub>3</sub> -CH- CH-CH <sub>2</sub> -CH <sub>3</sub>	
	CH <sub>3</sub>	* Only for advanced learning
5	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>2</sub> -CH <sub>3</sub>	* Only for advanced learning
	CH <sub>2</sub> -CH <sub>3</sub>	

#### Give the structures of the following

1	2,3,3-Trimethylhexane	
2	3-Ethyl-2-methylpentane	
3	3-Ethyl-2,2-Dimethylpentane	
4	3,3-Diethyl-2,2- Dimethyloctane	

## Space for rough work

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 8**

1	CH <sub>2</sub> =CH <sub>2</sub>	
2	CH <sub>3</sub> -CH=CH <sub>2</sub>	
3	CH <sub>3</sub> -CH <sub>2</sub> -CH=CH <sub>2</sub>	
4	CH <sub>3</sub> -CH=CH-CH <sub>3</sub>	
5	CH <sub>2</sub> =CH-CH <sub>2</sub> -CH <sub>3</sub>	
6	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH=CH-CH <sub>3</sub>	

#### Give the structures of the following

1	Ethene	
2	Hex-3-ene	
3	Hex-2-ene	

#### **Space for rough work**

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 9**

1	CH ≡ CH	
2	CH <sub>3</sub> -C ≡ CH	
3	CH <sub>3</sub> -CH <sub>2</sub> -C ≡ CH	
4	$CH_3$ - $C \equiv C$ - $CH_3$	
5	$CH \equiv C-CH_2-CH_3$	
6	$CH_3$ - $CH_2$ - $CH_2$ - $C \equiv C$ - $CH_3$	

#### Give the structures of the following

1	Ethyne	
2	Propyne	
3	But-1-yne	
4	But-2-yne	

#### **Space for rough work**

 $^*C_1$  - METH  $^*C_2$  - ETH  $^*C_3$  - PROP  $^*C_4$  - BUT  $^*C_5$  - PENT  $^*C_6$  - HEX  $^*C_7$  - HEPT  $^*C_8$ - OCT  $^*C_9$  NON  $^*C_{10}$  - DEC  $^*$ 

#### **FUNCTIONAL GROUPS**

SI No	FUCTIONAL GROUP	STRUCTURE	NAME	NAME OF THE COMPOUND	IUPAC NAME
1	-OH	-OH	Hydroxy	Alcohol	ol
2	-СНО	O    CH	Aldehyde	Aldehyde	al
3	-CO-	O    C	Keto group	Ketone	one
4	-СООН	O    COH	Carboxylic	Carboxylic Acid	oic acid
5	-NH <sub>2</sub>	-NH <sub>2</sub>	Amino	Amine	an amine
6	-F /-Cl / -Br /-I	-F /-Cl / -Br /-I	Halo	Halo	Halo
7	-O-	-O-	Alkoxy	Ether	Alkoxyalkane

#### **WORK SHEET 10**

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

1	CH <sub>3</sub> -OH
2	CH <sub>3</sub> -CH <sub>2</sub> -OH
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -OH
4	CH <sub>3</sub> -CH-CH <sub>3</sub> OH
5	CH <sub>3</sub> -CH <sub>2</sub> CH <sub>2</sub> -CH-CH <sub>3</sub> OH

#### Give the structures of the following

1	L	Ethanol	
2	2	Propan – 1- ol	
3	3	Propan – 2- ol	

<sup>\*</sup> Can you write Propan -3 -ol? Give reason.

Your Answer	Reason

#### **Space for rough work**

#### **WORK SHEET 11**

1	н-сно	

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

2	CH <sub>3</sub> -CHO	
3	CH <sub>3</sub> -CH <sub>2</sub> -CHO	

#### Give the structures of the following

1	Propanal	
2	Pentanal	

#### **WORK SHEET 12**

1	CH <sub>3</sub> -CO- CH <sub>3</sub>	
2	CH <sub>3</sub> -CO- CH <sub>2</sub> -CH <sub>3</sub>	
3	CH <sub>3</sub> -CO-CH <sub>2</sub> -CH <sub>3</sub>	
4	CH <sub>3</sub> -CO-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
5	CH <sub>3</sub> -CH <sub>2</sub> -CO-CH <sub>2</sub> .CH <sub>3</sub>	

#### Give the structures of the following

1	Propanone	
2	Butanone	
3	Pentan-3-one	

#### Space for rough work

#### **WORK SHEET 13**

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

1	НСООН	
2	CH <sub>3</sub> -COOH	
3	CH <sub>3</sub> -CH <sub>2</sub> -COOH	
4	CH <sub>3</sub> -CH <sub>2</sub> -COOH	
5	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -COOH	

#### Give the structures of the following

1	Hexanoic acid	
2	Propanoic acid	
3	Butanoic acid	

**Space for rough work** 

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 14**

1	CH₃-Cl
2	CH <sub>3</sub> -CH <sub>2</sub> -Cl
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -Cl
4	CH <sub>3</sub> -CH-CH <sub>3</sub> Cl
5	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub> Cl
6	CH <sub>3</sub> -Br
7	CH <sub>3</sub> -CH <sub>2</sub> -I
8	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -Br
9	CH <sub>3</sub> -CH-CH <sub>3</sub> Br
10	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub> Br

#### Give the structures of the following

1	1- Chloropropane	
2	2- Chloropropane	
3	2 - Bromobutane	

#### **Space for rough work**

#### **WORK SHEET 15**

1	Cl Cl CH <sub>3</sub> -CH- CH-CH <sub>3</sub>	
2	Cl Cl CH <sub>3</sub> -CH-CH <sub>2</sub> -CH-CH <sub>3</sub>	
3	Br Br CH <sub>3</sub> - CH- C-CH <sub>3</sub> Br	
4	Cl CH <sub>3</sub> -C-CH <sub>3</sub> Cl	

#### Give the structures of the following

1	2,2- Dichlorobutane	
2	2,3- Dibromopentane	
3	2,2,3- Trichlorobutane	

#### Space for rough work

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 16**

1	CH <sub>3</sub> -NH <sub>2</sub>	
2	CH <sub>3</sub> -CH <sub>2</sub> -NH <sub>2</sub>	
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -NH <sub>2</sub>	
4	CH <sub>3</sub> -CH-CH <sub>3</sub>   NH <sub>2</sub>	
5	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub> NH <sub>2</sub>	

#### Give the structures of the following

1	Propan – 2- amine	
2	Butan -2-amine	
3	Pentan -3- amine	

#### **Space for rough work**

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 17**

1	CH <sub>3</sub> -O-CH <sub>3</sub>	
2	CH <sub>3</sub> -CH <sub>2</sub> -O-CH <sub>2</sub> -CH <sub>3</sub>	
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -O-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
4	CH <sub>3</sub> -O-CH <sub>2</sub> -CH <sub>3</sub>	
5	CH <sub>3</sub> -CH <sub>2</sub> -O-CH <sub>3</sub>	
6	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -O-CH <sub>2</sub> -CH <sub>3</sub>	

#### Give the structures of the following

1	Ethoxyethane	
2	Methoxypropane	
3	Ethoxybutane	

## Space for rough work

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### For Advanced Learning (Page 208 of Teacher Text)

#### **WORK SHEET 18**

The order of priority among the above mentioned functional groups is COOH> -CHO> CO > OH>NH<sub>2</sub>> Alkenes> Alkynes

Alkyl groups and Alkoxy groups are always prefixes in poly functional compounds.

1	CH <sub>3</sub>	
	CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>2</sub> -OH	
2	CH <sub>3</sub>	
	CH <sub>3</sub> -C-CH <sub>2</sub> -CH <sub>2</sub> -OH	
	CH <sub>3</sub>	

#### Give the structures of the following

1	3-methyl-butan-1-ol	
2	2-methyl-butan-1-ol	
3	2-methyl-butan-2-ol	

#### Space for rough work

 $^*C_1$  - METH  $^*C_2$  - ETH  $^*C_3$  - PROP  $^*C_4$  - BUT  $^*C_5$  - PENT  $^*C_6$  - HEX  $^*C_7$  - HEPT  $^*C_8$ - OCT  $^*C_9$  NON  $^*C_{10}$  - DEC  $^*$ 

#### **Answers / Hints**

#### **WORK SHEET 1**

1	CH <sub>4</sub>	Methane
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	Butane
6	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	Octane

#### **WORK SHEET 2**

1	CH <sub>3</sub> -CH-CH <sub>3</sub>	2-Methylpropane
	CH <sub>3</sub>	
2	CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub>	2-Methylbutane
3	CH <sub>3</sub> -CH <sub>2</sub> - CH-CH <sub>3</sub> CH <sub>3</sub>	2-Methylbutane
5	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub>	3-Methylhexane

#### **WORK SHEET 3**

1	CH <sub>3</sub> -CH-CH <sub>3</sub> CH <sub>2</sub> - CH <sub>3</sub>	2-Methyl butane	Longest chain
2	CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	3-Methyl hexane	Longest chain
3	CH <sub>3</sub> -CH <sub>2</sub> - CH-CH <sub>3</sub> CH <sub>2</sub> - CH <sub>2</sub> - CH <sub>2</sub> - CH <sub>3</sub>	3-Methyl heptane	Longest chain

#### **WORK SHEET 4**

2	CH <sub>3</sub> CH <sub>3</sub>	2,4-Dimethylpentane
	CH <sub>3</sub> -CH-CH <sub>2</sub> - CH-CH <sub>3</sub>	
	CH <sub>3</sub>	2,2 – Dimethylpropane
4	CH <sub>3</sub> -C-CH <sub>3</sub>	
	CH <sub>3</sub>	

 $^*C_1$  - METH  $^*C_2$  - ETH  $^*C_3$  - PROP  $^*C_4$  - BUT  $^*C_5$  - PENT  $^*C_6$  - HEX  $^*C_7$  - HEPT  $^*C_8$ - OCT  $^*C_4$  NON  $^*C_{10}$  - DEC  $^*$ 

#### **WORK SHEET 5**

1	CH <sub>3</sub> -CH <sub>2</sub> - CH <sub>2</sub> -CH <sub>-</sub> CH <sub>3</sub>	3-Ethylhexane
2	CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	3,3-Diethylpentane

#### **WORK SHEET 6**

		3,4-Dimethylhexane	Longest chain
1	CH <sub>3</sub>		
	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>		
	ÇH <sub>3</sub> ÇH <sub>3</sub>	2,3,4-Trimethylhexane	Lowest sum rule
2	CH₃-CH₂- CH-CH-CH₃		
	CH <sub>3</sub>		
	CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub>	2,3,4,5- Tetramethylhexane	
3	CH₃-CH-CH-CH-CH₃ CH₃		
4	CH <sub>3</sub> CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub> -CH-CH <sub>2</sub> -CH-CH <sub>3</sub>	2,3,5-Trimethylheptane	Longest chain + Lowest sum

 $^*C_1$  - METH  $^*C_2$  - ETH  $^*C_3$  - PROP  $^*C_4$  - BUT  $^*C_5$  - PENT  $^*C_6$  - HEX  $^*C_7$  - HEPT  $^*C_8$ - OCT  $^*C_9$  NON  $^*C_{10}$  - DEC  $^*$ 

#### **WORK SHEET 7**

1	CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub> -CH <sub>-</sub> CH-CH <sub>3</sub> CH <sub>3</sub>	3-Ethyl-2-methylpentane	Lowest sum + Alphabetical order
2	CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub> CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	3-Ethyl-2-methylhexane	
3	CH <sub>3</sub> CH <sub>3</sub> CH <sub>3</sub> -CH- CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	4-Ethyl-2,3-dimethylhexane	
5	CH <sub>3</sub> CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>2</sub> -CH <sub>3</sub> CH <sub>2</sub> -CH <sub>3</sub>	3 – ethyl-4-methylhexane *(Only for advanced learning)	

#### **WORK SHEET 8**

2	CH <sub>3</sub> -CH=CH <sub>2</sub>	Propene
3	CH <sub>3</sub> -CH <sub>2</sub> -CH=CH <sub>2</sub>	But-1-ene
4	CH <sub>3</sub> -CH=CH-CH <sub>3</sub>	But-2-ene
6	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH=CH-CH <sub>3</sub>	Hept-2-ene

#### **WORK SHEET 9**

1	CH = CH	Ethyne
4	$CH_3$ - $C \equiv C$ - $CH_3$	But-2-yne
5	CH≡ C-CH <sub>2</sub> -CH <sub>3</sub>	But-1-yne
6	$CH_3$ - $CH_2$ - $CH_2$ - $C \equiv C$ - $CH_3$	Hept-2-yne

<sup>\*</sup> Number should be given to carbon atoms of normal alkenes or alkynes having FOUR or more carbon atoms

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 10**

2	CH <sub>3</sub> -CH <sub>2</sub> -OH	Ethanol
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -OH	Propan – 1-ol
5	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub>	Pentan -2-ol
	ОН	

## \* Number should be given to alcohols having three or more carbon atoms WORK SHEET11

1	Н-СНО	Methanal
3	CH <sub>3</sub> -CH <sub>2</sub> -CHO	Butanal

<sup>\*</sup> For straight chain aldehydes, there is **no** need to provide number to each carbon atom . CHO group will always be at one end.

#### **WORK SHEET 12**

2	CH <sub>3</sub> -CO- CH <sub>2</sub> -CH <sub>3</sub>	Butanone
3	CH <sub>3</sub> -CO-CH <sub>2</sub> -CH <sub>3</sub>	Butanone
4	CH <sub>3</sub> -CO-CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	Pentan -2-one
5	CH <sub>3</sub> -CH <sub>2</sub> -CO-CH <sub>2</sub> -CH <sub>3</sub>	Pentan -3-one

## \* Number should be given to straight chain **ketones** having **five or more carbon atoms**WORK SHEET 13

	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -COOH	Dentanciascid
10	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -COOH	Pentanoicacid
_	- 0 - 2 - 2	

<sup>\*</sup> For straight chain Carboxylic acids, there is **no** need to provide number to each carbon atom

#### **WORK SHEET 14**

2	CH <sub>3</sub> -CH <sub>2</sub> -Cl	Chloroethane
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -Cl	1- Chloropropane
4	CH <sub>3</sub> -CH-CH <sub>3</sub>	2- Chloropropane
5	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>-</sub> CH <sub>3</sub> Cl	2- Chloropentane
9	CH <sub>3</sub> -CH-CH <sub>3</sub> Br	2- Bromopropane

<sup>\*</sup> Number should be given to haloalkanes having three or more carbon atoms

 $^*C_1$  - METH  $^*C_2$  - ETH  $^*C_3$  - PROP  $^*C_4$  - BUT  $^*C_5$  - PENT  $^*C_6$  - HEX  $^*C_7$  - HEPT  $^*C_8$ - OCT  $^*C_9$  NON  $^*C_{10}$  - DEC  $^*$ 

#### **WORK SHEET 15**

3	Br Br CH <sub>3</sub> -CH- C-CH <sub>3</sub> Br	2,2,3- Tribromobutane
4	Cl CH₃-C-CH₃ Cl	2,2 - Dichloropropane

#### **WORK SHEET 16**

2	CH <sub>3</sub> -CH <sub>2</sub> -NH <sub>2</sub>	Ethanamine
3	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -NH <sub>2</sub>	Propan -1-amine
4	CH <sub>3</sub> -CH-CH <sub>3</sub>	Propan- 2-amine
	NH <sub>2</sub>	

<sup>\*</sup> Number should be given to amines having three or more carbon atoms

#### **WORK SHEET 17**

1	CH <sub>3</sub> -O-CH <sub>3</sub>	Methoxymethane
2	CH <sub>3</sub> -CH <sub>2</sub> -O-CH <sub>2</sub> -CH <sub>3</sub>	Ethoxyethane
4	CH <sub>3</sub> -O-CH <sub>2</sub> -CH <sub>3</sub>	Methoxyethane
5	CH <sub>3</sub> -CH <sub>2</sub> -O-CH <sub>3</sub>	Methoxyethane
6	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -O-CH <sub>2</sub> -CH <sub>3</sub>	Ethoxybutane

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

#### **WORK SHEET 18**

#### For Advanced Learning (Page 208 of Teacher Text)

The order of priority among the above mentioned fuctional groups is  $COOH>-CHO>CO>OH>NH_2>Alkenes>Alkynes$ 

CH <sub>3</sub>	3-Methylbutan -1-ol *
CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>2</sub> -OH	
CH <sub>3</sub>	3,3- Dimethylbutan -1-ol *
CH <sub>3</sub> -C-CH <sub>2</sub> -CH <sub>2</sub> -OH	
CH <sub>3</sub>	
ОН	5- Hydroxyhexan -2-one **(Only for advanced learning)
CH <sub>3</sub> -CH-CH <sub>2</sub> -CO-CH <sub>3</sub>	

#### \* Alkyl groups and Alkoxy groups are always prefixes in poly functional compounds.

 $^*C_1$  - METH  $^*C_2$  - ETH  $^*C_3$  - PROP  $^*C_4$  - BUT  $^*C_5$  - PENT  $^*C_6$  - HEX  $^*C_7$  - HEPT  $^*C_8$ - OCT  $^*C_9$  NON  $^*C_{10}$  - DEC  $^*$ 

<sup>\*\*</sup> CO group has more preference than OH group.

## **ISOMERISM**

Identify the pair/s of isomers from those given below .Also Find the type of isomerism exhibited by them.

Identify	y the pair/s of isomers from those given below .Also Find the type of isom	ierism exhibited by them.
No	Structure	Molecular formula
a	$CH_3$	
	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub>	
	$CH_3$	C <sub>7</sub> H <sub>16</sub>
b	CH <sub>3</sub>	
	CH <sub>3</sub> -CH <sub>2</sub> -CH-CH <sub>3</sub>	
С	$\mathrm{CH}_3$	
	CH₃-CH₂-C-CH₂-CH₃	
	$CH_3$	
d	CH <sub>3</sub>	
	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
e	CH <sub>3</sub> -O-CH <sub>3</sub>	$C_2H_6O$
f	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	
g	CH <sub>3</sub> -CH <sub>2</sub> -OH	
h	CH <sub>3</sub> -CH <sub>2</sub> -CHO	
i	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -Cl	
j	CH <sub>3</sub> -CH-CH <sub>3</sub>	
	ОН	
k	CH <sub>3</sub> -CO-CH <sub>3</sub>	
1	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -OH	
m	CH₃-CH-CH₃	
	Cl	C₃H <sub>7</sub> Cl
n	CH <sub>3</sub>	
	CH <sub>3</sub> -C-CH <sub>2</sub> -OH	
	CH <sub>3</sub>	<b>Hint</b> : <b>n</b> and <b>o</b> are Chain isomers
0	CH <sub>3</sub>	
	CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>2</sub> -OH	

\*C<sub>1</sub> - METH \* C<sub>2</sub> - ETH \* C<sub>3</sub> - PROP \* C<sub>4</sub> - BUT \* C<sub>5</sub> - PENT \* C<sub>6</sub> - HEX \* C<sub>7</sub> - HEPT \* C<sub>8</sub>- OCT \* C<sub>9</sub> NON \* C<sub>10</sub> - DEC \*

## **WORK SHEET 20**

#### Write all possible isomers of the following

Molecular formula	Isomers	IUPAC name
$C_5H_{12}$		
$C_2H_6O$		
$C_3H_6O$		
$C_3H_8O$		
C II		
$C_6H_{12}$		
$C_4H_8$		
$\mathbf{C}_{3}\mathbf{H}_{6}$		

Note: By changing the position of the double boned, we can write more position isomers to alkenes

 $^*C_1$  - METH  $^*C_2$  - ETH  $^*C_3$  - PROP  $^*C_4$  - BUT  $^*C_5$  - PENT  $^*C_6$  - HEX  $^*C_7$  - HEPT  $^*C_8$ - OCT  $^*C_9$  NON  $^*C_{10}$  - DEC  $^*$ 

## **WORK SHEET 20**

#### **Answers**

Molecular formula	Isomers	IUPAC name
	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>3</sub>	Pentane
$\mathbf{C_5H_{12}}$	CH <sub>3</sub> -CH-CH <sub>2</sub> -CH <sub>3</sub>	2- Methyl butane
	CH <sub>3</sub> CH <sub>3</sub> -C-CH <sub>3</sub> CH <sub>3</sub>	2,2 – Dimethylpropane
	CH <sub>3</sub> -CH <sub>2</sub> -OH	Ethanol
$C_2H_6O$	CH <sub>3</sub> -O-CH <sub>3</sub>	Methoxymethane
6 22 6	CH <sub>3</sub> -CH <sub>2</sub> -CHO	Propanal
C <sub>3</sub> H <sub>6</sub> O	CH <sub>3</sub> -CO-CH <sub>3</sub>	Propanone
	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -OH	Propan -1-ol
$C_3H_8O$	CH <sub>3</sub> - CH-CH <sub>3</sub> OH	Preopan - 2- ol
	CH <sub>3</sub> -O-CH <sub>2</sub> -CH <sub>3</sub>	Methoxyethane
	CH <sub>3</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH <sub>2</sub> -CH=CH <sub>2</sub>	Hex -1-ene *
$\mathrm{C_6H_{12}}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Cyclohexane
	CH <sub>3</sub> -CH <sub>2</sub> -CH=CH <sub>2</sub>	But – 1 -ene *
C <sub>4</sub> H <sub>8</sub>	H H H-C-C-H H-C-C-H H-H-H H-H	Cyclobutane
6 **	CH <sub>3</sub> -CH=CH <sub>2</sub>	Propene
$\mathbf{C_3H_6}$	H H H	Cyclopropane

Note: \*By changing the position of the double boned, we can write more position isomers to alkenes